



KEMPSEY
Shire Council

DIRECTOR SHIRE SERVICES REPORT

13th June 2006

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| DSS6 | BELLBROOK WATER SUPPLY |
| FILE: 350 AMB | { Folio No. * } |

SUMMARY:

This report is an update on the Bellbrook water supply.



DESCRIPTION:

This report provides a more detailed account than the previous report (DSS17 14th February 2006, see [Appendix G](#)), as well as an update on current progress. More detailed information has been provided to assist Council's understanding of the current challenges.

The Bellbrook water supply was found to be contaminated in early 2005. The contamination was arsenic and was found as part of the 6-monthly chemical analysis for this water supply. The arsenic levels from the water supply shingle bores were in excess of the Australian Drinking Water Guidelines (ADWG). A review of the NSW Health Drinking Water Database showed the ADWG had previously not been exceeded.

The resolution of this contamination has been managed using the NSW Health's Drinking Water Monitoring Program booklet. The risk assessment is summarised below.

- The ADWG has a health limit of 0.007mg/l for arsenic
- There is significant risk of harm over a lifetime of consumption above ADWG health limit levels
- arsenic is carcinogenic in high doses (>0.3mg/L)
- Bellbrook water supply had relatively low doses detected above the health guidelines (i.e. not carcinogenic)
- There were no chronic effects or chronic health risks
- There were no acute health risks
- It was a water source supply problem not water treatment problem

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- The initial response was a further sampling period to determine the extent of the contamination event.

The results of the initial sampling period can be seen graphically in Figures 1 and 2. The bore water source had 11 failures of 12 weekly samples in the period 16/5/05 to 4/7/05. The surface water had significantly better water quality than the bores and the quality met ADWG. Macleay Water 's response to these results after consultation with NSW Health was to decommission the bores (southern bores), make the interim source of water the river surface water (and carting when necessary) and that a new bore be trialled on the north side of the river (called the North Bore).

Figure 1: Project Monitoring Results - Round 1 – Southern Bores

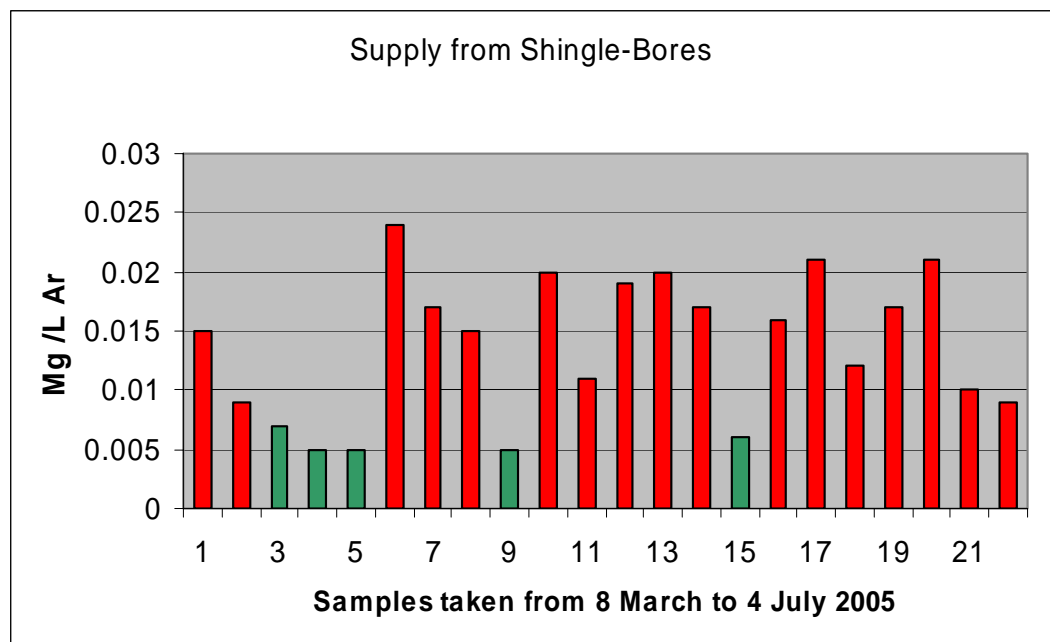
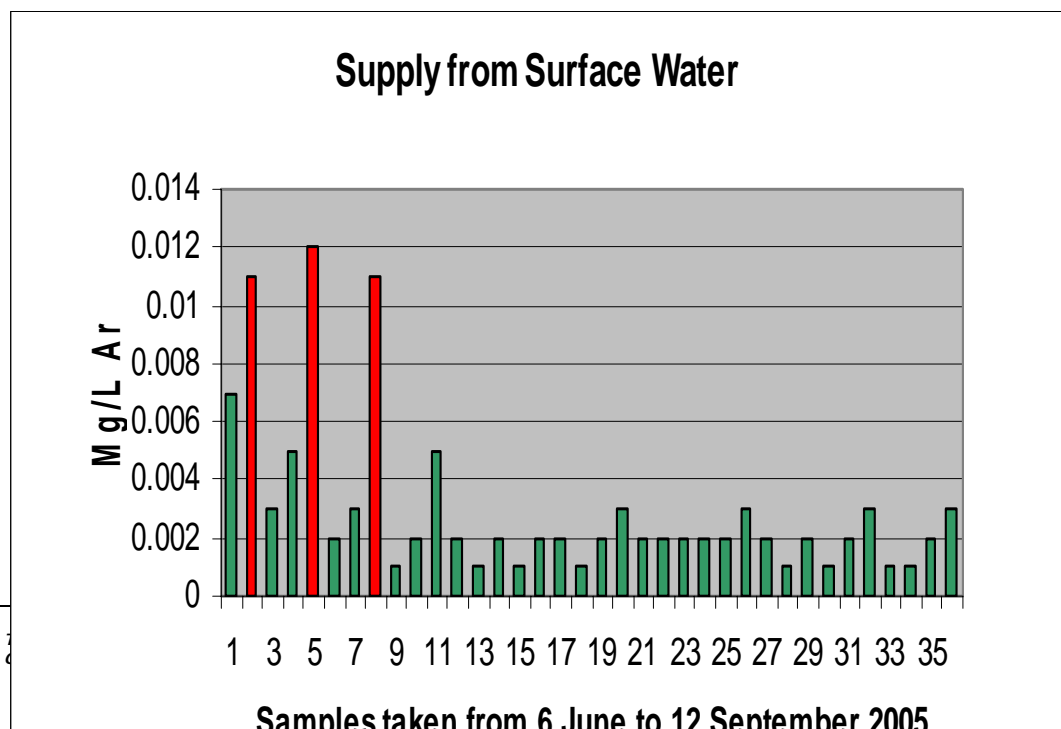


Figure 2: Project Monitoring Results - Round 2 – Surface Water

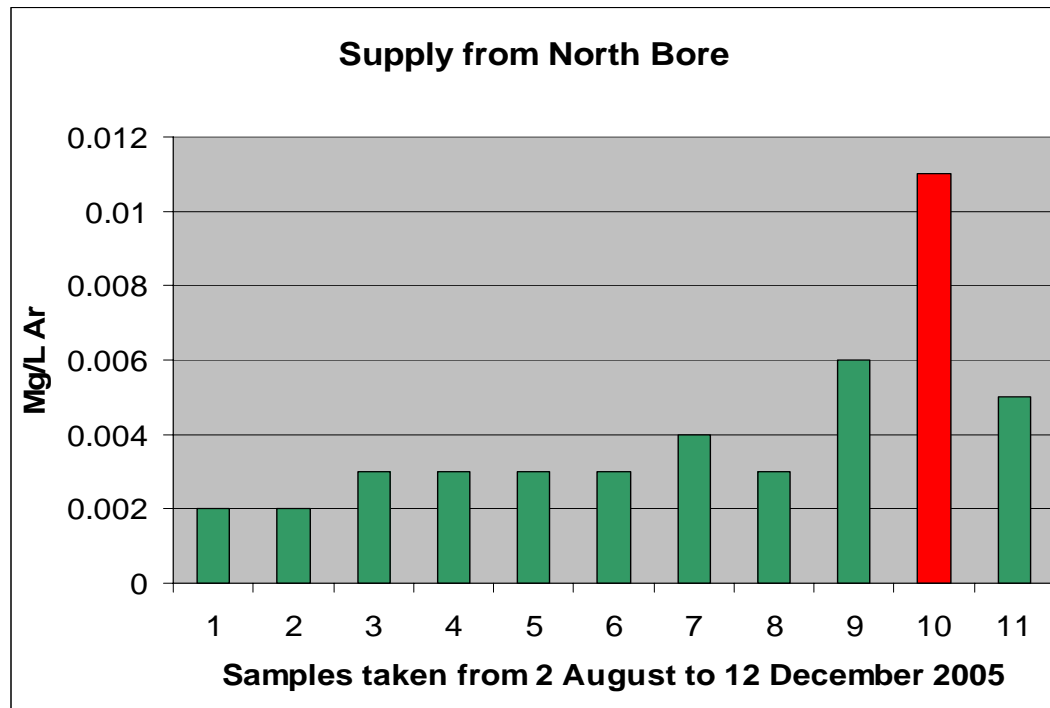


There were different risks to manage with a surface water supply. The following points summarise the risk management processes that are currently in place.

- Surface supply required additional monitoring for turbidity and a trigger level of 1 NTU has been set to ensure disinfection (Chlorination). The chlorination system is basic and also required additional monitoring to ensure disinfection
 - Move from 2 day per week to 7 day per week monitoring
 - purchase of a hand held turbidity meter (previously transported to lab, analysed then return transport to action, portable meter allows actioning on site immediately)
 - turbidity in excess of 1NTU would require the surface water to be 'turned off' and water supplies carted from Willawarrin or Kempsey
 - carting water from Willawarrin was only possible when the disinfection levels at Willawarrin were not detrimentally affected by withdrawal volumes
 - network with up river persons established to alert of freshes coming down river and ensure river supply could be turned off in sufficient time to avoid draw of dirty water into reservoir.
- pump placed below bridge under gravel for protection of supply from natural (increased flow and debris) and human interference
- Weekly microbiological testing completed to ensure river quality, fortnightly to NSW Health lab, alternate weeks to Kempsey Shire Council lab
- Intermittent telemetry function did not enable remote monitoring (reservoirs, turbidity, pumps). Monitoring is completed onsite and upgrades to the telemetry equipment has been sourced and will be completed concurrently with a series of other telemetry upgrades in late June

A further project monitoring program (Round 3) was established to assess the water quality (chemical analysis) of the North Bore. The results of the Round 3 project monitoring, are shown in Figure 3 (arsenic results only, other chemicals not shown). Based on the improved results, in early March, NSW Health determined that the North Bore supply was suitable to use.

Figure 3: Project Monitoring Results - Round 3 – North Bore



Macleay Water asked for further consideration of this determination and for set boundaries that detailed what constituted a further ADWG breach requiring an alternate water source. The Manager of Macleay Water took this position because of the intermittent spikes of arsenic above ADWG, the apparent increasing levels of arsenic in the samples over the sampling period and the various other chemical contaminants that were inconsistently spiking above ADWG such as antimony, aluminium, manganese, iron, colour and turbidity.

Before a determination was made the water quality of the North Bore deteriorated with considerable ADWG failures on 6/3/06. A fourth project monitoring program was granted to further monitor the water quality before a decision on the suitability of the North Bore as a permanent supply source could be determined. This fourth round of project monitoring is now one month into a four month assessment.

Table 1 presents the costs to date (26th May 2006) for the management of the Bellbrook water supply contamination. In addition technical staff, technicians (electrical, telemetry, fitters) and laboratory costs are attributable to this project. All laboratory costs where NSW Health has assessed samples have been at no cost to Macleay Water. NSW Health have borne the laboratory analysis costs for the four rounds of the project monitoring as this contamination event was accepted under the additional testing access scheme.

| Item | Cost |
|--------------------------------------------------------------|-----------|
| Wages and vehicle (field staff monitoring at Bellbrook only) | \$26,332 |
| Cartage of water | \$75,393 |
| New bore | \$14,000 |
| Additional equipment | \$2,760 |
| Road access to reservoir | \$1,690 |
| TOTAL | \$120,175 |

In early 2006, a request was made to Department of Energy, Utilities and Sustainability (DEUS) for emergency assistance funding to help defray the mounting costs for the measures taken to manage the contamination. Recent advice has indicated that any funding would have to be assessed against warrants determined for drought relief and a criteria was supplied. As such a technical report has been prepared and a request for \$21,661 has been submitted. The subsidy is for water cartage only and for \$18/kl less the amount payable by Council of \$1.86/kl.

Carting of water has not been necessary over recent dry months. The source of the contamination has not specifically been identified. Suspicions include natural leaching and previous land use activities (gold mining). The current theory is that heavy rains in November / December 2004 hastened the migration of heavy metal contamination along the Macleay River catchment. In order to try and narrow causes, negotiations with the NSW Health Labs Manager have enabled testing a sample set for gold traces at no cost. The results of this testing have not yet been received.

Recent dry weather has meant that water carting has not been necessary. The last carting was completed on 11th March having been for one week as a result of upriver rain.

The current round of project monitoring of the north bores is underway and is not due to conclude until late August. A long-term solution cannot be determined until after this monitoring period concludes. If the bore water results continue to prove unsatisfactory, options such as a water treatment plant will need to be considered.

In the interim, Council will continue to extract surface water from the river when flows allow. If dry weather persists, and river flow volumes continue to decline, various measures will need to be taken including imposition of water restrictions, carting of water from Willawarrin / Kempsey and / or a small temporary water treatment plant installed to access water from the north bore. These options are currently being investigated.

It is proposed that information regarding the status of the Bellbrook Water Supply will be disseminated to the Bellbrook water customers via a newsletter.

REPORT IMPLICATIONS:

- *Environmental*

There are no environmental impacts from this report.

- *Social*

Macleay Water is working with NSW Health to ensure safe drinking water is supplied to the Bellbrook community.

- *Economic (Financial)*

In February it was reported that the 2005/06 additional costs were likely to be \$140,000 and funds were transferred to cover this expenditure. Costs are within the budget estimated.

DEUS emergency funding has been sought for \$21,661.

- *Policy or Statutory*

There are no policy impacts from this report and all statutory requirements are being met.

- *Director's Review*

Council has an obligation to supply water to the Bellbrook community and to ensure that the water complies with Australian Drinking Water Guidelines.

RECOMMENDATION:

That the information be noted.

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A P Vermeulen
DIRECTOR SHIRE SERVICES