



## **DIRECTOR SHIRE SERVICES REPORT**

13 March 2007

<b>DSS8</b>	<b>SOUTH WEST ROCKS SEWAGE TREATMENT WORKS AUGMENTATION (INCLUDING WATER RECYCLING PLANT)</b> <b>FILE: 968 &amp; 499 AMB {Folio No. *} }</b>
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### **SUMMARY:**

Reporting on the change in estimated capital cost for the augmentation of the South West Rocks Sewage Treatment Works (including the proposed, integrated Water Recycling Plant)

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### **BACKGROUND**

The subject Project is part of Council's Adopted Macleay Water Integrated Water Cycle Management Strategy (MWIWCMS) Capital Works Plan, May 2005. The preliminary estimated cost at that time was \$10 million (round figures and including reliance on some unit rates dating back to 2002) and the appropriate allocation was made in Council's adopted 2006/2007/2008 Budget. The estimated costs in the MWIWCMS are based on 2005/2006 dollars.

The overall project cost is now estimated to be \$17 million (including a contingency allowance of \$3 million). This translates to a 70% increase in the existing budgetary allocation requirement (2006/2007 dollars).

Contingency allowances are industry-accepted, genuine parts of the project estimate and cover unidentified and unforeseen (but inevitable) items at the pre-design stage of a project as well as latent conditions. As such, the actual cost usually matches or exceeds the estimated project cost including contingency allowances.

The increase in the estimated cost is attributable to recent gross changes in the engineering construction market: the ABS producer price index for non-residential construction costs has risen from 104.0 in September 2001 to 141.0 in June 2006; 30%, above-PPI increases in actual process industry costs due to the mining boom; 20% and changes in the scope-of-works: 20%.

The changes in scope-of-works are primarily attributable to the changing operating framework (including statutory requirements for reduced phosphorus levels in effluent, higher recycled water quality for use in washing machines and requisite adjustments to the existing site).

The magnitude of the above cost increases as verified by Hunter Water Australia (HWA) are consistent with those experienced by other regional councils in terms of actual finished project costs against estimated costs.

The alteration to the current programme of expenditure in temporal terms would be as follows:

	<b>Existing Budget</b>	<b>Amended Budget</b>
2006/2007:	\$3.4 m	\$1.0 m
2007/2008:	\$6.6 m	\$5.6 m
2007/2008:	\$0.0 m	\$11.4 m

## **SEPARABLE ITEMS:**

The Sewage Treatment Works (STW) augmentation and the Water Recycling Plant (WRP) are considered as a single project because of the degree of connectivity between the infrastructures and the number of activities common to both during the various stages of project delivery. Under the pre-existing partnering arrangement with Macleay Water, HWA has been engaged as the overarching consultancy and joint project manager in this regard.

The processing of effluent to recycled water standards (ie WRP process component) has been incorporated in the MWIWCMS total capital works budget for the STW augmentation to 12000 equivalent persons (EP) in terms of a \$3,417,000 expenditure in 2006/2007 and a \$3,417,000 expenditure in 2007/2008. (Total \$6,834,000 in 2006/2007 dollars). The current STW is designed for 6000EP, is currently loaded at about 5000EP and over 6000EP at peak times. Historically, STW's have been found to fail prior to reaching full design loads.

The costs of irrigation effluent transfer mains, pump stations, reservoir, chlorination and dual reticulation systems as part of the WRP delivery system was included in the MWIWCMS capital works budget in terms of a \$3,209,000 expenditure in 2007/2008.

If required to be considered entirely separately, the current overall estimate of \$17 million would be approximately split as follows;

The STW is now estimated to cost \$10.65m (2006/2007 dollars)

The WRP is now estimated to cost \$6.35m (2006/2007 dollars)

Current expenditure on the planning, investigations and design phases of the integrated project is around \$260,000 of the estimated \$1,559,000 cost for these activities.

## **ENVIRONMENT PROTECTION AUTHORITY (EPA):**

The MWIWCMS was prepared, in part; in response to the EPA's call for a Shire-wide effluent reuse strategy based on sustainable and triple-bottom-line (TBL) grounds that would see a reduction in pollutant loads on receiving waters. The subsequent Effluent Management Plan seeks to move towards recovery of 50% of effluent produced during average dry weather conditions shire-wide (by 2014).

The EPA's expectations in this regard are reflected in environmental protection licences (EPL's) issued for the operation of sewerage systems.

Macleay Water is currently negotiating a number of pollution reduction programmes (PRP's) on the South West Rocks (SWR) EPL in light of the proposed STW augmentation and water recycling plant (WRP) construction.

A key aspect of the above EPA PRP's is the establishment of firm deadlines for the prompt implementation of proposed works. At this stage the draft deadlines being considered are:

PRP 1 The licensee must design and construct the effluent re-use scheme

Reporting progress against the following milestones:

1. submit REF\* BY 18 Oct 2007 - 30 Nov 2007
2. planning approvals BY 18 Nov 2007 - 30 Dec 2007
3. complete construction BY 29 Oct 2008 - 30 Jan 2009

\*REF (Review of Environmental Factors)

PRP 2 The licensee must complete the upgrade of the SWR STW reporting against the following milestones:

1. submit REF By 15 Aug 2007 - 30 Sep 2007
2. other approvals By 12 Sep 07 - 30 Oct 07
3. complete construction BY 16 Jan 09 - 30 Jan 09

Note: the earlier milestones within each line item are those currently put forward by the EPA whilst the latter ones are those put forward by Macleay Water (allowing some cushion between planned project design and construction completion dates formulated by HWA and formalised licence requirements).

Any decision to abandon the provision of the WRP would most likely result in the EPA requiring a higher degree of treatment at the STW (to reduce the current pollutant load) or, alternatively, pressure from the EPA for Council to reconsider and substantiate continuation of the existing effluent disposal system. The outcome of same could be a need to relocate it away from the dunal groundwater receival site.

The cost of the STW catering for a higher degree of treatment is expected to be about \$13m (ie a 20% increase from the existing \$10.65m).

The cost of relocating the effluent disposal site cannot be determined at this time because it would be highly speculative in terms of exactly what form it would take and where. However, it would not be unreasonable to suggest that it could be of the order of \$1.5m in view of the environmental and social constraints and implications. Arguably this may also be a politically sensitive issue.

At the end of the day the final results cannot be absolutely assured. All systems are subject to ongoing environmental performance monitoring. Whilst additional treatments and effluent reuse separately and collectively improve environmental performance, the long-term results of monitoring could lead to the need for extras and/or alternatives. This is apart from any changes in the operating framework (legislation etc).

Any decision to defer the construction of the WRP is a matter of greater conjecture. The degree of acceptance by the EPA is highly questionable

as are the ramifications of same. In any case, it would be much more desirable to go down this track prior to the setting of PRP's in concrete (by the end of March 2007, say).

Additionally, the WRP offers water supply demand management benefits. If the demand management targets are not achieved, the upgrade of the new potable water treatment plant at South West Rocks from 6ML/D TO 10MI/d would be brought forward substantially.

In the wider context, extended deferment (or abandonment) of the WRP and the existing BASIX-approved recycled water network for 23 lots would have unspecified implications. Costs of recycled water pipes already in-ground (\$150,000 say) and alternative home water tanks at \$5,000 each (in satisfaction of BASIX requirements) may be considered amongst other things.

## **NEW SITING**

A Local Environmental Study (LES) has been prepared for certain lands near Saltwater Lagoon and Council's departmental comments have been forwarded to the consultancy for finalisation of the draft version of the document.

A substantial part of the LES is concerned with the impacts from, and requisite buffers to, the STW site (including those applicable following augmentation of the plant).

Macleay Water's position is that 600 metre buffers around conventional STW's are desirable and satisfy precautionary principles applicable to such determinations. This view is shared by HWA and many other utilities. Arguably, the pressures of development have led to an industry-adopted minimum of 400m that is generally acceptable to the EPA. Whilst the adoption of minimum standards can be a problem in itself, a 400m buffer from the STW site boundary to residential developments has been tendered as an acceptable situation at the SWR STW provided that the environmental impact assessments justify same.

The LES proposes a 150m buffer and it is agreed that special noise attenuation and odour control measures (in the least) would be required at the STW in this case. It is understood that the provision of these additional capital works would need to be at the developers' expense. The estimated cost of these works is being addressed during the finalisation of the LES.

At this stage, it is estimated that the cost of odour, acoustic and other measures required as part of a reduced buffer would be about \$3m, bringing the total project cost to \$20m under these circumstances.

Predictions of odour and noise impacts are not exact sciences and it is expected that any individual consultancy assessment in this regard would need to be peer reviewed. Such a review would also satisfy any calls for substantiation of buffer sizes above 150m and up to 400m or 600m. Routine referral of the LES to the EPA for comment may fulfil this expectation.

Considerations of a reduced buffer and increased project cost raised the issue of the location of the STW itself. The Department of Public Works

Investigation Report 1979 considered two alternative sites for the STW including the rubbish tip (as suggested by the Macleay Valley Conservation Society). At the time, the site was summarily dismissed because of potential sewage septicity associated with long hauls from the New Entrance and Arakoon areas. More recent technologies would overcome these problems.

Investigations confirm that whilst the location of a completely new STP and WRP at a greenfield site, clear of the higher-density residential and recreational areas of SWR, may appear to be preferable for most stakeholders because of many social and arguable environmental benefits and technical benefits (particularly relating to process and energy efficiency, minimum footprint, ease of operation, and the capability to design future augmentation capacity well in advance of SWR's current needs), such an option is not supported by a pure capital cost assessment. The cost of a 15,000EP STP and WRP at the waste transfer site would be around \$43m with only \$2.4m - \$3.0m being recoverable from development of the existing site (the latter market value being relevant to Council entering a joint venture). That is to say, the qualitative benefits would have to outweigh the doubling in capital cost (\$20m to \$40m).

## **PROJECT STATUS**

The STW/WRP undertaking is currently on-track in terms of meeting planned project milestones in accordance with latest revisions (compared to the initial MWIWCMS programme).

An Expression of Interest (EOI) advertisement for the WRP has been placed and tender documents are planned to be distributed by the end of April 2007 with a view to awarding a contract in October 2007.

Tender documents for the STP, under a different scheme of arrangement of procurement, are to be released for major equipment items in December 2007.

## **REPORT IMPLICATIONS:**

### ***Environmental***

***Nil***

### ***Social***

***Nil***

### ***Economic (Financial)***

***Increase of \$7million above the existing budget allocation of \$10million for the South West Rocks Sewage Treatment Works / Water Recycling Plant Project.***

***The unexpected surge in the cost of capital works across the entire integrated water and sewerage 30-yr capital works plan would, in the first instance, will necessitate an increase in developer charges prior to the ongoing adopted CPI increases over***

*the 30 years. This would be applied at the time the developer servicing plans are reviewed (2008).*

***Policy or Statutory***

***Nil***

***Director's Review***

***Marked recent increases in construction costs will result in major increases in the estimated costs of major capital projects. In order to meet water demand management and environmental targets, it is recommended that Council proceed with the proposed projects.***

**RECOMMENDATION:**

- 1. That the South West Rocks Sewage Treatment Works Augmentation / Water Recycling Plant Project proceed as planned.**
- 2. That Council's budget be amended to accommodate the delivery of the Project.**

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**A P Vermeulen**  
**DIRECTOR SHIRE SERVICES**