



KEMPSEY
Shire Council

DIRECTOR SHIRE SERVICES REPORT

11th December 2007

DSS3	POTENTIAL BELLBROOK WATER TREATMENT PLANT	FILE: 1099	AMB	{ Folio No. * }
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SUMMARY:

Reporting on a potential Water Treatment Plant for Bellbrook Water Supply.

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DESCRIPTION:

Recently published UNE studies have concluded that the heavy metal contamination present in the Macleay River is as a result of the poor environmental practices in the gold mines of the past, in particular that of the Hillgrove mine. The mine was previously operated from the late 1800s to the 1970s and tailings stockpiles and dams were located adjacent to the creek lines. The heavy metals within these tailings are being transported down the Macleay River in the sediment.

Bellbrook water supply has experienced heavy metal contamination from the bore source water. The bores are located adjacent to the Bellbrook bridge and water is sourced from the shingle bed of the river. In 2005 initial contamination resulted in the southern bore's use being discontinued and a new bore, the north bore, sunk in an effort to obtain better quality bore water. With assistance from NSW Health, subsequent testing followed to determine if the north bore's source water quality met Australian Drinking Water Guidelines (ADWG). In the meantime, the alternative safe source water was the river surface water as the heavy metal contamination was not present in this source water.

The river surface water is subject to quality issues of a different type. Turbidity (muddiness) following rainfall events means the basic chlorination equipment at Bellbrook is unable to maintain disinfection of the water to ADWG and when this occurs water is carted in to Bellbrook from Kempsey.

The different source waters (bore and surface water) have been the subject of a significant amount of monitoring and analysis. Analysis of meteorological and turbidity data to date has determined that localised rain does not usually result in river turbidity levels exceeding ADWG, it is predominantly rainfall events on the Tablelands. Clearance timeframes for river turbidity events has been determined as approximately a 21 day period and during this period water carting is necessary multiple times a

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day. It is as yet unknown what river event triggers contamination transportation, this lack of knowledge being partly due to the relatively infrequent river events during the recent drought period. Conservative management of the reconnection to the north bore has determined that a river event of 1 metre at the Bellbrook bridge should be managed as a potential contamination period until chemical analysis has proven otherwise. The constraints previously mentioned in this report, coupled with river surface water being subject to low flow risk show that the long-term solution for Bellbrook water supply is a water treatment plant. The draft Management Plan for the Bellbrook North Bore does indicate the following objectives:

- Medium term (late 2007 – 2009) - conservatively managed return to the north bore in accordance with the Management Plan red/amber green protocols;
- Long term (2009) – a Water Treatment Plant (WTP)

The medium term goals of the Management Plan for the Bellbrook north bore offers a reduced operational cost to Council whilst providing the community with a water supply conservatively managed to be within the ADWG. The draft Plan indicates that if a river event produced contamination in the north bore, alternative water supply sources would still be required, and it is likely that water carting would be utilised if turbidity concurrently persisted with the contamination. Of concern is that long term weather predictions (next 2 years) has indicated a pattern on wetter overall weather, meaning increased turbidity incidences and heightened potential for water carting.

Until recent developments in water treatment technology for smaller communities, cost implications had not determined the WTP to be more financially sustainable than a conservatively managed move back to the north bore. A recently received quote from Advanced Water Technologies (AWT) for a small footprint, new technology water treatment plant has indicated this cost comparison has changed.

The proposed WTP offers the new technology of Rapid Catalytic Oxidation (RCO) to deal with the heavy metal contamination. This is a hybrid of conventional sand filtration WTPs. Conventional sand filtration treatment plants are similar to the actions of a sand filter on a swimming pool. Chemical additions cause particles to group together (flocculation) and this floc is then filtered out as the grading of sand in the filter does not permit the floc to pass. In a similar way to sand filtration the RCO WTP uses a proprietary mineral filtration medium to remove metals and metalloids and other hazardous materials from water.

The cost proposed within the quote is considerably less than other water treatment solutions previously costed. Previous estimates confirmed by Department of Water and Energy (DWE) were in the order of \$800,000. This technology is less than half that cost. In addition the company is offering a pilot WTP with a money back guarantee.

The reduced cost is in part related to this technology not being used for either permanent solutions or for drinking water purposes. Although only new to Australia, AWT have used the RCO technology for short term solutions on major construction sites and at large mines to meet environmental protection requirements. Bellbrook would be the first permanent water supply solution.

Normally such a capital investments would go to tender. There are provisions under the Local Government Act that negate the need to go to tender. Under Section 55, part 3 it states:

- *A contract where, because of extenuating circumstances, remoteness of locality or the unavailability of competitive or reliable tenderers, a council decides by resolution (which states the reasons for the decision) that a satisfactory result would not be achieved by inviting tenders.*

It is proposed that Council endorse not going to tender and support the development of a contract with AWT to pilot plant stage with options to continue based on comparative pilot plant performance.

If Council endorses this 'not going to tender', a detailed report on the treatment process, project funding and contract details will be brought to the January Council meeting. Further, justification will be provided at that time why tendering is not favoured.

If Council was not comfortable going outside the tender process or in adopting this new trial of water technology, there are means to instil greater confidence. A closed tender process could occur and invite other traditional companies to submit a proposal in competition to AWT. However cost estimates to date from alternatives do not indicate such competition will exist. To instil greater confidence in the use of new technology, DWE and / or Hunter Water Australia could assist Macleay Water with the peer review of the pilot plant and the associated contract processes.

Public meetings with the Bellbrook community indicate great support for a WTP. It is proposed that if Council endorses the proposed WTP that the Bellbrook water customers be advised of the proposal by mail-out and the outlying community be advised through the communication means outlined in the Management Plan for the Bellbrook north bore.

Adoption of the draft Management Plan for the Bellbrook north bore will be sought in January following completion of the public consultation. This will enable reduction in operational costs for the Bellbrook Water Supply in the lead time for the WTP. The lead time is estimated at 20 weeks. Should Council not wish to proceed with a WTP at this time, the adoption of a Management Plan for the north bore will be sought for the operation of Bellbrook water supply.

REPORT IMPLICATIONS:

- ***Environmental***

The proposal offers to rectify the environmental impact placed upon the Bellbrook water supply.

- ***Social***

Continued open communication with the Bellbrook community is proposed.

- ***Economic (Financial)***

A lower cost long term solution is proposed for the operation of Bellbrook water supply. The means to fund this WTP will be the subject of a further Council report.

- *Policy or Statutory*

Negation of tendering process is proposed and this matter will be dealt with at the January Council meeting.

- *Director's Review*

I support the strategy proposed.

RECOMMENDATION:

That Council support in principle not going to tender for the provision of a WTP at Bellbrook and the proposal of Australian Water Technologies subject to a detailed report to be submitted to Council in January.

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Kevin Smith
ACTING DIRECTOR SHIRE SERVICES