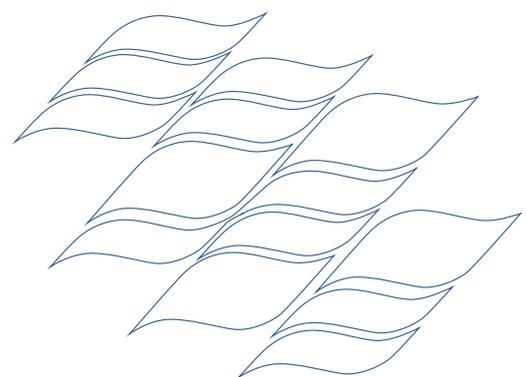


Appendix 20

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Gladstone-Fitzroy Pipeline Project, Approvals and
Design Maintenance Schedule 2010–2030
(Arup)



Gladstone Area Water
Board

**Gladstone-Fitzroy
Pipeline Project**

Approvals & Design
Maintenance Schedule
2010-2030

Gladstone Area Water
Board

**Gladstone-Fitzroy
Pipeline Project**

Approvals & Design

Maintenance Schedule
2010-2030

September 2009

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This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party

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Appendices

Appendix A

Maintenance Schedule

1 Executive Summary

GAWB has developed the Project to a stage where it has reached a point of preparedness for delivery of the Project in a construction timeframe of 24 months following a period of Early Works.

To maintain its capability to deliver the Project in the long-term a managed program of maintenance is required to monitor emerging developments and assess their impact on the Project's Approvals and Design, and hence preparedness for delivery within the required timeframe. To adequately and efficiently manage the maintenance phase from July 2010 to June 2030 a number of tasks are required to maintain / refresh the current deliverables.

The underlying assumption for the purpose of this advice is that there will be no augmentation before 2030. Any process of augmentation before 2030 will trigger a different process of price reset. Early Works and project (construction) costs are therefore outside the scope of this advice.

The advice only considers impacts from 2010 to 2030. If additional work is required it has been programmed in the Early Works phase and it is not accounted for here (e.g. it is deemed to be a project cost).

Due to the statutory timeframe limitations imposed on most of the approvals required for the construction of the Project, it will be necessary for actions to be undertaken during the Maintenance Schedule to ensure:

- approvals obtained (e.g., the EIS) are "kept live"; and
- other approvals are obtained in a timely manner to ensure that the construction timeframe is not delayed.

As well as completing the essential paperwork, maintaining existing approvals may require additional investigations or consultations depending upon the regulatory authority's requirements.

The design will retain a nominal useful life of approximately 10 years. Beyond this, a range of issues are likely to progressively create scope drift, which will require to be addressed by significant and progressively more extensive design re-work. It is assumed that no particular issue will dominate but the incremental effect of a range of issues over time will further diminish the viability of design deliverables and their ability to be adopted for construction without check and / or change.

To review major environmental / EIS approvals and emerging issues, separate budgets of \$75,000 every 4 years and \$10,000 every 6 years are recommended. To consolidate the review work at year 4, 8 and 12 an additional budget of \$125,000 at year 12 is recommended. [Actual year 12 budget is \$210,000, i.e. \$75,000, \$10,000 and \$125,000.]

To review design and emerging issues, budgets of \$82,500 every 4 years are recommended. To consolidate the review work at year 4, 8 and 12, an additional budget of \$250,000 at year 12 is recommended. [Actual year 12 budget is \$332,500, i.e. \$82,500 and \$250,000.]

The tasks described in the Maintenance Schedule are considered the minimum necessary to maintain the currency and validity of the Approvals and Design developed in the Preparatory Works phase. It allows GAWB to:

- track major developments across a range of key areas of interest to the Project
- manage emerging developments which impact on the Approvals and Design associated with the Project
- hold the Project ready for efficient delivery within a 24 month construction period (following a period of Early Works).

2 Purpose of this Advice

GAWB has developed the Project to a stage where it has reached a point of preparedness for delivery of the Project in a construction timeframe of 24 months following a period of Early Works. It has attained this capability to augment supply to its Service Area by completing sufficient Preparatory Works under the recently completed ECI process. To maintain its capability to deliver the Project in the long-term a managed program of maintenance is required to monitor emerging developments and assess their impact on the Project's Approvals and Design, and hence preparedness for delivery within the required timeframe.

GAWB is planning budgets for expenditures over the projected maintenance years (that is, 2010 to 2030). GAWB has requested our third party advice in order to provide indicative tasks and associated budgets to adequately and efficiently manage the maintenance phase from July 2010 to June 2030.

3 Assumptions

The underlying assumption for the purpose of this advice is that there will be no augmentation before 2030. Any process of augmentation before 2030 will trigger a different process of price reset. Early Works and project (construction) costs are therefore outside the scope of this advice.

The advice only considers impacts from 2010 to 2030. If additional work is required it has been programmed in the Early Works phase and it is not accounted for here (e.g. it is deemed to be a project cost).

It is assumed that the EIS approval will be maintained to 2030. Not doing so will likely create credibility / relationship / political issues with the relevant key state government agencies, e.g. DIP, DERM, DPIF etc. All other review work will hold the project in readiness with issues logged for future action in the Early Works phase.

It is assumed after a period of 4-5 yrs, say 2015, that the PDA will no longer be valid requiring a competitive tendering process. This will: (a) increase the early works period (project time and cost) or (b) require tendering and technical work necessary for tender documentation to be completed as late as possible but in advance of the Early Works (maintenance time and cost). Depending on the route to procurement (at (a) or (b)), cumulative effects of design, redesign (process etc), approvals timeframes will or will not be accommodated in the Early Works.

DN - Land and Project Management has not been incorporated into this advice.

4 Approvals

Due to the statutory timeframe limitations imposed on most of the approvals required for the construction of the Project, it will be necessary for actions to be undertaken during the Maintenance Schedule to ensure:

- Approvals obtained (e.g., the EIS) are "kept live"; and
- Other approvals are obtained in a timely manner to ensure that the construction timeframe is not delayed.

As well as completing the essential paperwork, maintaining existing approvals may require additional investigations or consultations depending upon the regulatory authority's requirements.

Also due to the duration of the Maintenance Schedule, there is a high probability that there will be changes to existing policy and legislation and the introduction of new policy and legislation that may impact upon the approvals requirements for the Project. It is therefore essential that resources are committed to monitoring the statutory regime over the Maintenance Schedule to ensure that the implications of any such changes or additions on

the approvals requirements for the Project are determined efficiently and any associated changes to future works or the design are also addressed efficiently.

5 Design

The design will retain a nominal useful life of approximately 10 years. Beyond this, a range of issues are likely to progressively create scope drift, which will require to be addressed by significant and progressively more extensive design re-work. It is assumed that no particular issue will dominate but the incremental effect of a range of issues over time will further diminish the viability of design deliverables and their ability to be adopted for construction without check and / or change. In particular, as time passes, whilst the design of the current scheme remains functional, its credentials as the most optimal scheme will be difficult to substantiate without further design effort. By addressing significant issues as they develop, it will be possible to further extend the life of the design and maintain its viability as far as reasonably practicable.

The impact of the duration of the Maintenance Period is important but for the purposes of this advice is not factored into our development of the Maintenance Schedule. The longer the maintenance period, the more likely design re-work will be undertaken (for non-technical reasons).

The Schedule concentrates on high-level issues and assumes all detail design issues can be addressed during Early Works and / or the start-up of the 24 month construction period.

Critical issues include:

- Change and / or amendment of pipeline corridors
- Change and / or amendment of Approvals
- Change in water industry regulations and / or best practice (e.g. route for disposal of sludge)
- Changes / improvements in technology (e.g. WTP, ICA and pumps)
- Developments around water quality (e.g. Fitzroy River and product water)
- Change GAWB requirements (e.g. network integration and operational philosophy)
- Emerging third party issues (e.g. power availability, Alinta 'conditions' at Aldoga and Sun Water common facilities agreement at the Intake).

6 Maintenance Schedule

A draft high-level maintenance schedule has been developed (and is attached) to allow GAWB to identify key stages and budget accordingly.

It is assumed that the EIS is subject renewal / extension every 4 years. It is sensible to schedule periodic reviews of the Design on a 4 year cycle, aligned with the renewal / extension of the EIS. This is consistent with State approval periods for an EIS. The Schedule assumes all significant tasks repeat every 4 years, i.e. 2014, 2018, 2022 and 2026. Only the 6 year cycle for CID requires standalone work at years 2016 and 2028.

At year 12 it is assumed that a major review of significant issues impacting on the Design will be commissioned by GAWB. This is assumed to include rolling-up issues and reviews from year 4 and year 8 into the issues log developed from the review at year 12.

It is assumed that GAWB will lead the activity associated with the Maintenance Schedule, with a dedicated Project Manager mobilised at appropriate stages, and where possible GAWB teams performing each task. Particular tasks may require the ad-hoc appointment of external advisors, e.g. Approvals and water quality.

7 Budget

Key items included in the budget and discussed further in the attached schedule (Appendix A) are:

7.1 Approvals

For major environmental/EIS approvals, the following nominal budgets are recommended:

- To maintain the CID, \$10,000 every 6 years
- To maintain EIS approval (including high level review of policy / impacts & lodgement of necessary forms), \$35,000 every 4 years
- To confirm findings of EIS & review any changes to environmental conditions/habitat (including any necessary fieldwork), \$125,000 every 12 years
- To update EMP (Planning), \$10,000 every 4 years
- To review policy / legislation changes as they arise and provide advice to GAWB on potential implications (and consider changes as part of relevant applications), a budget of \$10,000 every 4 years
- To review land use changes, "Other Approvals" legislation/policy & SDA licences, \$20,000 every 4 years.

7.2 Design

To review design and emerging issues and provide a running log for GAWB to manage developments a budget of \$82,500 every 4 years is recommended.

To consolidate year 4, 8 and 12 Design reviews an additional budget of \$250,000 at year 12 is recommended.

7.3 Summary

The budget estimate is presented at 2009 prices and is exclusive of GST.

There is no allowance for GAWB project management and / or procurement costs in the make-up.

A provision of 5% is recommended for expenses. This has not been allowed for in the budget. The proposed budget is presented in tabular format below.

Year	Approvals (4 yrs)	Approvals (6 yrs)	Approvals (12 yrs)	Design (4 yrs)
2010	\$0	\$0	\$0	\$0
2011	\$0	\$0	\$0	\$0
2012	\$0	\$0	\$0	\$0
2013	\$0	\$0	\$0	\$0
2014	\$75,000	\$0	\$0	\$82,500
2015	\$0	\$0	\$0	\$0
2016	\$0	\$10,000	\$0	\$0
2017	\$0	\$0	\$0	\$0
2018	\$75,000	\$0	\$0	\$82,500
2019	\$0	\$0	\$0	\$0
2020	\$0	\$0	\$0	\$0
2021	\$0	\$0	\$0	\$0
2022	\$75,000	\$10,000	\$125,000	\$332,500
2023	\$0	\$0	\$0	\$0
2024	\$0	\$0	\$0	\$0
2025	\$0	\$0	\$0	\$0
2026	\$75,000	\$0	\$0	\$82,500
2027	\$0	\$0	\$0	\$0
2028	\$0	\$10,000	\$0	\$0
2029	\$0	\$0	\$0	\$0
2030	\$0	\$0	\$0	\$0
Total	\$340,000	\$30,000	\$125,000	\$580,000

8 Conclusions

The attached Maintenance Schedule is necessary to maintain the currency and validity of the Approvals and Design developed in the Preparatory Works phase. It allows GAWB to track major developments across a range of key areas of interest to the Project. Its adoption will allow GAWB to manage emerging developments which impact on the Approvals and Design associated with the Project and hold the Project ready for efficient delivery within a 24 month construction period (following a period of Early Works).

Appendix A

Maintenance Schedule

**GAWB
GFP PROJECT
MAINTENANCE SCHEDULE TO 2030
APPROVALS & DESIGN**

Principles

1. Only impacts from 2010 to 2030 are considered. If additional work is required it has been programmed in the early works phase and it is not accounted for here (e.g. it is deemed to be a project cost).
2. It is assumed that the EIS approval will be maintained to 2030. Not doing so will likely create credibility / relationship / political issues within DIP / DERM etc.
3. It is assumed after a period of 4-5 yrs, say 2015, that the PDA will no longer be valid requiring a competitive tendering process. This will:
(a) increase the early works period (project time & cost) or (b) require tendering and technical work necessary for tender documentation to be completed as late as possible but in advance of the early works (maintenance time & cost).

Key Drivers

The key drivers for any design work will be:

- to allow updated impact assessments for EIS approval renew that may be required by change
- to accommodate any land tenure issues (Sun Water, SDA licenses etc) affecting approvals.

Depending on the route to procurement (at 3(a) or 3(b)), cumulative effects of design, redesign (process etc), approvals timeframes will or will not be accommodated in the early works.

Guidance

It assumed the first annual review will occur in 2010, the first 4 year review (to match EIS approval renewal cycle) will occur in 2014 and the first 6 year review (to match CID renewal cycle) will occur in 2016. Final reviews will be conducted in: 2029 (annual); 2026 (4 year); and 2028 (6 year).

It is assumed that a GAWB project manager will manage the maintenance process, and continually refresh and populate the maintenance schedule (and risk register). It is assumed a GAWB project manager will be mobilized on a full-time basis as follows for each key review to scope, guide, direct and report:

- 4 weeks for annual cycle tasks
- 16 weeks for 4 year cycle tasks
- 6 weeks for 6 year cycle tasks.

In addition to a central coordination role, the project manager will be responsible for linkage of each task and assessing wider project impacts.

It is suggested that an additional 5% is allowed for expenses associated with each sub-task. *[This has not been embedded into the budget estimate below.]*

The budget estimate excludes allowances for GAWB PM, expenses and GST. It is based on 2009 prices. The budget has been prepared such that it is likely that the regular recurrent costs will not be fully expended at each interval (annual, 4yrs, 6yrs etc) and will allow for some unknowns and redesign to be accommodated.

Impact	Commentary	Action		
		Task	Budget	Timeframe
Approvals				
Corridor "not reserved"	<p>CID will need renewal every 6yrs. There is precedent of maintaining CID for ~12yrs.</p> <p><i>Without CID, corridor may be compromised by State / RCC approvals for other projects. Likelihood will increase with time.</i></p>	Maintain CID	\$10,000	Every 6yrs
Expiry of EIS approval	<p>EIS will have 4yr approval (at State level). This can be renewed, but risk of additional work to obtain this will increase over time due to changes noted below. There is no known precedent of maintaining EIS approval for 20yrs, but it is assumed that EIS approval will be maintained rather than allowing it to lapse and potentially causing credibility / relationship issues with government and increasing the early works duration.</p> <p>NB – maintain DIP relationship (GAWB PM – not costed)</p>	<p>High level review of policy/impacts pending requirements of relevant government agencies. (assuming no additional fieldwork required)</p>	\$25,000	Every 4yrs
		Renew EIS approval)	\$10,000	Every 4yrs
Currency of EIS & impact levels	Confirm findings of original EIS & review any changes to environment/habitat.	Review relevant datasets. Determine necessary additional field studies & implement (based on risk assessment). Modify EIS as required.	\$125,000	Every 12 yrs

EMP (Planning) becomes outdated	It is likely that the EMP (Planning) will need to be updated to reflect latest legislation, policy, design changes and management practices/technology.	Review legislation, policy, design changes and management practices/technology	\$10,000	Every 4 years
Change in land use	There will likely be increased development over time that is currently not foreseen. This could include expansion of Gracemere to support Stanwell, new Port Alma development, LNG / coal seam gas projects. RCC is currently investigating new industrial areas. These may or may not impact on the GFP and is difficult to quantify. Progressing State / Local approvals could manage some of this risk.	Review land use impacts periodically and consider as part of future relevant applications	\$10,000	Every 4 years
Change in Government policy / legislation (for "Other Approvals", including NCA & Vegetation Clearing related approvals)	Over time policy will likely become more onerous for project proponents. This could include associated offset requirements. Progressing State / Local approvals could manage some of this risk.	Review policy / legislation changes as they arise and provide advice to GAWB on potential implications. Consider changes as part of relevant applications	\$10,000	Every 4 years
Occupation of SGIC / GSDA	<p>If other projects proceed within the SDAs, GAWB will likely lose its preferred alignment and bargaining position with DIP. GAWB will also then be subject to changing DIP demands resulting from agreements with others. DIP may also change its management of the corridors and operational requirements.</p> <p>If changes are within current EIS approval footprint, this will only impact design in early works. However, if alignment moves out of SGIC or notably within GSDA, redesign will be required to maintain approvals.</p>	<p>Obtain relevant "licence/lease" for EIS footprint in both the SGICSDA and GSDA [Not costed]</p> <p>Maintain contact with the State Development Areas team within DIP to ensure that planning for emerging proposals consider the GFP Project</p>	\$10,000	Every 4 years
Design				
Change in final alignment in Alton Downs, SGIC & GSDA	Amendment of horizontal and vertical alignments will impact on design where change is driven by approvals / land / other corridor users / future development, e.g. road, rail, services, easements etc. Redesign maybe required to renew approvals etc	Review and assess impact of known amendments	\$20,000	Every 4yrs

Change in approval conditions or requirements	Design change may be required to renew approvals.	Review and assess impact of known amendments		
Change in Fitzroy River water quality	Water quality deterioration may impact on WTP consumption of consumables, operational philosophy, product water quality etc. [Recent high intensity water quality monitoring program will lose currency with time.] NB - if post-2020 allow 18 months to initiate 12 month WQ monitoring program (not costed)	Monitor river water quality in advance of early works	\$5,000	Every 4yrs
Change in product water quality requirements	New or current industrial customers' requirements may change impacting on the plant's ability to deliver water within desired parameter range.	Track current customers and their emerging requirements and engage with new customers and establish their requirements.	\$10,000	Every 4yrs
Change in water quality standards	New or amended regulations may impact on compliance of scheme with desired standards, e.g. DBP	Review quality standards on a desktop basis		
Change / improvement in available treatment technology	Current process selection (physical and chemical) may become obsolete, sub-optimal etc if technology evolves. In addition it may not be offered on a commercial basis by a process contractor.	Review emerging technologies and market test availability of current process	\$10,000	Every 4yrs
Change / improvement in available pump technology	Current pump station GA and pump configurations may become sub-optimal or redundant if technology evolves.	Review emerging technologies		
Change / improvement in control and instrumentation technology	Current ICA (instrumentation, control and automation) selection may become sub-optimal or redundant if technology evolves. [This is an area of continual and technology led improvement.]	Review emerging technologies		
Change in routes for sludge disposal	Regulations may tighten and current proposed arrangements may be eliminated as an option.	Review emerging regulations and monitor new technology developments	\$2,500	Every 4yrs
Change in availability for power supply	Current availability may change as other developments pick up spare or reserved capacity.	Maintain contact with utility and negotiate as necessary	\$5,000	Every 4yrs

Change in network integration requirements	Current assumptions on network integration inform storage capacity / location, network connection point, pumping head etc. Any change will impact design, e.g. condition of existing main at connection point, hydraulic capacity constraints etc.	Review network developments / condition assessments (and model as necessary to establish impacts on GFP)	\$10,000	Every 4yrs
Change in hydrological conditions	If the Fitzroy River floods more frequently the intake will be inundated too.	Monitor gauge stations and determine if new regime impacts on GAWB operational requirements	\$2,500	Every 4yrs
Change in GAWB operational requirements	GAWB Operations to 2030 may evolve enhanced protocols / approaches and elements of the scheme may no longer be appropriate. OH&S and other regulations may oblige change.	GAWB Operations to review GFP functional requirements (set 2007) and confirm current alignment with emerging GAWB practice	\$10,000	Every 4yrs
Change in agreement with SunWater (SW)	Intake structure is co-located on SW land, sharing access road etc. If this agreement is not extendable a new intake site may be required, and perhaps an access road if SW elect to retire the asset.	Maintain contact with SW and negotiate as necessary	\$2,500	Every 4yrs
Change in agreement with Alinta	Any additional conditions imposed by Alinta at Aldoga may impact design.	Maintain contact with Alinta and negotiate as necessary	\$2,500	Every 4yrs
Change in engineering platforms	Particular platforms, e.g. CAD, ArcView etc may become wholly redundant.	Review emerging industry practice	\$2,500	Every 4yrs

Major Design Review

At year 12 it is assumed that a major review of significant issues impacting on the design will be commissioned by GAWB. This is assumed to include rolling-up issues and reviews from year 4 and year 8 into the issues log developed from the review at year 12. It is further assumed that GAWB will project manage this process over a 6 month period. One full-time project manager will be required with the support of GAWB technical staff as appropriate (say on the basis of one FTE over 6 months). The review will establish critical issues which require immediate work to maintain the currency and viability of the design. It is not intended to create new detailed design merely to test, and develop emerging issues to the point that wider impacts are understood, and a strategy (or modest body of work) exists to maintain the readiness of the project for delivery within 33 months. A budget of \$250,000 (at 2009 prices) is suggested. This excludes allowances for GAWB PM, expenses and GST. This is approximately three times the budget allocated for a 4 year cycle design review.