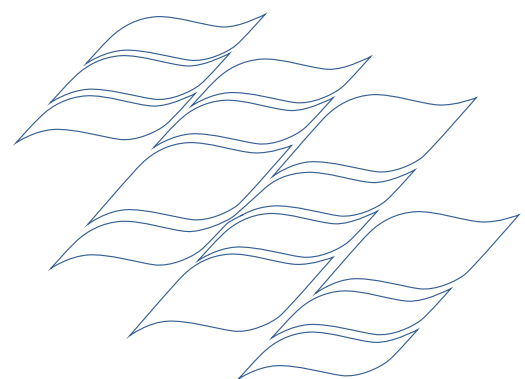


Appendix 23

[RETURN TO APPENDICES LIST](#)

Peer Review of Future Costs of CSS July 2010 to
June 2030
(Harrington Construction Consultants Pty Ltd)



18th November 2009

Gladstone Area Water Board
147 Goondoon Street
GLADSTONE Qld 4680

Attention: Mr. Jim Grayson

Dear Sir

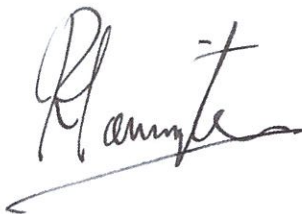
**RE: PEER REVIEW OF FUTURE COSTS OF CSS
JULY 2010 TO JUNE 2030**

I have pleasure in providing the following Peer Review as requested by GAWB and as per Scope of Work document supplied to me on 28 September 2009.

This Peer Review is presented in the following sections:

1. Background information;
2. Brief description of the CSS (Contingent Supply Strategy);
3. Review of the scope of works included in the cost estimate;
4. Review of planned expenditures;
5. Overall conclusions.

Yours sincerely



**Ian Harrington
Principal**

1. Background Information

The Gladstone Region

Gladstone is Queensland's largest multi-cargo port and is considered of major strategic importance for economic development, both at the national and state level. The Gladstone region is already well developed with an established major industry base including power stations, two alumina refineries, an aluminium smelter, a cement plant, chemical plants and other process industries. There are also currently several major industrial proposals in various stages of planning and implementation.

The availability of a reliable water supply is one of the key criteria that are considered by potential industries when assessing the suitability of a region for its establishment, and to this end, GAWB plays an important role into the future development of the region.

Gladstone Area Water Board

The Gladstone Area Water Board (GAWB) is a commercialised Statutory Authority operating under the *Water Act 2000* and responsibility to the Minister for Environment & Resource Management.

GAWB's main role is to supply water in bulk to major consumers in the Gladstone Region including the supply of treated water to the Gladstone Regional Council.

Approximately 20% of the bulk water supplied is treated water with the remaining 80% raw water supplied to the industry.

Under the *Resource Operations Plan: Boyne River Basin*, GAWB currently has an allocation of 70,000 MI per annum. Current industrial and urban water consumption from Awoonga Dam is approximately 55,000 MI per annum. As part of its drought mitigation strategy and planning for long term water supply, GAWB has commenced Preparatory Works on the Gladstone-Fitzroy Pipeline project to acquire and hold an ability to access a 30,000 MI allocation from the Fitzroy River should this be required due to drought or demand.

GAWB owns and operates the Awoonga Dam on the Boyne River south of Gladstone which is the sole source of water.

2. Contingent Supply Strategy (CSS)

The CSS recognises that the time required to identify, plan, seek approvals, construct and commission a new water supply will require a longer period of time than would be available to respond to either of:

- drought situation whereby Awoonga Dam needs to be augmented; or
- demand due to one or more new major industrial facilities requiring water.

For that reason, the CSS was developed to ensure that alternate projects are developed to a stage, and then maintained, so that GAWB can respond and supply water to customers in either the drought or increased demand scenarios.

The selected alternatives are:

- Additional supply from the Fitzroy River (30,000 MI/year capacity); or
- Desalination (10,000 MI to 30,000 MI/year capacity to match needs).

The additional supply from the Fitzroy River would involve two capital projects, namely the:

- Gladstone-Fitzroy Pipeline (GFP) which consists of a pump station on the Fitzroy River, Water Treatment Plant, Booster Pump Station, and Reservoirs at Aldoga;
- Lower Fitzroy River Infrastructure Plan (LFRIP), which consists of one new weir and raising of another weir.

The “state of readiness” of the projects is described as:

“...to ensure water is available within a nominal two years of a decision to construct...”

The CSS also allows for a “trigger point” approximately one year prior to the “decision to construct”. This trigger point would allow the Early Works to be carried out prior to the “decision to construct”.

The initial Preparatory Works is described as the work required to get each of the GFP, LFRIP, Desalination to a “state of readiness” that satisfies the CSS.

The initial Preparatory Works for each project will be completed in accordance with the following schedule:

- GFP – prior to June 2010;
- LFRIP – prior to Dec 2010
- Desalination – Prior to June 2011

Therefore, some of the initial Preparatory Works for the LFRIP and Desalination will be carried out during the 2010-2015 price reset period.

3. Review of Scope: July 2010 to June 2030

The expenditure during this period will fall into the following categories:

- Completion of initial Preparatory Works (LFRIP and Desalination);
- Maintain the assets developed during the Preparatory Works;
- Maintain the CSS so that the projects remain in a “state of readiness.

The design consultants of the LFRIP (GHD), and Desalination (Arup) have both supplied GAWB with budgets and schedules to complete the initial Preparatory Works. GAWB will also need to supply Project Management resources to complete those works.

The initial Preparatory Works will be completed for a cost in excess of \$40m and the resultant assets are described as:

- Engineering (including site survey, geotechnical investigation and design expressed as drawings and specifications);

- Approvals either partially or fully obtained (including EIS);
- Land both owned and leased;
- Cost estimates for the Capital Works of each option;
- A whole of life NPV for each option
- A design and construct contract for the GFP
- Time Schedules for both Early Works and Construction Risk Schedules;
- Comparisons of the various projects covering Time, Capex, Opex and Risk Profiles.

These assets need periodic review and upgrade to ensure that they remain “in force” and relevant so as to maintain the CSS required “state of readiness” for the alternate projects.

The maintenance of the assets is undertaken on the following basis:

- Initial “moth balling” which ensures that all the information is stored in a manner where it can be readily retrieved and used at a later date. This would include a procedure manual to undertake the various reviews and upgrades in accordance with the plan covered by this Peer Review.
- Mid-term review every 2½ years to identify major changes or risks that could affect the ability to deliver on the “state of readiness” of the individual projects.
- Refresh and upgrade of the projects each five years which includes:
 - extending approvals; (EIS is on a 4 yr cycle as a statutory requirement)
 - identifying, scoping and concept engineering of new technology etc. to ensure engineering is up to date;
 - review and upgrade risk schedules;
 - upgrade estimates and time schedules,

to ensure that the CSS “state of readiness” is maintained.

The five year cycle has been selected to coordinate with the GAWB price reset periods.

The mid-term reviews are to identify any critical issues that could affect the viability of the CSS. If any issues are discovered, the review is then to identify if there is likely to be a “trigger” to commence Early Works prior to the next five year “refresh and upgrade”.

If no trigger is likely, the “state of readiness” is not compromised so any other work would be delayed until the five year “refresh and upgrade”

If a trigger is likely, then work should be undertaken that the CSS “state of readiness” is maintained. No allowance is included for this potential work because the basis of the submission is that the augmentation process is not activated over the period. If it was the Early Works would be managed separately to this budget.

The Peer Review believes that the approach adopted will:

- maintain the CSS “state of readiness”;

- maintain the assets;
- does not include unnecessary work;
- is efficient because the work can be done by dedicated personnel on a pre-planned basis.

4. Review of Expenditure

The planned costs have been prepared by GAWB based on:

- estimated costs advised by the various design consultants;
- estimates of the costs of project management to be undertaken by GAWB.

This Peer Review has considered the estimated costs as:

1. overview for the 20 year period;
2. costs of individual activities.

The total costs 2010-2030 have been estimated as \$9.2m. This includes an estimate for completion of the initial Preparatory Works (Desalination) and "moth balling" the LFRIP and Desalination for a total of \$0.85m.

Therefore, the cost of maintaining the assets over 20 years is \$8.35m. This is to maintain work which has cost in the order of \$40m.

Total Maintenance Costs	\$8.35m
Average Annual Cost over 20 years	\$0.42m
% Cost of maintenance/year	1.05%

This reviewer is not aware of any general industry records of the cost of maintaining this range of assets.

However, it would appear that an annual cost of 1% could only be regarded as a good investment to maintain assets to ensure that the CSS is current by maintaining the "state of readiness" of the two options.

The total cost of the activities is summarised as:

Project Management (regularly updating the cost estimate/ cost comparison/ contractual relationships/ risk register, as well as managing all processes)	\$4,805,000
Approvals (maintaining EIS, EIA and CID Approvals and indentifying legislative changes)	\$755,000
Engineering (monitoring events that could affect the design and regularly upgrading design – at a concept level only)	\$2,465,000
Land Maintenance of owned land and maintaining rights of alignment	\$310,000
Completion of Preparatory Works	\$850,000

Total **\$9,185,000**

The Project Management, as well as managing the other functions, keeps the planned capital costs, risk register and comparison of the options up to date with a full upgrade every five years. The capital value of the works involved is in likely to be in excess of \$1bn. [Note this estimate relates to a 30gig pa desalination plant and is based on a substantially less developed basis than the GFP and a less developed basis than the LFRIP]

These costs seem reasonable for the scope of work and the process would appear to be efficient.

Maintenance of Approvals estimate of \$755,000 appears reasonable. An accurate estimate is not possible because future changes to legislative and other requirements are unknown.

Engineering costs of \$2.5m to maintain a current concept design for over \$1bn worth of infrastructure appears modest. However, it is reasonable to expect that the major changes to engineering will be limited to:

- new technology for water treatment (Desalination and WTP on the GFP);
- some new/ improved materials;
- changes in legislation and engineering codes which could effect the design.

The estimate clearly does not allow to upgrade completed or near completed design and drawings, however, it should be sufficient to undertake some concept design to be used to maintain realistic capital cost estimates.

The whole of the land for the GFP is either owned or leased. There is no land secured or the LFRIP and the Desalination Plant. Land Costs of \$310,000 are negligible over 20 years.

This report concludes that the cost estimates are well considered and reasonable.

5. Conclusion

This Peer Review concludes that the scope of works and cost estimates to maintain the assets developed during the Preparatory Works for the GFP, LFRIP, Desalination Plan pass the test that:

“the standard of work is appropriate in that the works do not involve any unnecessary works and are not over designed; and

the cost of the work is reasonable, that is, it is economically efficient.”