

Akaroa Wastewater Scheme

Whole Scheme High Level Estimate

SUMMARY

Ref	Option	1	2	3	4	5
	Description	Ocean Outfall	100% Bore Injection near the WWTP	Robinsons Bay Irrigation & Bore Injection near the WWTP	Goughs/Hickory Bay Dam Storage and Irrigation	Pompeys Pillar Dam Storage & Irrigation
	Reticulation, Terminal PS, WWTP, Ponds A-C	\$27,320,000	\$27,520,000	\$27,320,000	\$26,450,000	\$26,450,000
	Disposal Option	\$7,390,000	\$7,910,000	\$13,730,000	\$29,090,000	\$25,910,000
	Total Estimate	\$34,710,000	\$35,430,000	\$41,050,000	\$55,540,000	\$52,360,000
Expected Range (\$ million)		\$32m to \$40m	\$32m to \$41m	\$38m to \$48m	\$50m to \$64m	\$47m to \$60m

Estimates include allowance for Land Purchase Costs.

Estimates exclude cost for Non-potable Reuse Pipe (Supplementary Option).

Akaroa Wastewater Scheme

Whole Scheme High Level Estimate

Note:
 · Allowances included in the estimates for Land Purchase are based on average Rateable Valuation data and include a 25% land acquisition factor.
 · The estimates presented in this table are for high-level feasibility assessment only. Please refer back to the source documents for the assumptions, clarification, exclusions and risks that apply to each estimate.

ESTIMATE INFORMATION								DISPOSAL OPTIONS					
Item	Comments	Level of Design	Date	Estimate	Allowance for Escalation to end 2018	Estimate in 2018 values	Contingency %	1 Ocean Outfall	2 100% Bore Injection near the WWTP	3 Robinsons Bay Irrigation & Bore Injection near the WWTP	4 Goughs/Hickory Bay Dam Storage and Irrigation	5 Pompeys Pillar Dam Storage & Irrigation	6 Non-potable Reuse Pipe (Supplementary Option)
Common Items - WWTP and Network Infrastructure:													
Wastewater Reticulation Network	as per 2014 scope less scope transferred to Renewals Programme)	Preliminary	#####	\$2,860,000	12%	\$3,200,000		\$3,200,000	\$3,200,000	\$3,200,000	\$3,200,000	\$3,200,000	n/a
Construction cost estimate incl. P&G and Margin				\$2,033,000	12%	\$2,280,000							
Allowance for Design and Construction Monitoring				\$318,000	12%	\$360,000							
Contingency				\$508,000	12%	\$570,000	25%						
Terminal Pump Station	as per 2014 scope	Preliminary	#####	\$7,430,000	12%	\$8,320,000		\$8,320,000	\$8,320,000	\$8,320,000	\$8,320,000	\$8,320,000	n/a
Construction Cost incl. P&G and Margin				\$5,421,000	12%	\$6,070,000							
Allowance for Design and Construction Monitoring				\$813,000	12%	\$910,000							
Allowance for Resource Consents				\$110,000	12%	\$120,000							
Contingency				\$1,084,000	12%	\$1,210,000	20%						
Wastewater Treatment Plant	as per 2014 scope with an adjustment for revised design specific to disposal option	Preliminary	#####	\$11,530,000	12%	\$12,910,000		\$12,910,000	\$12,910,000	\$12,910,000	\$12,040,000	\$12,040,000	n/a
Construction cost estimate incl. P&G and Margin				\$8,378,000	12%	\$9,380,000							
Allowance for Design and Construction Monitoring				\$1,300,000	12%	\$1,460,000							
Allowance for Resource Consents				\$170,000	12%	\$190,000							
Contingency				\$1,680,000	12%	\$1,880,000	20%						
Storage Ponds A - C on Site 10		Concept	#####			\$2,090,000		\$2,090,000	\$2,290,000	\$2,090,000	\$2,090,000	\$2,090,000	
Construction cost estimate incl. P&G and Margin						\$1,380,000							
Allowance for Design and Construction Monitoring						\$230,000							
Allowance for CCC project costs						\$70,000							
Allowance for Resource Consents						elsewhere							
Contingency						\$410,000	30%						
Additional costs for Pond B treated wastewater Non-potable Reuse Pipe (Supplementary Option)		Concept	#####			\$200,000							\$200,000
Construction Cost incl. P&G and Margin						\$2,170,000							\$2,170,000
Allowance for Design and Construction Monitoring						\$1,430,000							
Allowance for CCC project costs						\$240,000							
Allowance for Resource Consents						\$70,000							
Contingency						elsewhere							
						\$430,000	30%						
Allowance for Land Purchase	Site 10 across road from WWTP							\$800,000	\$800,000	\$800,000	\$800,000	\$800,000	\$0
SUBTOTAL - COMMON ITEMS								\$27,320,000	\$27,520,000	\$27,320,000	\$26,450,000	\$26,450,000	\$2,370,000
Disposal Options													
Total Disposal Option Estimate	See breakdown of these estimates in separate spreadsheet "Disposal Options Capital Cost Estimates" dated 10/08/2018.							\$7,390,000	\$7,910,000	\$13,730,000	\$29,090,000	\$25,910,000	
Construction Cost incl. P&G and Margin								\$4,720,000	\$5,000,000	\$8,010,000	\$18,960,000	\$16,530,000	
Allowance for Design and Construction Monitoring								\$800,000	\$850,000	\$1,350,000	\$3,200,000	\$2,790,000	
Allowance for CCC project costs								\$250,000	\$260,000	\$420,000	\$990,000	\$860,000	
Allowance for Resource Consents								\$200,000	\$300,000	\$500,000	\$200,000	\$200,000	
Contingency							30%	\$1,420,000	\$1,500,000	\$2,400,000	\$5,690,000	\$4,960,000	
Allowance for Land Purchase	Land required for disposal option							\$0	\$0	\$1,050,000	\$50,000	\$570,000	
TOTAL EXPECTED ESTIMATE (rounded)								\$34,710,000	\$35,430,000	\$41,050,000	\$55,540,000	\$52,360,000	
Expected Range (\$ million)								\$32m to \$40m	\$32m to \$41m	\$38m to \$48m	\$50m to \$64m	\$47m to \$60m	\$2m to \$2.5m
Total Land Purchase and Access Costs included in the Estimate								\$800,000	\$800,000	\$1,850,000	\$850,000	\$1,370,000	\$0
Total Contingency included in the Estimate	(Non-potable Reuse Pipe shown separately)							\$5,490,000	\$5,570,000	\$6,470,000	\$9,760,000	\$9,030,000	\$430,000

Akaroa Wastewater Alternate Disposal Options

Concept Stage Cost Estimate

Option 2 100% Bore Injection near the WWTP

Description of works:

Reinjection bores located at Site 10 near WWTP

Ref	DESCRIPTION	UNIT	QUANTITY	RATE	Subtotal	TOTAL	COMMENT
1.0	REINJECTION BORES	LS	1			\$4,455,000	
	Located at the Site 10 across road from WWTP						
	Target depth below sea level	m	100				
	Starting site elevation (m above sea level)	m	120				
	Depth of drilling	m	220				
1.01	Gravity pipeline from Ponds B to bores - allow DN180 PE100 PN16 pipe, trenched including all valves, fittings, thrust restraint	m	100	\$330		\$33,000	
1.02	Allowance for booster pump station	LS	1	\$50,000		\$50,000	
1.03	Drill 4No x 220m deep reinjection bores	No	4	\$352,000		\$1,408,000	allow reinjection bores \$1600/m
1.04	Construct 4No headworks to reinjection bores	No	4	\$50,000		\$200,000	
1.05	Drill 8No x 220m deep monitoring wells	No	8	\$308,000		\$2,464,000	allow monitoring wells \$1400/m
1.06	Construct 8No headworks to monitoring wells	No	8	\$25,000		\$200,000	
1.07	Allow for instrumentation to monitoring wells	No	8	\$10,000		\$80,000	
1.08	Allow for Telemetry and RTU for monitoring wells	LS	1	\$20,000		\$20,000	
	Allow for civil works - access road, gate and fencing to	LS	1			measured	assume included in Pond civil
2.0	TREATED WASTEWATER PUMP STATION					\$0	
							none for this option
3.0	PIPELINE TO EASTERN BAYS					\$0	
							none for this option
4.0	IRRIGATION STORAGE					\$0	
							none for this option
5.0	IRRIGATION	LS	1			\$0	
							none for this option
	Rounding	LS	1	\$5,000.00		\$5,000	
	NET CONSTRUCTION ESTIMATE					\$4,460,000	
	Preliminaries & General and Margin	%	12%	\$4,460,000		\$540,000	
	GROSS CONSTRUCTION ESTIMATE					\$5,000,000	
	Contingency	%	30%	\$5,000,000		\$1,500,000	
	TOTAL CONSTRUCTION BUDGET					\$6,500,000	
	Allowance for Professional Fees	%	13%	\$6,500,000		\$850,000	
	Allowance for CCC project costs	%	4%	\$6,500,000		\$260,000	
	Allowance for Resource Consents	LS	1	\$300,000		\$300,000	
	Allowance for Land Purchase Costs	LS	1	\$0		\$0	Allowance for Pond Site 10 area included elsewhere
	TOTAL ESTIMATE					\$7,910,000	rounded

Akaroa Wastewater Scheme

Disposal Options Capital Cost Estimates
(including allowance for Land Purchase Costs)

8/08/2018

SUMMARY

Ref	Option Description	1 Ocean Outfall	2 100% Bore Injection near the WWTP	3 Robinsons Bay Irrigation & Bore Injection near the WWTP	4 Goughs/Hickory Bay Dam Storage and Irrigation	5 Pompeys Pillar Dam Storage & Irrigation	6 Non-potable Reuse Pipe (Supplementary Option)
	Bore depth	n/a	220m deep	220m deep	n/a	n/a	This is not a stand-alone but a supplementary option only - to be added onto a selected Disposal Option if so desired.
	Irrigation Storage	n/a	n/a	n/a	75,000m ³ dam	85,000m ³ dam	
	Irrigation	n/a	n/a	30ha to trees	113ha to pasture	91ha to pasture	
1.0	Reinjection Bores	n/a	\$4,455,000	\$4,455,000	n/a	n/a	n/a
2.0	Treated Wastewater Pump Station	n/a	n/a	n/a	\$1,483,000	\$1,483,000	n/a
3.0	Pipeline to Irrigation Area	n/a	n/a	\$1,925,000	\$4,868,000	\$5,993,500	n/a
4.0	Irrigation Storage	n/a	n/a	n/a	\$8,134,605	\$5,172,680	n/a
5.0	Irrigation	n/a	n/a	\$566,000	\$2,188,000	\$1,855,500	n/a
6.0	Pipeline to Outfall	\$660,800	n/a	n/a	n/a	n/a	n/a
7.0	Ocean Outfall	\$3,482,035	n/a	n/a	n/a	n/a	n/a
	Non-potable Reuse Pipe (Supplementary Option)	n/a	n/a	n/a	n/a	n/a	\$1,204,550
	Rounding	-\$2,835	\$5,000	\$4,000	-\$3,605	-\$4,680	-\$4,550
	NET CONSTRUCTION ESTIMATE	\$4,140,000	\$4,460,000	\$6,950,000	\$16,670,000	\$14,440,000	\$1,200,000
	Preliminaries & General and Margin - 12%	\$500,000	\$540,000	\$830,000	\$2,000,000	\$1,730,000	\$140,000
	Traffic Management for Pipelines (6% - 12% of pipelaying)	\$80,000	\$0	\$230,000	\$290,000	\$360,000	\$90,000
	GROSS CONSTRUCTION ESTIMATE	\$4,720,000	\$5,000,000	\$8,010,000	\$18,960,000	\$16,530,000	\$1,430,000
	Contingency - 30%	\$1,420,000	\$1,500,000	\$2,400,000	\$5,690,000	\$4,960,000	\$430,000
	TOTAL CONSTRUCTION BUDGET	\$6,140,000	\$6,500,000	\$10,410,000	\$24,650,000	\$21,490,000	\$1,860,000
	Allowance for Professional Fees - 13%	\$800,000	\$850,000	\$1,350,000	\$3,200,000	\$2,790,000	\$240,000
	Allowance for CCC project costs - 4%	\$250,000	\$260,000	\$420,000	\$990,000	\$860,000	\$70,000
	Allowance for Resource Consents	\$200,000	\$300,000	\$500,000	\$200,000	\$200,000	\$0
	Allowance for Land Purchase and Access - for Disposal Option site only (Pond Site 10 costs are included in Whole Scheme Estimates)	n/a	n/a	\$1,050,000	\$50,000	\$570,000	n/a
	TOTAL ESTIMATE, rounded	\$7,390,000	\$7,910,000	\$13,730,000	\$29,090,000	\$25,910,000	\$2,170,000
	Expected Range (\$ million)	\$5.9m to \$9.6m	\$6.3m to \$10.2m	\$10.9m to \$17.8m	\$23.2m to \$37.8m	\$20.7m to \$33.6m	\$1.7m to \$2.8m

Below the Line Items:							
The below cost items are deemed to be common to all options and are included in the Whole Scheme Estimates							
A	Revisions to 2014 WWTP design (net cost estimate)	-\$190,000	-\$190,000	-\$190,000	-\$650,000	-\$650,000	n/a
B	Storage Ponds A - C on Site 10 (total cost estimate including On costs and Contingency)	\$2,090,000	\$2,290,000	\$2,090,000	\$2,090,000	\$2,090,000	\$2,290,000
C	Land Purchase and Access Costs - Site 10 (net cost estimate)	\$800,000	\$800,000	\$800,000	\$800,000	\$800,000	\$800,000

General Estimate Exclusions

Goods and Services Tax (GST).
Construction escalation beyond date of estimate.
Foreign Exchange costs.
Staged or phased handover or commissioning.
Council reserves and Development Contributions.
Legal / accounting fees.

Assumptions

The estimate is based upon Beca design information received up until 30 July 2018.
All quantities and dimensions are approximate.
Measurements are based on GIS and Googlemaps.
Ponds A-C are located at Site 10 on Old Coach Road across from WWTP.
Irrigation Storage pond is located near selected treatment site.
Allowances for Non-potable Reuse pipe are based on Option 1 scenario.
Non-potable Reuse option is not a stand-alone option but a supplementary option only.
Estimates include allowances for land purchase costs based on average CCC Rateable Valuation data.
A 25% "land acquisition factor" has been included in the allowances for land purchase costs.
No allowance for land purchase in Goughs Bay option - allowance to purchase Site 10 only.
Goughs Bay option includes an allowance for arranging a land lease agreement.
The Outfall and 100% bore options include allowance for land purchase/access costs for Site 10 only.
No allowance for land purchase or access costs for monitoring bores located outside of Site 10.
On cost allowances include: P&G (12%), Contingency (30%), Professional Fees (13%).
Contingency allowance included at 30% for Concept level design. No detailed risk analysis has been carried out.
Note: allowance for Professional Fees for design and management is based upon single design from preliminary design through to completion - excludes concept design stage costs.

Project Specific Exclusions

Geotechnical ground improvement / treatment.
Incurred costs to date.
Fast track or accelerated programme.
Work outside normal working hours.
Treating & handling contaminated soil and materials.
No allowance for working around or relocating existing services.
Pond / dam excavation spoil assumed disposed of on site (no cartage allowed for).
Bores - drilling and development costs in addition to allowances included in the estimate.
Temporary accommodation costs.
Plantation management - pruning, thinning, etc.
Pasture establishment/renewal.
Architectural treatment to exterior of pumpstation.
Archaeological costs.
Land purchase for Goughs Bay location - allowance for purchasing Site 10 and agreeing lease arrangement only.
Land access costs for monitoring bores.
Wastewater treatment plant costs - allowance for "revisions to WWTP design" is only for anticipated cost effect of changes to the WWTP design associated with the selected disposal option.

Limitation

The estimates above should be considered as high level, concept design estimates intended for options appraisal.
Further design, investigation and cost estimation will be required prior to financial commitments are made. The probable accuracy range of estimate is -20% to +30%.



Akaroa Wastewater Alternate Disposal Options

Concept Stage Cost Estimate

Option 4 Goughs/Hickory Bay Dam Storage and Irrigation

Description of works:

New pump station near WWTP
 10.5km pressure pipe from WWTP to Goughs Bay - 4.25km DICL and 6.25km PE
 75,000m3 Storage Pond and Dam at Goughs Bay
 113ha pole-mounted fixed grid irrigation to pasture

Ref	DESCRIPTION	UNIT	QUANTITY	RATE	Subtotal	TOTAL	COMMENT
1.0	REINJECTION BORES					\$0	
						none for this option	
2.0	TREATED WASTEWATER PUMP STATION					\$1,483,000	
2.01	Civil site works - allowance for bulk earthworks to create level building platform and access road	LS	1	\$50,000		\$50,000	
2.02	Civil site works - retaining walls - allow 60m x 2m high average (face retained)	m2	120	\$1,000		\$120,000	
2.03	Civil works - access road - allow 100m x 3m wide	m2	300	\$150		\$45,000	
2.04	Construct pump station 10.5m long x 8.5m x 5m high, assume precast concrete panel construction on concrete floor slab and foundations, profiled steel roof on purlins, monorail crane. Include for basic building services: electrical and lighting, drainage, HVAC, security and fire protection.	m2	90	\$3,700		\$333,000	No allowance for architectural treatment to exterior
2.05	Pumps - KSB Multitec RO MTCA 65/15E-5.1 31.80	No	2	\$195,000		\$390,000.00	supply pricing \$177k each
2.06	Mechanical - pipework and valving	LS	1	\$50,000		\$50,000.00	
2.07	Electrical - MSB	LS	1	\$100,000		\$100,000.00	
2.08	Electrical - VSD, harmonic filters etc	LS	1	\$75,000		\$75,000.00	
2.09	Instrumentation	LS	1	\$30,000		\$30,000.00	
2.10	SCADA and communications	LS	1	\$25,000		\$25,000.00	assume connect into WWTP
2.11	External Works	LS	1	\$10,000		\$10,000.00	
2.12	Emergency diesel generator	LS	1	\$125,000		\$125,000.00	
2.13	Pad for the generator	LS	1	\$10,000		\$10,000.00	
2.14	Diesel tank, pipework and valving	LS	1	\$45,000		\$45,000.00	
2.15	Civil services - allow for water supply	LS	1	\$25,000		\$25,000.00	
2.16	Civil services - allow for stormwater drainage	LS	1	\$50,000		\$50,000.00	
3.0	PIPELINE TO EASTERN BAYS					\$4,868,000	
	High pressure pipeline from Pump Station to Storage Pond (B) at Goughs Bay	km	10.5				
3.01	DN150 DICL PN64 pipe trenched in sealed road with 900mm cover	m	2,000	\$470		\$940,000	based on Saint-Gobain supply pricing received 30/07/2018; exchange rate 1EUR = 1.72NZD
3.02	DN150 DICL PN100 pipe trenched in sealed road with 900mm cover	m	2,250	\$500		\$1,125,000	based on Saint-Gobain supply pricing received 30/07/2018; exchange rate 1EUR = 1.72NZD
3.03	DN180 PE100 PN10 pipe trenched in sealed road with 900mm cover	m	3,250	\$300		\$975,000	
3.04	DN180 PE100 PN16 pipe trenched in unsealed road with 900mm cover	m	3,000	\$210		\$630,000	
3.05	Extra over for deeper trenching - up to 1400mm cover	m	1,050	\$100		\$105,000	
3.06	Provisional allowance for rock excavation - allow 50% of alignment; assume 0.5m3/m	m3	2,630	\$200		\$526,000	
3.07	Extra over for fittings	%	5%	\$3,670,000		\$183,500	
3.08	Extra over for valves	%	5%	\$3,670,000		\$183,500	
3.09	Air valve arrangements in cabinet located in the berm	No	6	\$10,000		\$60,000	
3.10	Stand pipe arrangement 100mm PVC 3m high	No	12	\$7,500		\$90,000	
3.11	DN1500 precast manhole installed <1.5m deep	No	2	\$10,000		\$20,000	
3.12	Extra over for trenchless installation	Item	1	\$30,000		\$30,000	
4.0	IRRIGATION STORAGE	LS	1			\$8,134,605	
	Construct dam and pond to provide 75,000m3 storage at Goughs Bay location (option 2):						
4.01	Allowance for geotechnical investigations, boreholes, analysis etc.	LS	1	\$350,000		\$350,000	
4.02	Allow to create access road to site - allow 3km x 3m wide	m2	9,000	\$15		\$135,000	
4.03	Finish access road back to Hickory Bay Road, allow 3.0km x 3m wide 250 thick AP65	m2	9,000	\$30		\$270,000	
4.04	Allowance for environmental controls - erosion and sediment control	LS	1	\$100,000		\$100,000	
4.05	Stormwater cut off channel 2m wide x 2m deep, unlined, assume batters 1:1 so volume of cut = 8m3/m	m	450	\$120		\$54,000	
4.06	Extra over for rip rap to cut off channel - allow 50m x 8m2/m	m2	400	\$100		\$40,000	
4.07	Strip vegetation from footprint (dam and impounded area) and remove from site	m2	25,000	\$0.50		\$12,500	
4.08	Strip topsoil 150 thick from footprint (dam and impounded area) and stockpile on site	m2	25,000	\$1		\$25,000	
4.09	Cut to stockpile soil beneath dam footprint - allow 13,500m2 x 500mm thick	m3	6,750	\$7		\$47,250	
4.1	Cut to fill thick soil deposits within impounded area	m3	10,000	\$10		\$100,000	

Ref	DESCRIPTION	UNIT	QUANTITY	RATE	Subtotal	TOTAL	COMMENT
4.11	Contour finished pond floor & walls with fine grained surface suitable for lining systems - assume use graded excavated materials	m2	25,000	\$5		\$125,000	
4.12	Excavate a key into the rock one meter deep x five meters wide across the dam footprint	m3	1,150	\$200		\$230,000	
4.13	Grout any large cracks or fissures encountered across the footprint - allow provisional quantum 100m3 grout	m3	100	\$1,000		\$100,000	
4.14	Install ground anchors to lock in unfavourable rock blocks - allow 20No. x 6m deep x \$350/m	No.	20	\$2,100		\$42,000	
4.15	Supply and place imported engineered fill for drainage core of the dam (75% AP65, 15% gravels, 10% large rip rap)	m3	30,000	\$65		\$1,950,000	
4.16	Place a drainage blanket within the dam - 150mm thick 2A sand	m3	375	\$90		\$33,750	
4.17	Extra over for drainage outlets, monitoring system	LS	1	\$50,000		\$50,000	
4.18	Borrow to fill material from within 800m of site	m3	102,500	\$25		\$2,562,500	
4.19	Make good borrow site - assume topsoiling, levelling & grading, cultivation and grassing - allow 3Ha = 30,000m2	m2	30,000	\$10		\$300,000	
4.20	Uplift and place topsoil to downstream face of site	m3	3,381	\$5		\$16,905	
4.21	Anchor 500mm deep trenches for liner	m	250	\$25		\$6,250	
4.22	Place Bidim A34 under layer to footprint of impounded area	m2	14,500	\$3		\$43,500	
4.23	Place 2.5mm thick HDPE liner system within the dam	m2	14,500	\$15		\$217,500	
4.24	Allow for pipe outlet	LS	1	\$30,000		\$30,000	
4.25	Road to dam crest - 3m wide x 250 thick reinforced concrete	m3	173	\$1,500		\$258,750	
4.26	Extra over for vehicle barriers to both sides - allow wire rope or steel W section barriers	m	460	\$175		\$80,500	
4.27	Ramp into dam base - 3m wide x 250 thick reinforced concrete	m3	74	\$1,500		\$110,250	
4.28	Emergency spillway - 3m wide concrete base with 1m high concrete walls - approx 98m long	m3	74	\$1,500		\$110,250	
4.29	Extra over for 1m high walls to sides of spillway - assume 300 thick	m3	59	\$1,500		\$88,200	
4.30	Extra over for concrete block dissipators to base of spillway	m3	9	\$1,500		\$13,500	
4.31	Extra over for rip rap to base of spillway - allow 100m2	m2	100	\$100		\$10,000	
4.32	Construct concrete pond base over HDPE liner - 150 thick reinforced with fibre mesh	m2	1,500	\$225		\$337,500	
4.33	Fencing to perimeter of dam site 8-wire post and batten	m	500	\$15		\$7,500	
4.34	Extra over for farm gates	No.	4	\$500		\$2,000	
4.35	Allow for power supply to site	LS	1				measured elsewhere
4.36	Allow for instrumentation and controls	LS	1	\$100,000		\$100,000	
4.37	Allow for weather station	LS	1	\$5,000		\$5,000	
4.38	Allow for RTU and repeater station	LS	1	\$120,000		\$120,000	
4.39	Allowance for landscaping	LS	1	\$50,000		\$50,000	allowance only - design TBC
5.0	IRRIGATION	LS	1			\$2,188,000	rounded
5.01	Allowance for pole-mounted fixed-grid irrigation. Construct spray irrigation system to pasture, including site clearance, modify site access and fencing, 22kW booster pump station, mainline from Storage Pond to irrigation site, on-site submain and laterals, valving, irrigation infrastructure, power supply to site	ha	113				113ha at Goughs/Hickory Bay; excludes pasture renewal / establishment
5.02	Allowance for site clearance and enabling works	LS	1	\$60,000		\$60,000	allowance only
5.03	Allowance for booster pump station on site	kW	22	\$3,000		\$66,000	11kW x 2 (duty/standby)
5.04	Allowance for mainline from booster PS to tie-in with Irrigation - DN180 PE100	m	1,000	\$180		\$180,000	assume within 1km of pond
5.05	Extra Over for fittings	%	5%	\$180,000		\$9,000	
5.06	Extra Over for valves	%	10%	\$180,000		\$18,000	isolation valves etc
5.07	Extra Over for minor road crossings	LS	1	\$10,000		\$10,000	
5.08	Pole-mounted fixed grid irrigation infrastructure	ha	113	\$15,000		\$1,695,000	assume at 50m crs
5.09	Pasture renewal including fertilising	ha	113	\$550			excluded
5.10	Provisional Allowance for power supply to site	PS	1	\$150,000		\$150,000	allowance only
	Rounding	LS	1	-\$3,605		-\$3,605	
	NET CONSTRUCTION ESTIMATE					\$16,670,000	
	Preliminaries & General and Margin	%	12%	\$16,670,000		\$2,000,000	
	Allowance for Traffic Management for Pipelines	LS	1	\$290,000		\$290,000	
	GROSS CONSTRUCTION ESTIMATE					\$18,960,000	
	Contingency	%	30%	\$18,960,000		\$5,690,000	
	TOTAL CONSTRUCTION BUDGET					\$24,650,000	
	Allowance for Professional Fees	%	13%	\$24,650,000		\$3,200,000	
	Allowance for CCC project costs	%	4%	\$24,650,000		\$990,000	
	Allowance for Resource Consents	LS	1	\$200,000		\$200,000	
	Allowance for Land Leasing costs	LS	1	\$50,000		\$50,000	Allowance only - TBC by CCC
	TOTAL ESTIMATE					\$29,090,000	rounded

Akaroa Wastewater Upgrade

Preliminary Design Cost Estimate

Ocean Outfall Pipeline

Description of works:

Pipeline down hill from WWTP to shoreline
 Connection to Deaeration structure near shoreline
 PE pipeline laid and buried in trench in the sea bed, weighed down with ballast blocks
 Discharge diffusers, risers and protective structures

This estimate shows Discharge Pipeline and Outfall only

Ref	DESCRIPTION	UNIT	QUANTITY	RATE	Escalation	TOTAL	
1.0	Outfall pipeline					\$3,482,035	
	PE Pipe	LS	1	\$335,000	12%	\$375,200	based on 2014 estimate
	Fabricated pipe strings	LS	1	\$570,000	12%	\$638,400	
	Near shore sheet pile and excavation	LS	1	\$558,000	12%	\$624,960	
	Launch and secure	LS	1	\$780,000	12%	\$873,600	
	Contractor Personnel	LS	1	\$297,000	12%	\$332,640	
	Contractor's Risk	%	20%	\$2,844,800	12%	\$637,235	
2.0	Pipeline from WWTP to Outfall					\$660,800	
	Add allowance for pipeline from WWTP to Outfall	LS	1	\$400,000	12%	\$448,000	based on Hawkins pricing 2015
	Road Crossing SH75	LS	1	\$100,000	12%	\$112,000	
	Connection	LS	1	\$30,000	12%	\$33,600	
	Add for Deaeration Chamber	LS	1	\$210,000	12%	included	included in 2014 Reticulation Pipeline Estimate
	Allowance for Testing and commissioning, survey, approvals, CCTV etc	LS	1	\$60,000	12%	\$67,200	
	Rounding	LS	1	-\$2,835		-\$2,835	
	NET CONSTRUCTION ESTIMATE					\$4,140,000	
	Preliminaries & General - 12%	LS	1	\$500,000		\$500,000	
	Traffic Management - 12%	LS	12%	\$657,965		\$80,000	
	Margin	LS				included	
	GROSS CONSTRUCTION ESTIMATE					\$4,720,000	
	Contingency - 30%	LS	1	\$1,420,000		\$1,420,000	
	TOTAL CONSTRUCTION BUDGET					\$6,140,000	
	Allowance for Professional Fees - 13%	LS	1	\$800,000		\$800,000	
	Allowance for CCC project costs - 4%	LS	1	\$250,000		\$250,000	
	Allowance for Resource Consents	LS	1	\$200,000		\$200,000	
	Allowance for Land Purchase Costs	LS	1	\$0		excluded	
	TOTAL CAPITAL COST ESTIMATE					\$7,390,000	rounded

Akaroa Wastewater Alternate Disposal Options

Concept Stage Cost Estimate

Option 5 Pompeys Pillar Dam Storage & Irrigation

Description of works:

New pump station near WWTP
 12.5km pressure pipe from WWTP to Pompeys Pillar - 4km DICL and 8.5km PE
 85,000m3 Storage Pond and Dam at Pompeys Pillar
 91.5ha pole-mounted fixed grid irrigation to pasture

Ref	DESCRIPTION	UNIT	QUANTITY	RATE	Subtotal	TOTAL	COMMENT
1.0	REINJECTION BORES					\$0	
							none for this option
2.0	TREATED WASTEWATER PUMP STATION					\$1,483,000	
2.01	Civil site works - allowance for bulk earthworks to create level building platform and access road	LS	1	\$50,000		\$50,000	
2.02	Civil site works - retaining walls - allow 60m x 2m high average (face retained)	m2	120	\$1,000		\$120,000	
2.03	Civil works - access road - allow 50m x 3m wide	m2	300	\$150		\$45,000	
2.04	Construct pump station 10.5m long x 8.5m x 5m high, assume precast concrete panel construction on concrete floor slab and foundations, profiled steel roof on purlins, monorail crane. Include for basic building services: electrical and lighting, drainage, HVAC, security and fire protection.	m2	\$90	\$3,700		\$333,000	No allowance for architectural treatment to exterior
2.05	Pumps - KSB Multitec RO MTCA 65/15E-5.1 31.80	No	2	\$195,000		\$390,000.00	supply pricing \$177k each
2.06	Mechanical - pipework and valving	LS	1	\$50,000		\$50,000.00	
2.07	Electrical - MSB	LS	1	\$100,000		\$100,000.00	
2.08	Electrical - VSD, harmonic filters etc	LS	1	\$75,000		\$75,000.00	
2.09	Instrumentation	LS	1	\$30,000		\$30,000.00	
2.10	SCADA and communications	LS	1	\$25,000		\$25,000.00	assume connect into WWTP
2.11	External Works	LS	1	\$10,000		\$10,000.00	
2.12	Emergency diesel generator	LS	1	\$125,000		\$125,000.00	
2.13	Pad for the generator	LS	1	\$10,000		\$10,000.00	
2.14	Diesel tank, pipework and valving	LS	1	\$45,000		\$45,000.00	
2.15	Civil services - allow for water supply	LS	1	\$25,000		\$25,000.00	
2.16	Civil services - allow for stormwater drainage	LS	1	\$50,000		\$50,000.00	
3.0	PIPELINE TO EASTERN BAYS					\$5,933,500	
	High pressure pipeline from Pump Station to Storage Pond (B) at Pompeys Pillar	km	12.5				
3.01	DN150 DICL PN64 pipe trenched in sealed road with 900mm cover	m	2,000	\$470		\$940,000	based on Saint-Gobain supply pricing received 30/07/2018; exchange rate 1EUR = 1.72NZD
3.02	DN150 DICL PN100 pipe trenched in sealed road with 900mm cover	m	2,000	\$500		\$1,000,000	based on Saint-Gobain supply pricing received 30/07/2018; exchange rate 1EUR = 1.72NZD
3.03	DN180 PE100 PN10 pipe trenched in sealed road with 900mm cover	m	7,500	\$300		\$2,250,000	
3.04	DN180 PE100 PN16 pipe trenched in unsealed road with 900mm cover	m	1,000	\$210		\$210,000	
3.05	Extra over for deeper trenching - up to 1400mm cover	m	1,250	\$100		\$125,000	
3.06	Provisional allowance for rock excavation - allow 50% of alignment; assume 0.5m3/m	m3	3,130	\$200		\$626,000	
3.07	Extra over for fittings	%	5%	\$4,400,000		\$220,000	
3.08	Extra over for valves	%	5%	\$4,400,000		\$220,000	
3.09	Air valve arrangements in cabinet located in the berm	No	6	\$10,000		\$60,000	
3.10	Stand pipe arrangement 100mm PVC 3m high	No	31	\$7,500		\$232,500	
3.11	DN1500 precast manhole installed <1.5m deep	No	2	\$10,000		\$20,000	
3.12	Extra over for trenchless installation	Item	1	\$30,000		\$30,000	
4.0	IRRIGATION STORAGE	LS	1			\$5,172,680	
	Construct dam and pond to provide 85,000m3 storage at Pompeys Pillar location (P4):						
4.01	Allowance for geotechnical investigations, boreholes, analysis etc.	LS	1	\$300,000		\$300,000	
4.02	Allow to create access road to site - allow 1km x 3m wide	m2	3,000	\$15		\$45,000	
4.03	Finish/restore access road upon completion, allow 1km x 3m wide 250 thick AP65	m2	3,000	\$30		\$90,000	
4.04	Allowance for environmental controls - erosion and sediment control	LS	1	\$100,000		\$100,000	
4.05	Stormwater cut off channel 2m wide x 2m deep, unlined, assume batters 1:1 so volume of cut = 8m3/m	m	450	\$120		\$54,000	
4.06	Extra over for rip rap to cut off channel - allow 50m x 8m2/m	m2	400	\$100		\$40,000	
4.07	Strip vegetation from footprint (dam and impounded area) and remove from site	m2	20,000	\$0.50		\$10,000	
4.08	Strip topsoil 150 thick from footprint (dam and impounded area) and stockpile on site	m2	20,000	\$1		\$20,000	
4.09	Cut to stockpile soil beneath dam footprint - allow 13,500m2 x 500mm thick	m3	4,500	\$7		\$31,500	
4.10	Cut to fill thick soil deposits within impounded area	m3	10,000	\$10		\$100,000	
4.11	Contour finished pond floor & walls with fine grained surface suitable for lining systems - assume use graded excavated materials	m2	20,000	\$5		\$100,000	
4.12	Excavate a key into the rock one meter deep x five meters wide across the dam footprint	m3	400	\$200		\$80,000	

Ref	DESCRIPTION	UNIT	QUANTITY	RATE	Subtotal	TOTAL	COMMENT
4.13	Grout any large cracks or fissures encountered across the footprint - allow provisional quantum 100m3 grout	m3	100	\$1,000		\$100,000	
4.14	Install ground anchors to lock in unfavourable rock blocks - allow 20No. x 6m deep x \$350/m	No.	20	\$2,100		\$42,000	
4.15	Supply and place imported engineered fill for drainage core of the dam (75% AP65, 15% gravels, 10% large rip rap)	m3	20,000	\$65		\$1,300,000	
4.16	Place a drainage blanket within the dam - 150mm thick 2A sand	m3	375	\$90		\$33,750	
4.17	Extra over for drainage outlets, monitoring system	LS	1	\$50,000		\$50,000	
4.18	Borrow to fill material from within 600m of site	m3	45,000	\$25		\$1,125,000	
4.19	Make good borrow site - assume topsoiling, levelling & grading, cultivation and grassing - allow 2Ha = 20,000m2	m2	20,000	\$10		\$200,000	
4.20	Uplift and place topsoil to downstream face of site	m3	696	\$5		\$3,480	
4.21	Anchor 500mm deep trenches for liner	m	350	\$25		\$8,750	
4.22	Place Bidim A34 under layer to footprint of impounded area	m2	20,000	\$3		\$60,000	
4.23	Place 2.5mm thick HDPE liner system within the dam	m2	20,000	\$15		\$300,000	
4.24	Allow for pipe outlet	LS	1	\$30,000		\$30,000	
4.25	Road to dam crest - 3m wide x 250 thick reinforced concrete	m3	60	\$1,500		\$90,000	
4.26	Extra over for vehicle barriers to both sides - allow wire rope or steel W section barriers	m	160	\$175		\$28,000	
4.27	Ramp into dam base - 3m wide x 250 thick reinforced concrete	m3	44	\$1,500		\$66,250	
4.28	Emergency spillway - 3m wide concrete base with 1m high concrete walls - approx 98m long	m3	44	\$1,500		\$66,250	
4.29	Extra over for 1m high walls to sides of spillway - assume 300 thick	m3	35	\$1,500		\$52,200	
4.30	Extra over for concrete block dissipators to base of spillway	m3	9	\$1,500		\$13,500	
4.31	Extra over for rip rap to base of spillway - allow 100m2	m2	100	\$100		\$10,000	
4.32	Construct concrete pond base over HDPE liner - 150 thick reinforced with fibre mesh	m2	1,500	\$225		\$337,500	
4.33	Fencing to perimeter of dam site 8-wire post and batten	m	700	\$15		\$10,500	
4.34	Extra over for farm gates	No.	4	\$500		\$2,000	
4.35	Allow for power supply to site	LS	1			\$0	
4.36	Allow for instrumentation and controls	LS	1	\$100,000		\$100,000	
4.37	Allow for weather station	LS	1	\$5,000		\$5,000	
4.38	Allow for RTU and repeater station	LS	1	\$120,000		\$120,000	
4.39	Allowance for landscaping	LS	1	\$50,000		\$50,000	allowance only - design TBC
5.0	IRRIGATION	LS	1			\$1,855,500	
5.01	Allowance for pole-mounted fixed-grid irrigation. Construct spray irrigation system to pasture, including site clearance, modify site access and fencing, 22kW booster pump station, mainline from Storage Pond to irrigation site, on-site submain and laterals, valving, irrigation infrastructure	ha	91.5				90ha at Pompeys Pillar; excludes pasture renewal / establishment
5.02	Allowance for site clearance and enabling works	LS	1	\$50,000		\$50,000	allowance only
5.03	Allowance for booster pump station on site	kW	22	\$3,000		\$66,000	11kW x 2 (duty/standby)
5.04	Allowance for mainline from booster PS to tie-in with Irrigation - DN180 PE100	m	1,000	\$180		\$180,000	assume within 1km of pond
5.05	Extra Over for fittings	%	5%	\$180,000		\$9,000	
5.06	Extra Over for valves	%	10%	\$180,000		\$18,000	isolation valves etc
5.07	Extra Over for minor road crossings	LS	1	\$10,000		\$10,000	
5.08	Pole-mounted fixed grid irrigation infrastructure	ha	91.5	\$15,000		\$1,372,500	assume at 50m crs
5.09	Pasture renewal including fertilising	ha	91.5	\$550		excluded	
5.10	Provisional Allowance for power supply to site	PS	1	\$150,000		\$150,000	allowance only
	Rounding	LS	1	-\$4,680		-\$4,680	
	NET CONSTRUCTION ESTIMATE					\$14,440,000	
	Preliminaries & General and Margin	%	12%	\$14,440,000		\$1,730,000	
	Allowance for Traffic Management for Pipelines	LS	1	\$360,000		\$360,000	
	GROSS CONSTRUCTION ESTIMATE					\$16,530,000	
	Contingency	%	30%	\$16,530,000		\$4,960,000	
	TOTAL CONSTRUCTION BUDGET					\$21,490,000	
	Allowance for Professional Fees	%	13%	\$21,490,000		\$2,790,000	
	Allowance for CCC project costs	%	4%	\$21,490,000		\$860,000	
	Allowance for Resource Consents	LS	1	\$200,000		\$200,000	
	Allowance for Land Purchase Costs	LS	1	\$570,000		\$570,000	Allow 92ha for irrigation
	TOTAL ESTIMATE	rounded				\$25,910,000	

Akaroa Wastewater Alternate Disposal Options

Concept Stage Cost Estimate

Storage Ponds A - C

Description of works:

Construct Ponds A - C on Site 10 Site located across Old Coach Road from the WWTP.

Ref	DESCRIPTION	UNIT	QUANTITY	RATE	Subtotal	TOTAL	COMMENT
1.0	STORAGE PONDS A - C (ON SITE 10)					\$1,234,676	
	Pond A - covered peak flow raw wastewater	4,500	m3				
	Pond B - covered treated wastewater	1,200	m3				
	Pond C - covered diurnal balancing raw wastewater	500	m3				
		6,200	m3 total				
1.01	Strip topsoil 150 deep to stockpile	m2	10,000	\$1		\$10,000	
1.02	Earthworks - cut to stockpile	m3	678	\$7		\$4,746	
1.03	Earthworks - cut to fill	m3	9,838	\$10		\$98,380	
1.04	Earthworks - uplift and spread on site	m3	678	\$5		\$3,390	no off site disposal allowed for
1.05	Provisional allowance for rock excavation - 10% volume	m3	68	\$200		\$13,560	Provisional Item
1.06	Trim batters and prepare for liner	m2	4,700	\$1.60		included	
1.07	Sand blinding below liner	m2	5,600	\$9		\$50,400	
1.08	HDPE liner on geotextile	m2	5,600	\$12		\$67,200	
1.09	Liner anchor trench to perimeter	m	440	\$25		\$11,000	
1.10	HDPE pond cover	m2	4,300	\$70		\$301,000	
1.11	Inlet and outlet structures	No	2	\$30,000		\$60,000	
1.12	Leak detection system including drains below pond base	m2	7,500	\$10		excluded	
1.13	Provisional allowance to remove Pond B treated wastewater	LS	-1	\$120,000		-\$120,000	Provisional Item
1.14	Provisional allowance to upsize Pond A raw wastewater pond to 10,000m3	LS	1	\$300,000		\$300,000	Provisional Item
1.15	Allowance for treated water pipeline from WWTP to site 10 across the road - allow DN180 PE100 pipe	m	100	\$330		\$33,000	allowance only - design TBC
1.16	Allow for raw water pump station and pipeline from Site 10 back to WWTP - allow DN180 PE100 pipe	LS	100	\$330		\$33,000	allowance only - design TBC
1.17	Extra Over for trenchless installations	Item	2	\$30,000		\$60,000	
1.18	Allowance for raw water pump station	LS	1	\$50,000		\$50,000	allowance only - design TBC
1.19	Site Access Road - allow 300m long x 3m wide gravel road	m2	900	\$75		\$67,500	
1.20	Pond Access Road - allow total 420m long x 3m wide gravel road to crest of ponds	m2	1,260	\$25		\$31,500	
1.21	Allow to create drill pads - assume 25m x 10m x 300 thick gravels on geotextile fabric and make good upon completion	No	3	\$20,000		\$60,000	
	Excavate - cut to stockpile	m3	75	\$30	\$2,250.00		
	Geotextile fabric	m2	250	\$10	\$2,500.00		
	Imported gravels	m3	75	\$85	\$6,375.00		
	Uplift and remove gravels	m3	75	\$50	\$3,750.00		
	Remove geotextile to waste	m2	250	\$5	\$1,250.00		
	Uplift and place excavated materials	m3	75	\$15	\$1,125.00		
	Grassing to surface	m2	250	\$3	\$750.00		
	Rounding				\$2,000.00		
	Subtotal				\$20,000		
1.22	Allowance for landscaping of Ponds site	LS	1	\$100,000		\$100,000	allowance only - design TBC
	Rounding	LS	1	-\$4,676		-\$4,676	
	NET CONSTRUCTION ESTIMATE					\$1,230,000	
	Preliminaries & General and Margin	%	12%	\$1,230,000		\$150,000	
	Allowance for Traffic Management for Pipelines	LS				included	
	GROSS CONSTRUCTION ESTIMATE					\$1,380,000	
	Contingency	%	30%	\$1,380,000		\$410,000	
	TOTAL CONSTRUCTION BUDGET					\$1,790,000	
	Allowance for Professional Fees	%	13%	\$1,790,000		\$230,000	
	Allowance for CCC project costs	%	4%	\$1,790,000		\$70,000	
	Allowance for Resource Consents	LS	1			\$0	included elsewhere
	Allowance for Land Purchase Costs	LS	1			\$0	included elsewhere
	TOTAL ESTIMATE					\$2,090,000	rounded

Akaroa Wastewater Alternate Disposal Options

Concept Stage Cost Estimate

Supplementary Option: Non-potable Reuse Pipe

Description of works:

Non-potable reuse pipe (i.e. "purple pipe") network from WWTP to Akaroa for irrigation of CCC parks and reserves and private property connections.

Ref	DESCRIPTION	UNIT	QUANTITY	RATE	Subtotal	TOTAL	COMMENT
1.0	NON-POTABLE REUSE PIPE					\$1,204,550	
1.01	Allowance for UV system at WWTP	1	LS	\$300,000		\$300,000	allowance only - design TBC
	Non-potable reuse pipe (i.e. "purple pipe") from WWTP to Akaroa for irrigation of CCC parks and reserves and private property connections. Assume laid in carriageway and footpaths:						allowances are based on Option 1 scenario.
1.02	DN32 PE100 PN16	m	670	\$120		\$51,600	
1.03	DN63 PE100 PN16	m	2,720	\$140		\$380,800	
1.04	DN110 PE100 PN16	m	430	\$150		\$100,500	
1.05	Private property connections	No	32	\$5,000		\$160,000	
1.06	Backflow prevention device to existing water supply	No	32	\$2,200		\$70,400	based on Wilkins 25mm top access double check valve assembly
1.07	Connections to irrigation	No	4	\$10,000		\$40,000	
	Allowances for irrigation to:						allowances only - design TBC
1.08	Waeckerle Green	m2	3,250	\$5		\$16,250	
1.09	Rec Ground	m2	20,000	\$4		\$80,000	assume sub-surface installed by mole ploughing
1.10	Woodhills Park	m2	1,000	\$5		\$5,000	
	Rounding	LS	1	-\$4,550		-\$4,550	
	NET CONSTRUCTION ESTIMATE					\$1,200,000	
	Preliminaries & General and Margin	%	12%	\$1,200,000		\$140,000	
	Allowance for Traffic Management for Pipelines	LS	1	\$90,000		\$90,000	
	GROSS CONSTRUCTION ESTIMATE					\$1,430,000	
	Contingency	%	30%	\$1,430,000		\$430,000	
	TOTAL CONSTRUCTION BUDGET					\$1,860,000	
	Allowance for Professional Fees	%	13%	\$1,860,000		\$240,000	
	Allowance for CCC project costs	%	4%	\$1,860,000		\$70,000	
	Allowance for Resource Consents	LS	1			\$0	included elsewhere
	Allowance for Land Purchase Costs	LS	1			\$0	included elsewhere
	TOTAL ESTIMATE					\$2,170,000	rounded

Akaroa Wastewater Alternate Disposal Options

Concept Stage Cost Estimate

Option 3 Robinsons Bay Irrigation & Bore Injection near the WWTP

Description of works:

Reinjection bores located at Site 10 near WWTP
 6km PE wastewater gravity pipe from WWTP to Robinsons Bay
 30ha dripline irrigation to trees

Ref	DESCRIPTION	UNIT	QUANTITY	RATE	Subtotal	TOTAL	COMMENT
1.0	REINJECTION BORES					\$4,455,000	
	Located at the Site 10 across road from WWTP						
	Target depth below sea level	m	100				
	Starting site elevation (m above sea level)	m	120				
	Depth of drilling	m	220				
1.01	Gravity pipeline from Ponds B to bores - allow DN180 PE100 PN16 pipe, trenched including all valves, fittings, thrust restraint	m	100	\$330		\$33,000	
1.02	Allowance for booster pump station	LS	1	\$50,000		\$50,000	
1.03	Drill 4No x 220m deep reinjection bores	No	4	\$352,000		\$1,408,000	allow reinjection bores \$/m
1.04	Construct 4No headworks to reinjection bores	No	4	\$50,000		\$200,000	
1.05	Drill 8No x 220m deep monitoring wells	No	8	\$308,000		\$2,464,000	allow monitoring wells \$/m
1.06	Construct 8No headworks to monitoring wells	No	8	\$25,000		\$200,000	
1.07	Allow for instrumentation to monitoring wells	No	8	\$10,000		\$80,000	
1.08	Allow for Telemetry and RTU for monitoring wells	LS	1	\$20,000		\$20,000	
1.09	Allow for civil works - access road, gate and fencing to perimeter of site	LS	1				measured elsewhere assume included in Pond civil works
2.0	TREATED WASTEWATER PUMP STATION					\$0	
							none for this option
3.0	PIPELINE TO ROBINSONS BAY					\$1,925,000	
	Gravity pipeline from Storage Pond A at WWTP to Thacker Farm at 11 Sawmill Road in Robinsons Bay						
3.01	DN180 PE100 PN16 pipe trenched in road berm	m	5,600	\$300		\$1,680,000	
3.02	Extra over for fittings and valves	%	5%	\$1,680,000		\$84,000	
3.03	Thrust blocks	No	20	\$1,000		\$20,000	
3.04	Pressure / Air valve arrangements	No	3	\$15,000		\$45,000	
3.05	Extra over for trenchless installation across State Highway corridor	Item	2	\$30,000		\$60,000	
3.06	Additional pipeline across farmland to bore site - allow 500m of DN180 PE100 PN12 SDR13.6 pipe	m	200	\$180		\$36,000	
4.0	IRRIGATION STORAGE	LS	1			\$0	
4.01							none for this option
5.0	IRRIGATION					\$566,000	
	Allowance for drip-line irrigation to trees - including site clearance, modify site access and fencing, booster pump station, mainline from Storage Pond, on-site submain and laterals, all valving, irrigation infrastructure:						
5.01	Allowance for site clearance and enabling works	LS	1	\$30,000		\$30,000	allowance only
5.02	Allowance for booster pump station on site	kW	22	\$3,000		\$66,000	11kW x 2 (duty/standby)
5.03	Allowance for mainline from booster PS to tie-in with Irrigation - DN180 PE100	m	500	\$180		\$90,000	assume within 500m of pond
5.04	Extra over for fittings and valves	%	5%	\$90,000		\$4,500	
5.05	E/O for minor road crossings	LS	1	\$10,000		\$10,000	
5.06	Drip line irrigation to trees	ha	30	\$5,000		\$150,000	assume polypipe drip lines laid at 1.5m spacing on ground
5.07	Supply tree seedlings	ha	30	\$1,100		\$33,000	assume planting density 1,100 stems/ha; assume \$1/rt grade stem
5.08	Planting and fertilising	ha	30	\$2,750		\$82,500	
5.09	Provisional Allowance for power supply to site	PS	1	\$100,000		\$100,000	allowance only
	Rounding	LS	1	\$4,000		\$4,000	
	NET CONSTRUCTION ESTIMATE					\$6,950,000	
	Preliminaries & General and Margin	%	12%	\$6,950,000		\$830,000	
	Allowance for Traffic Management for Pipelines	LS	1	\$230,000		\$230,000	
	GROSS CONSTRUCTION ESTIMATE					\$8,010,000	
	Contingency	%	30%	\$8,010,000		\$2,400,000	
	TOTAL CONSTRUCTION BUDGET					\$10,410,000	
	Allowance for Professional Fees	%	13%	\$10,410,000		\$1,350,000	
	Allowance for CCC project costs	%	4%	\$10,410,000		\$420,000	
	Allowance for Resource Consents	LS	1	\$500,000		\$500,000	
	Allowance for Land Purchase Costs	LS	1	\$1,050,000		\$1,050,000	Allow 30ha for irrigation
	TOTAL ESTIMATE					\$13,730,000	rounded