

Technical Bulletin # 7

Bore Decommissioning in the Dryland Mallee

From 1993 to 2003 a decommissioning program was undertaken in the dryland Mallee to decommission old bores that were known to have failed. Decommissioning these bores aimed to reduce contamination of saline groundwater from the Parilla Sands Aquifer into the fresher Murray Group Limestone Aquifer.

Early development in the Mallee region was hampered by the lack of a secure water supply. It was not until groundwater was located from the limestone aquifer (Murray Group Limestone Aquifer) that there was a reliable water supply.

To access this water a significant number of groundwater bores were installed in the late 1890's and early 1900's which were used for stock and domestic purposes. Many of these bores were constructed out of cast iron and steel. The aquifer system in this region is layered with a highly saline Parilla Sands Aquifer above the fresher Murray Group Limestone aquifer. This allowed for the expectation that many of the groundwater bores had failed from corrosion allowing for contamination of the Murray Group Limestone Aquifer from the saline Parilla Sands Aquifer.

In response to the concern of contamination of the Murray Group

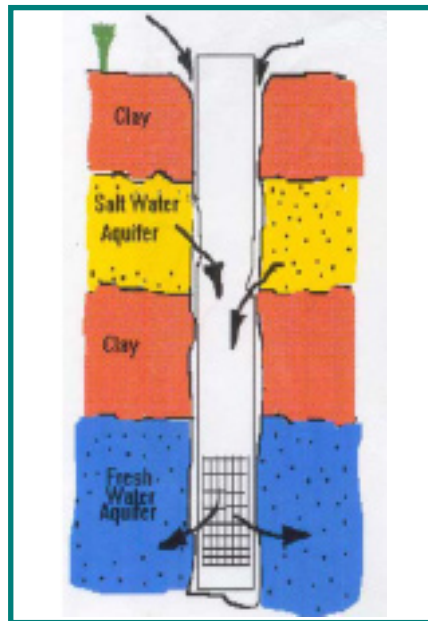


Diagram 1. Shows the failure procedure for the old bores where saline groundwater from the upper aquifer passes through holes in the bore casing to the lower fresh water aquifer, thereby contaminating it.

Limestone, priority was given in the Mallee Dryland Salinity Management Plans to progressively decommission bores that had failed.

Method

The first step in the decommissioning program was to identify which bores had potentially failed and where these bores were located.

It was not until recently that stock and domestic bores have been licensed and information recorded onto a database.

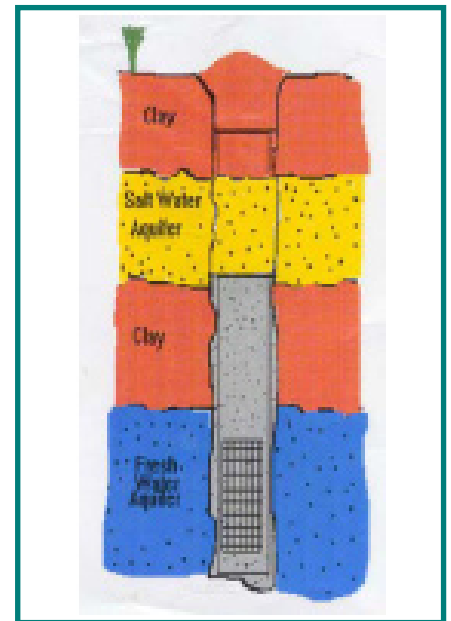


Diagram 2. Shows the bore shown in bore casing filled with cutting cement grout thus off any avenue for groundwater from the upper aquifer passing through holes in the casing to the lower better quality aquifer.

At a glance

- 287 bores were decommissioned in the Mallee as part of a 10 year program;
- There still may be many old bores out there that have failed and need decommissioning
- Decommissioning failed bores is now the responsibility of the landholder.

Hydrogeological experts and community consultation provided a means to identify and locate these older failed bores.

From this information a decommissioning program was developed which prioritised bores to be decommissioned dependent on location, bore age, bore diameter, type of casing, groundwater level, groundwater salinity and known deterioration in water quality in the Murray Group Limestone Aquifer.

Drilling contractors were appointed to decommission the bores. The bores were drilled down into the old bore casing. Surplus mud and material was removed and then the bore was filled with cement mortar mix. A number of bores had obstructions including star picket posts and stones. This made the bores difficult to decommission and required a second attempt with more sophisticated equipment. Contractors used 'wash-over string' technology to drill down the outside of the bore casing and withdraw the whole casing.



Above: Bore casings removed by the jacking procedure. The deterioration of the bore casings is clearly visible.



The decommissioning program followed the guidelines developed by the Department of Sustainability and Environment (DSE). As part of ensuring the decommissioning program was run efficiently an audit of the program was also undertaken.

Results/findings

Over the decommissioning period a total of 287 bores were decommissioned. This project resulted in being the first decommissioning program of its type.

Implications of the findings

The aim of decommissioning bores is to reduce the contamination of saline groundwater into the fresher Murray Group Limestone Aquifer. This was

achieved through the decommissioning of some failed bores but there may still be many old bores out there that need decommissioning. Decommissioning failed bores will allow the groundwater resource to be available for longer to the Murrayville Water Supply Protection Area (WSPA).

Decommissioning failed bores is now the responsibility of the landholder. To ensure this is done properly a Bore Decommissioning Licence from your local Rural Water Authority is required. Causing groundwater to be polluted is an offence under the Environmental Protection Act (1970).

GWMWater will be conducting a 5 yearly survey of bores in the WSPA to assess the number and potential impact these failed bores are having in the Murrayville WSPA.

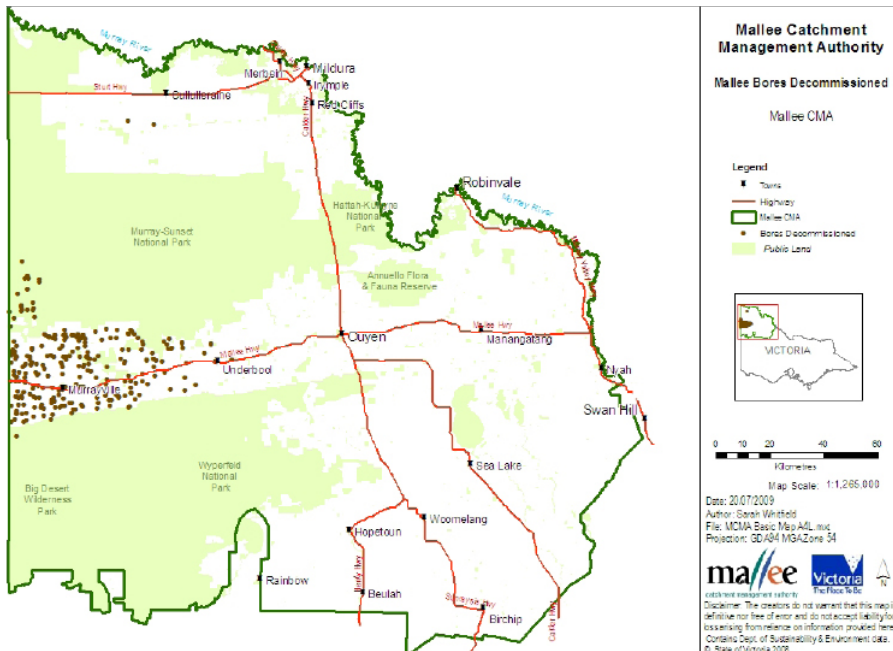
Project Support

Funding was provided through the National Action Plan for Salinity and Water Quality, Department of Sustainability and Environment, National Heritage Trust and the National Landcare Program.

Find out more

For further information, please contact the Land Resources unit at the Mallee CMA on (03) 5051 4377.

If you would like to know more about decommissioning a bore, please contact GWMWater on 1300 659 961.



Above: Bores decommissioned in the Mallee region. Map: Mallee CMA

Project Partners



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