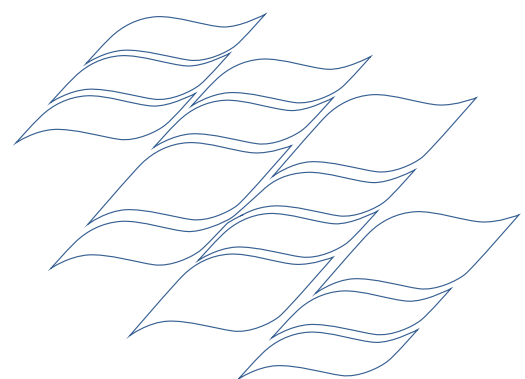


Appendix 17

[RETURN TO APPENDICES LIST](#)

Pre-feasibility assessment for site 2, correspondence
4 September 2009
(Aurecon Australia Pty Ltd)



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4 September 2009

Richard West
Specialist Engineer
Gladstone Area Water Board
147 Goondoon Street
GLADSTONE QLD 4680

Dear Richard

PRE-FEASIBILITY COST ESTIMATE FOR SITE 2

Please find attached the Cost Estimate for Site 2 as per your request. Please note that the estimate was carried out before the completion of the full feasibility study of all the six potential sites. Our initial assessment suggests that Site 2 has the least construction costs based on the embankment volume (132,100 m³ for Site 2). Other factors still to be considered include:

- Geotechnical
- Environmental
- Land use
- Permits

The typical embankment cross section was assumed to have a crest width of 4 m with upstream and downstream slopes of 1:3 (V:H) and 1:2 (V:H) respectively. The maximum embankment height is 15 m and the crest length is approximately 300 m. The spillway length was assumed to be 25 m.

Rates were based on rates used on similar sized projects that Aurecon have been involved with. Adjustments were made for location and time elapsed since projects have been undertaken.

Please also note that due to time constraints, the estimate has not been fully reviewed and verified internally.

Based on the above, the estimated cost of constructing an off-line storage at Site 2 is approximately \$21 million. Details of the cost estimate are attached.

Yours sincerely

A handwritten signature in blue ink, appearing to read "Sunganayi Mhuka".

Sunganayi Mhuka
Civil Engineer – Water

Enc: Cost Estimate Site 2



PROJECT: OFF-LINE STORAGE FACILITY - FEASIBILITY STUDY

JOB. NO. 26439-019-02

CLIENT: GLADSTONE AREA WATER BOARD

PRE-FEASIBILITY COST ESTIMATE-SITE 2

Item	Description	Unit	Quantity	Rate	Amount (AUD)
1.00	Dam and Interconnecting pipework				
1.01	Strip Top Soil	m3	3800	3.08	\$ 11,701
1.02	Excavate unsuitable material and replace with suitable material				
	a) Excavation	m3	5000	4.69	\$ 23,459
	b) Cart and Place of suitable material	m3	5000	55.54	\$ 277,724
	c) Dispose Excavated Materials (Assume spread only)	m3	5000	0.91	\$ 4,562
1.03	Excavate cut-off trench and replace with impervious material				
	a) Excavation	m3	3200	4.69	\$ 15,014
	b) Cart and Place of Impervious Material	m3	3200	55.54	\$ 177,743
	c) Dispose Excavated Materials (Assume spread only)	m3	500	0.91	\$ 456
1.04	Construct homogeneous fill embankment	m3	132,100	45.00	\$ 5,944,500
1.05	Construct concrete spillway	m3	60	1,505.37	\$ 90,322
1.06	Excavate spillway and return channel	m3	3600	5.60	\$ 20,175
1.07	Install outlet works				
	a) Intake structure	Lsum			20,000
	b) Excavate for and backfill outlet pipe	m3	665	73.17	\$ 48,661
	c) Install outlet pipe (DN1,000) - MSCL	m	95	1,902.80	\$ 180,766
1.08	Allowance for rock excavation (5% of excavation volume)	m3	400	140.00	\$ 56,000
1.09	DN 1,290 MSCL pipeline	m	60	2,355.08	\$ 141,305
1.10	Install DN1,290 equal tee to existing DN1,290 MSCL	No	1	38,712.00	\$ 38,712
1.11	Miscellaneous valves and fittings (outside pump station)	Lot			\$ 200,000
2.00	Pump Structure				
2.01	Building structure (24mx12m)	m2	288	1,400.00	\$ 403,200
2.02	Fencing	m	100	393.50	\$ 39,350
2.03	9 tonne crane	Lsum	1	78,272.00	\$ 78,272
3.00	Pump and valves				
3.01	Centrifugal pump (Flow 1.111m3/s, Head 95m) c/w 1400KW motor	No	1	1,500,000	\$ 1,500,000
3.02	Pipework	Lsum			\$ 600,000
3.03	Electromagnetic flow meter, DN375	No.	1	21,237.07	\$ 21,237
3.04	DN 600 reflux valve	No.	3	38,840.00	\$ 116,520
3.05	DN 750 reflux valve	No.	1	92,250.00	\$ 92,250
3.06	Miscellaneous valves	Lot	1	150,000.00	\$ 150,000

Item	Description	Unit	Quantity	Rate	Amount (AUD)
4.00	Electrical				
4.01	11kV Switchboard, 600A Bus; 1 x Incomer, x 2 x Feeders	No	1	167,025.00	\$ 167,025
4.02	Cable 70mm2 Cu 12.7/22kV Three Core XLPE Insulated and PVC Sheathed	m	50	68.92	\$ 3,446
4.03	Cable 70mm2 Cu 12.7/22kV terminations	No	6	411.42	\$ 2,469
4.04	Transformer, 11kV-3.3kV, 3MVA	No	1	157,391.30	\$ 157,391
4.05	Cable 150mm2 Cu 3.8/6.6kV Three Core XLPE Insulated and PVC Sheathed	m	50	113.02	\$ 5,651
4.06	Cable 150mm2 Cu 3.8/6.6kV terminations	No	12	1,097.92	\$ 13,175
4.07	Switchboard, 3.3kV, 800A Bus, 1 x Incomer, 2 x Feeders, 1 x DOL motor	No	1	120,000.00	\$ 120,000
4.08	Cable 120mm2 Cu 3.8/6.6kV Three Core XLPE Insulated and PVC Sheathed	m	50	106.13	\$ 5,307
4.09	Cable 120mm2 Cu 3.8/6.6kV terminations	No	6	1,039.46	\$ 6,237
4.10	Cable 50mm2 Cu 3.8/6.6kV Three Core XLPE Insulated and PVC Sheathed	m	100	68.92	\$ 6,892
4.11	Cable 50mm2 Cu 3.8/6.6kV terminations	No	6	411.42	\$ 2,469
4.12	Transformer, 3.3kV-415V, 200kVA	No	1	63,250.00	\$ 63,250
4.13	Cable 185mm2 Cu 0.6/1kV Three Core PVC/PVC	m	50	42.25	\$ 2,112
4.14	Cable 185mm2 Cu 0.6/1kV terminations	No	6	373.18	\$ 2,239
4.15	Switchboard, 415V, 400A Bus, 1 x Incomer, 4 x Feeder	No	1	106,520.50	\$ 106,521
4.16	Distribution Board, 415V, 24 pole light & power board	No	1	10,000.00	\$ 10,000
4.17	5 x GPO circuits, 240V	Points	5	500.00	\$ 2,500
4.18	3 x 30A welding outlets, 415V	Points	3	1,200.00	\$ 3,600
4.19	Battery Charger	No	1	25,000.00	\$ 25,000
4.20	Transformer bay c/w bund and sump	Item	1	30,000.00	\$ 30,000
4.21	Area lighting	Item	1	10,000.00	\$ 10,000
4.22	Communications	Item	1	30,000.00	\$ 30,000
4.23	Allowance for contribution to Ergon mods	Item	1	-	\$ -
4.24	Allowance for Earthing and installation	No	5	25,000.00	\$ 125,000
4.25	Allowance for trenching	m	100	112.19	\$ 11,219
4.26	Commissioning	Item	1	75,000.00	\$ 75,000
4.00	Others				
4.01	Fire Protection at Pump Station	Item	1	15,000.00	\$ 15,000
4.02	Fire Detection at Pump Station	Item	1	20,000.00	\$ 20,000
5.00	Growth Allowance on pump station (% of items 2+3+4)	%	15%		\$ 603,349
	Sub-Total				\$ 11,876,780
6.0	In-Direct Costs				
6.01	Establishment & Disestablishment (as a % of items 1-5)	%	15%		\$ 1,781,517
7.0	Engineering, Procurement, Construction Management, Administration and Approvals (% of items (1+2+3+4+5+6))	%	7.5%		\$ 1,024,372
8.0	Contingency (% of items (1+2+3+4+5+6+7))	%	30%		\$ 4,404,801
	Total				\$ 19,087,470
				GST (10%)	\$ 1,908,747
				Grand Total	\$ 20,996,217