Report

Huia Site Selection Short-list Cost Estimate

Prepared for Watercare Services Ltd (Client)

By CH2M Beca Limited

13 September 2016



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Revision History

Prepared By	Description	Date
Jack Brennan		26/9/16

Document Acceptance

Action	Name	Signed	Date
Prepared by	Jack Brennan	1 Obremen	2619/16
Reviewed by	Dennis Hunt	DM Aust	26 September 201
Approved by	Clive Rundle	Cahrille	27 Sedender 2016
on behalf of	CH2M Beca Limited		



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1 Introduction

This report is written to describe the cost estimate approach used for the shortlist of sites. It will also summarise the cost estimates for the four sites, which are:

- The Existing Site
- Manuka Road
- Parker North
- Parker South

This report should be read in conjunction with the Shortlist Site Development Report¹, the Ancillary Structures Summary Report² and the cost estimate spreadsheets in the appendix.

The appendices include:

- Appendix A Cost Estimate Summary: this provides a summary of the key line items and allows direct comparison of the four sites
- Appendix B Site Specific Risks: this is an individual sheet for each site, which looks at the site specific risks associated with each line item
- Appendix C NPV Summary: this indicates the costs over time associated with each site and the associated capital infrastructure and provides an NPV summary based on the Watercare NPV calculation spreadsheet
- Appendix D Detailed Site Cost Estimates: this is the full cost estimate for each site. These should be referred to when interrogating the detail of the individual estimates.

2 Cost Estimate Approach

2.1 Base Capital Cost

The costs have been developed through a combination of unit rates, examples from similar projects and engineering judgement. Where appropriate the cost estimates previously developed for the Huia Water Treatment Plant and North Harbour Watermain have been utilised.

2.1.1 Water Treatment Plant

The water treatment plant costs have been developed using the designs in the Shortlist Site Development Report¹. Civil and structural costs directly utilise the quantities on the drawings in this report and use current material and construction costs from the CH2M Beca database.

The process, mechanical, instrumentation, electrical and control costs were based on the process sizing in the site development report. The costs were drawn from costs provided by suppliers and from similar historical projects.

² CH2M Beca (Sept, 2016) Ancillary Structures Summary Report



¹ GHD (Sept. 2016) Shortlist Site Development Report

The P&G costs for the water treatment plant are shown as a separate line, which includes onsite overheads and admin costs.

2.1.2 Treated Water Storage

The treated water storage reservoirs cost estimates for the civil and structural costs were also based on the drawings in the Shortlist Site Development Report. These were then compared with the cost estimates for the Runciman Reservoirs to provide an allowance for inlet and outlet pipework and other ancillary costs.

2.1.3 Raw and Treated Water Transmission

The unit rate that has been used for trenched 1,200mm CLS pipeline is \$4,771/m. This is based on a detailed cost review that was carried out for the Hunua No.1 replacement study in 2014. This study utilised experience from the Waikato Watermain, the Cossey's raw watermain and included a detailed breakdown from an Auckland based contractor.

The tunnel costs are based on the estimate provided to Watercare by McConnell Dowell for the Woodlands Park Tunnel (2014).

This has a fixed cost of \$5 million for the equipment and fixed P&G.

The flexible costs include:

- Shafts
- Line installation
- Pipe installation
- Contingency
- Design, consents, contract supervision and project management

The unit rate for the flexible costs comes to \$14,525/m.

2.1.4 Off-spec Discharges

The overflow and attenuation requirements was calculated based on the overflow assessment that was carried out by T&T (Options for off-spec discharges, April 2016). The distance to the closest discharge point was used to estimate the overflow pipeline length and the pipeline was sized to be 1200mm.

In the case of the existing site, which requires the Muddy Creek pipeline for off-spec discharges, the cost estimate that was previously developed by MWH was utilised.

2.1.5 Other Ancillary Infrastructure

The following ancillary infrastructure costs have been used:

- Wastewater pipeline installation costs were estimated using the Watercare Unit rates database.
- Offsite Power costs were estimated using a per meter rate for installation, which was provided from Vector via Watercare.
- Fibre communications costs were developed from a rate of \$300/m installation, which was provided by Watercare.



2.1.6 Design, Management and Consenting

These costs were based on standard percentages applied to the total capital cost as broken down below.

- Design, management, construction and contract supervision (15%)
- Consent and regulatory fees (2%)
- Client internal costs (3%)

2.1.7 Land Acquisition

Land costs have been taken from the latest CV values from Auckland Councils GIS. This is based on the land needed to construct the plant and reservoir at its proposed location.

An additional 35% has been added to the purchase price to reflect the current Auckland market.

A purchasing cost per property of \$25,000 has been included to account for legal costs and property negotiations.

Where the land surrounding the existing treatment plant can be sold an allowance for a cost saving has been made. This has been based on the CV of the Watercare owned property, which has been proportionally split based on land area.

2.2 Risk Costing

Due to the concept level detail of the current scheme designs, there is a degree of uncertainty associated with the cost estimates. This uncertainty has been split into specific technical risks, which differ for each scheme, and price uncertainty.

2.2.1 Specific Risks

The specific technical risks have been allocated a maximum cost and a likelihood which are multiplied to provide an expected specific risk cost. These are detailed in Appendix B. Some of the specific areas where there is uncertainty at this stage of design include:

- Ground conditions and earthworks
- Land acquisition
- Additional process and mechanical complexity arises during the detailed design stage
- The available working area on the construction site
- Tunnel lining and ground conditions
- Road repairs
- System control requirements
- Construction around existing heritage buildings
- Consenting risks

2.2.2 Price Uncertainty

The cost estimates are in the order of minus 15% to plus 25% accuracy overall.

2.3 Capital Cost Estimate

The expected specific risk cost has been added to the base capital cost estimate to provide an expected capital cost estimate.



2.4 Operational Cost Estimate

The operational costs for the water treatment plant utilised the Opex estimate from the MWH concept design water treatment plant. This figure is not anticipated to vary between sites.

The energy requirements of the pumps was separated out and calculated based on the total head requirement and length of the rising main. This figure is not anticipated to vary significantly between the sites because:

- There is little difference between the sites in the hydraulic grade at the inlet of the plant
- The top water level of the treated water reservoirs is the same for all four sites

The Opex estimates have been developed for comparative purposes only.

2.5 NPV Calculation

The 20 year NPV has been calculated for the four sites and includes the effects of inclusion, exclusion or deferment of ancillary projects in Watercare's capital projects programme, as appropriate. The NPV has been calculated using Watercare's NPV spreadsheet, which uses inflation rates that are consistent with Watercare's Long Term Plans. The NPV calculation is based on the capital and operational cost estimates for each site and the capital cost estimates previously prepared for Watercare for the following projects:

- Upper Nihotupu raw watermain
- The raw water aqueduct
- The treated water aqueduct

The staging of these schemes and the Huia project are based on the spend profiles from the Watercare Asset Management Plan (AMP). The Waitakere Water Treatment Plant replacement has not been included as this does not differ between sites.



3 Cost Estimate Summary

3.1 Cost Summary

A summary of the cost estimates for the four sites is provided in Table 1; a more detailed breakdown is provided in Appendix A.

Table 1 Cost Estimate Summary

	Existing	Manuka	Parker North	Parker South
Water Treatment Plant	146,300,000	153,000,000	146,400,000	147,100,000
Reservoirs (civil structure only)	23,400,000	23,400,000	21,700,000	20,200,000
Raw water tunnel	-	-	26,000,000	23,200,000
Connection to aqueduct	700,000	2,300,000	3,700,000	3,700,000
Gravity supply from Upper Nihotupu RWM	-	5,600,000	4,300,000	4,300,000
Off-spec discharge	18,600,000	1,100,000	1,500,000	1,900,000
Wastewater pipeline	-	-	800,000	900,000
Treated water tunnel	20,200,000	20,200,000	-	-
Treated water pipeline	24,800,000	26,800,000	30,200,000	31,800,000
Offsite Power Upgrades	1,800,000	1,700,000	1,100,000	1,800,000
Fibre communications	1,600,000	1,600,000	2,300,000	2,100,000
SUB-TOTAL	237,400,000	235,700,000	238,000,000	237,000,000
Design, management, construction and contract				
supervision (15%)	35,600,000	35,400,000	35,700,000	35,400,000
Consent and regulatory fees (2%)	4,700,000	4,700,000	4,800,000	4,700,000
Client internal costs (3%)	7,100,000	7,100,000	7,100,000	7,100,000
		_		

TOTAL	\$ 284,800,000	\$ 284,900,000	\$ 295,200,000	\$ 305,200,000
Specific Risks (refer to individual site breakdowns)	26,000,000	31,000,000	31,000,000	28,000,000
TOTAL including specific risks	\$ 311,000,000	\$ 316,000,000	\$ 326,000,000	\$ 333,000,000

2,000,000

9,600,000

21,000,000

3.2 Cost Differentials

Land purchase and sale costs

There is very little difference between the water treatment plant costs for the four sites. This is because all four site designs are based on the same template and process units. The difference in the treatment plant costs largely arise from differences in the earthworks requirements. The main cost differentials between the four sites are:

- The overflow discharge pipeline required for the existing site
- Land acquisition associated with the Parker Road Sites
- The additional tunnelling length associated with the Parker Road Sites
- The Upper Nihotupu raw watermain connection for the Parker Road sites and Manuka Road

3.3 Key Differentiating Risks

A full breakdown of the site specific risks that have been identified is provided in Appendix B. The key differentiating risks are:

- The confined nature of the Woodlands Park Road sites
- Uncertainties associated with the tunnelling and whether the raw water tunnel will required lining
- Geotechnical issues and ground conditions



Road reinstatement costs

3.4 NPV

The breakdown of the 20 year NPV for the four sites is presented in Table 2. The key points regarding the NPV are:

- The Parker sites have a lower NPV because the amount of ancillary capital projects is lower than the Woodlands Park site.
- The replacement/relining of the Huia treated water aqueduct has been included in the Woodlands Park Road NPV and this will provide additional resilience to the treated water network but at a capital cost that is not available for the Parker sites.

Option Name	NPV 20 Years
Existing Site	\$368,000,000
Manuka Road	\$369,000,000
Parker Road North	\$359,000,000
Parker Road South	\$367,000,000

3.5 Conclusion

The capital costs and 20yr NPV for the four sites are presented in Figure 1. The error bars indicate the cost uncertainty. It can be seen from this figure that there is limited difference between the sites. The Woodland Park Road sites have a marginally lower capital cost but the Parker Road Sites have a marginally lower NPV.

The following have been excluded from the cost estimate and will need to be included by Watercare to get an overall cost estimate:

- GST
- Escalation post September 2016
- Capitalised interest
- Costs to date
- Insurance
- Legal and finance costs.



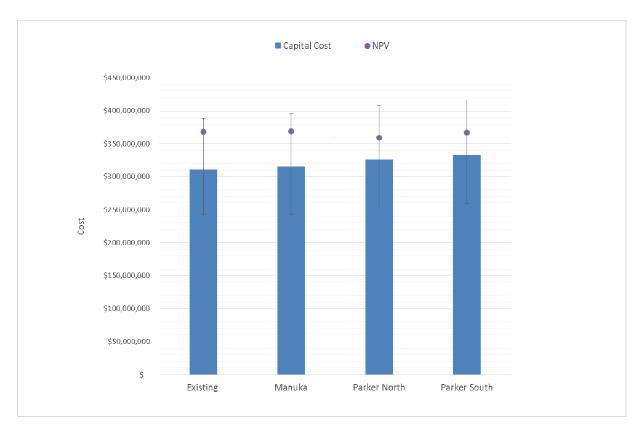


Figure 1. Scheme capital cost estimate and NPV comparison (brackets indicate price range)



Appendix A

Cost Estimate Summary

Huia WTP Cost Estimate Summary Comparison

Process costs are concept level. Civil costs are preliminary level.

The estimates are in the order of minus 15% to plus 25% accuracy overall.

See below for additional notes and exclusions.

			Existing		Manuka	F	Parker North	F	Parker South
1	Water Treatment Plant		146,300,000		153,000,000		146,400,000		147,100,000
1.01	Site Clearance and Demolition		2,600,000		700,000		1,200,000		1,000,000
1.02	Environmental Compliance and Management		900,000		1,000,000		900,000		900,000
1.03	General Earthworks		2,600,000		5,900,000		4,600,000		5,000,000
1.04	Chemical Systems		8,600,000		8,600,000		8,600,000		8,600,000
1.05	DAF		14,000,000		14,000,000		14,000,000		14,000,000
1.06	BAC filters		22,400,000		22,400,000		22,400,000		22,400,000
1.07	Ozone		11,200,000		11,200,000		11,200,000		11,200,000
1.08	Residuals management		25,900,000		25,100,000		25,600,000		26,100,000
1.09	Raw water pump station		-		7,800,000		-		-
1.10	Chlorine contact tank + treated water pump station		12,300,000		7,500,000		12,300,000		12,300,000
1.11	Ancillary pipework (interconnecting pipework and serv		5,300,000		5,300,000		5,300,000		5,300,000
1.12	Power supply and generation		5,000,000		5,000,000		5,000,000		5,000,000
1.13	Administration building		500,000		1,400,000		1,400,000		1,400,000
1.14	Lagoon		-		1,800,000		1,400,000		900,000
1.15	Services relocation		600,000		300,000		100,000		100,000
1.16	Roading and finishing works (inc landscaping)		5,600,000		5,500,000		4,400,000		4,800,000
1.17	Traffic management and temporary works		2,500,000		2,500,000		1,700,000		1,700,000
1.18	Instrumentation and Control and SCADA		9,300,000		9,300,000		9,300,000		9,300,000
1.19	Process commissioning and support		600,000		600,000		600,000		600,000
1.20	Project closeout		700,000		700,000		700,000		700,000
1.21	O&M manuals and training		300,000		300,000		300,000		300,000
1.22	P+G (Contractors onsite overheads and admin costs)		15,400,000		16,100,000		15,400,000		15,500,000
Ancilla	ry Structures (inc P&G)								
2	Reservoirs (civil structure only)		23,400,000		23,400,000		21,700,000		20,200,000
3	Raw water tunnel		-		-		26,000,000		23,200,000
4	Connection to aqueduct		700,000		2,300,000		3,700,000		3,700,000
5	Gravity supply from Upper Nihotupu RWM		-		5,600,000		4,300,000		4,300,000
6	Off-spec discharge		18,600,000		1,100,000		1,500,000		1,900,000
7	Wastewater pipeline		-		-		800,000		900,000
8	Treated water tunnel		20,200,000		20,200,000		-		-
9	Treated water pipeline		24,800,000		26,800,000		30,200,000		31,800,000
10	Offsite Power Upgrades		1,800,000		1,700,000		1,100,000		1,800,000
11	Fibre communications		1,600,000		1,600,000		2,300,000		2,100,000
	SUB-TOTAL		237,400,000		235,700,000		238,000,000		237,000,000
	Design was no govern to another string and contract							1	
	Design, management, construction and contract		25 600 000		35 400 000		25 700 000		25 400 000
	supervision (15%)		35,600,000		35,400,000		35,700,000		35,400,000
	Consent and regulatory fees (2%)		4,700,000		4,700,000		4,800,000		4,700,000
	Client internal costs (3%)		7,100,000		7,100,000		7,100,000		7,100,000
	Lond willebook and calc costs				2 000 000		0.600.000		21 000 000
	Land purchase and sale costs	4	- 204 000 000	<u>,</u>	2,000,000	ć	9,600,000	4	21,000,000
	TOTAL	\$	284,800,000	\$	284,900,000	\$	295,200,000	\$	305,200,000
	Specific Risks (refer to individual site breakdowns)		26,000,000		31,000,000		31,000,000		39 000 000
	TOTAL including specific risks	\$		\$		Ś		Ś	28,000,000
	TOTAL including specific risks	Ş	311,000,000	Ş	316,000,000	Ş	326,000,000	Ģ	333,000,000
	Upper Bound (+25%)	\$	388,750,000	ć	395,000,000	\$	407,500,000	\$	416,250,000
	Opper Bound (+23%)	Ą	388,730,000	Ą	393,000,000	Ą	407,300,000	Ą	410,230,000
	Raw Water Infrastructure Upgrades								
	Upper Nihotupu Raw Watermain (2029-2035)		36,000,000		36,000,000		35,000,000		35,000,000
	Raw Water Aqueduct (2017-2035)		13,300,000		13,300,000		33,000,000		33,000,000
	Treated Water Aqueduct (2017-2033)		14,000,000		14,000,000				
	medica water Aqueduct (2025-2024)		17,000,000		17,000,000				
	NPV 20yr (using WSL inflation rates) including all upg	Ś	368,000,000	\$	369,000,000	\$	359,000,000	\$	367,000,000
	iti v 2091 (using vv32 innation rates) including an app	Y	300,000,000	~	303,000,000	7	333,000,000	7	307,000,000

Notes:

These estimates are based on the GHD civils drawings and information and the Beca information for the ancillary structures.

Rates used in these estimates are based on a mixture of the following:

- CH2M Beca database
- First principles
- Costs from suppliers
- Similar Historical projects

Exclusions:

Excavation in hard rock / basalt
Night or after hours work
Cost for shutting down any existing plant
Asbestos removal / disposal
GST
Escalation after September 2016
Capitalised interest
Costs to date
Operating and Maintenance cost
Insurance costs
Legal and finance fees

Appendix B

Site Specific Risks

Existing Site

\$ 388,408,125

Process costs are concept level. Civil costs are preliminary level.

The estimates are in the order of minus 15% to plus 25% accuracy overall.

See below for additional notes and exclusions.

PRICE UNCERTAINTY
Upper Bound (+25%)

		Baseline Cost	Max Additional Cost	Likelihood	Specific risks	Comments	Assumptions- basis for max additional cost	
1	Water Treatment Plant	146,300,000	Wax riadicional cost	Lincilliood	opecine risks	Comments	7 ESGRIPTIONS DESISTON MAX COCITON COST	
1.01	Site Clearance and Demolition	2,600,000	1,300,000	50%	650,000	Demolition around existing heritage building adds costs and complexity	Half of Demolition estimate	
	Environmental Compliance and Management	900,000	500,000	50%	250,000	Protection of native trees during construction period	Construction of barriers and additional monitoring	
	General Earthworks	2,600,000	8.700.000	50%	4,350,000	Additional piling across the site	Based on 50,000m2 at 5m deep and \$35/m	
1.04	Chemical Systems	8,600,000	2,580,000	30%	774.000	Detailed design adds process and mechanical complexity	30% of cost estimate	
1.05	•	14,000,000	1,400,000	30%	420,000	Detailed design adds process and mechanical complexity	10% of cost estimate	
	BAC filters	22,400,000	2,240,000	30%	672,000	Detailed design adds process and mechanical complexity	10% of cost estimate	
	Ozone	11,200,000	1,120,000	30%	336,000	Detailed design adds process and mechanical complexity	10% of cost estimate	
1.08	Residuals management	25,900,000	2,590,000	30%	777,000	Detailed design adds process and mechanical complexity	10% of cost estimate	
1.09	Raw water pump station	-						
1.10	Chlorine contact tank + treated water pump station	12,300,000	2,000,000	20%	400,000	Additional Noise Control needed	Additional structural noise barriers	
1.11	Ancillary pipework (interconnecting pipework and services)	5,300,000						
1.12	Power supply and generation	5,000,000	500,000	30%	150,000	Detailed design results in greater load from site	10% of cost estimate	
1.13	Administration building	500,000	1,000,000	50%	500,000	Heritage status of existing building	Costs equivalent to a new administration building	
1.14	Lagoon	-						
1.15	Services relocation	600,000	500,000	20%	100,000	Full survey indicates significant services relocation	Costs of temporary and permenant relocation for mul	tiple services
1.16	Roading and finishing works (inc landscaping)	5,600,000	3,600,000	50%	1,800,000	Road reinstatement due to traffic movements during construction	From Titirangi to site	
1.17	Traffic management and temporary works	2,500,000	5,000,000	20%	1,000,000	Additional Landscaping mitigation needed	As per Runciman Reservoir	
1.18	Instrumentation and Control and SCADA	9,300,000	2,325,000	30%	697,500	Detailed design adds control complexity	25% of cost estimate	
1.19	Process commissioning and support	600,000						
1.20	Project closeout	700,000						
1.21	O&M manuals and training	300,000						
1.22	P+G (Contractors onsite Overheads)	15,400,000	3,080,000	50%	1,540,000	Confined Treatment Plant Site	Based on an additional year of construction on site. As	ssumes all P&G costs are time related
Ancilla	ry Structures (inc P&G)							
2	Reservoirs (civil structure only)	23,400,000	8,000,000	50%	4,000,000	Additional preload requirements following geotech investigation	As per Runciman Reservoir	
3	Raw water tunnel	-						
4	Connection to aqueduct	700,000	700,000	50%	350,000	Brownfield site- on site survey identifies complex connection to aqueduct	100% of cost estimate	
5	Gravity supply from Upper Nihotupu RWM	-						
6	Off-spec discharge	18,600,000						
7	Wastewater pipeline		800,000	20%	160,000	Upgrade to wastewater network needed due to insufficent capacity	New 150mm sewer needed 2km in length	
8	Treated water tunnel	20,200,000	3,280,000	50%	1,640,000	Risks due to tunnel length and uncertainty regarding ground conditions	McDow estimate doubled	
9	Treated water pipeline	24,800,000	4,800,000	20%	960,000	Full road reinstatement needed due to narrow road	\$1200/m of road lane	
10	Offsite Power Upgrades	1,800,000	2,000,000	20%	400,000	Back-up supply from a second sub-station needed	Costs from Vector for a Laingholm back-up	
	Fibre communications on raw and treated water network	1,600,000			-			
	SUB-TOTAL	237,400,000			-			
					-			
	Design, management, construction and contract							
	supervision (15%)	35,600,000			-		_	
	Consent and regulatory fees (2%)	4,700,000	8,000,000	50%	4,000,000	Consenting costs in line with Central Interceptor		
	Client internal costs (3%)	7,100,000			-		_	
	Land purchase	-			-		_	
	Land sale	-					_	
	Demolition of existing site	-			-		_	
	TOTAL	\$ 284,800,000	66,015,000		25,926,500		_	
	[4					
	Specific Risks	25,926,500	4					
	TOTAL including appellic side	£ 240 726 500	1					
	TOTAL including specific risks	\$ 310,726,500	_					

Manuka

Process costs are concept level. Civil costs are preliminary level.

The estimates are in the order of minus 15% to plus 25% accuracy overall.

See below for additional notes and exclusions.

		Baseline Cost	May Additional Cost	ام م ما الميال ا	Canaifia siala	Commonto	Assumentions	
1	Water Treatment Plant	153,000,000	Max Additional Cost	Likelinood	Specific risks	Comments	Assumptions	
1.01	Site Clearance and Demolition	700.000						
	Environmental Compliance and Management	1,000,000	500,000	50%	250,000	Protection of native trees during construction period	Construction of barriers and additional monitoring	
	General Earthworks	5,900,000	8,700,000	50%		Additional piling across the site	Based on 50.000m2 at 5m deep and \$35/m	
	Chemical Systems	8,600,000	2,580,000	30%		Detailed design adds process and mechanical complexity	30% of cost estimate	
1.04								
		14,000,000	1,400,000	30%		Detailed design adds process and mechanical complexity	10% of cost estimate	
	BAC filters Ozone	22,400,000	2,240,000	30% 30%	672,000 336,000	Detailed design adds process and mechanical complexity	10% of cost estimate	
		11,200,000	1,120,000		,	Detailed design adds process and mechanical complexity	10% of cost estimate	
	Residuals management	25,100,000	2,510,000	30%	753,000	Detailed design adds process and mechanical complexity	10% of cost estimate	
	Raw water pump station	7,800,000	2 000 000	200/	400.000	Additional Nation Control and deal	Additional standard action is and a	
	Chlorine contact tank + treated water pump station	7,500,000	2,000,000	20%	400,000	Additional Noise Control needed	Additional structural noise barriers	
	Ancillary pipework (interconnecting pipework and services)	5,300,000						
	Power supply and generation	5,000,000	500,000	30%		Detailed design results in greater load from site	10% of cost estimate	
	Administration building	1,400,000	500,000	30%	150,000	Additional Scope from technology, fit out etc		
	Lagoon	1,800,000	1,800,000	50%	900,000	Additional Retaining walls needed due to topography	100% of lagoon costs	
	Services relocation	300,000	500,000	20%		Full survey indicates significant services relocation	Costs of temporary and permenant relocation for	multiple services
	Roading and finishing works (inc landscaping)	5,500,000	3,600,000	50%		Road reinstatement due to traffic movements during construction	From Titirangi to site	
	Traffic management and temporary works	2,500,000	5,000,000	20%	1,000,000	Additional Landscaping mitigation needed	As per Runciman Reservoir	
1.18	Instrumentation and Control and SCADA	9,300,000	2,325,000	30%	697,500	Detailed design adds control complexity	25% of cost estimate	
1.19	Process commissioning and support	600,000						
	Project closeout	700,000						
	O&M manuals and training	300,000						
	P+G (Contractors onsite overheads and admin costs)	16,100,000	3,220,000	50%	1,610,000	Confined Treatment Plant Site	Based on an additional year of construction on site	e. Assumes all P&G costs are time relat
Ancilla	ry Structures (inc P&G)							
2	Reservoirs (civil structure only)	23,400,000	8,000,000	50%	4,000,000	Additional preload requirements following geotech investigation	As per Runciman Reservoir	
3	Raw water tunnel	-						
4	Connection to aqueduct	2,300,000	700,000	50%	350,000	Brownfield site- on site survey identifies complex connection to aqueduct	100% of cost estimate to connect to existing aquif	er
5	Gravity supply from Upper Nihotupu RWM	5,600,000						
6	Off-spec discharge	1,100,000	16,900,000	20%	3,380,000	Lagoon is insufficient-Muddy Creek Pipeline is also needed	Cost of Muddy Creek Pipeline	
7	Wastewater pipeline		800,000	20%	160,000	Upgrade to wastewater network needed due to insufficent capacity	New 150mm sewer needed 2km in length	
8	Treated water tunnel	20,200,000	3,280,000	50%	1,640,000	Risks due to tunnel length and uncertainty regarding ground conditions	McDow estimate doubled	
9	Treated water pipeline	26,800,000	4,800,000	20%	960,000	Full road reinstatement needed due to narrow road	\$1200/m of road lane	
10	Offsite Power Upgrades	1,700,000	2,000,000	20%	400,000	Back-up supply from a second sub-station needed	Costs from Vector for a Laingholm back-up	
11	Fibre communications on raw and treated water network	1,600,000			-			
	SUB-TOTAL	235,700,000			-			
					-		-	
	Design, management, construction and contract						7	
	supervision (15%)	35,400,000			-			
	Consent and regulatory fees (2%)	4,700,000	8,000,000	50%	4,000,000	Consenting costs in line with Central Interceptor	1	
	Client internal costs (3%)	7,100,000	1,420,000	50%	710,000	Confined Treatment Plant Site	Based on an additional year of construction on site	e. Assumes all P&G costs are time relat
		.,,	_,,	2070	,,,,,,		1	
	Land purchase	-	+				1	
	Land sale	<u> </u>	-				1	
	Demolition of existing site	2,000,000	2,000,000	50%	1 000 000	Demolition around existing heritage building adds costs and complexity	1	
	TOTAL	\$ 284,900,000	86,395,000	3076	30,962,500	bemonton around existing heritage banding adds costs and complexity	<u> </u>	
		Ç 204,500,000	00,333,000		55,502,500		_	
	Specific Risks	30,962,500	1					
Ь	opecine nisks	30,302,300	1					
	TOTAL including specific risks	\$ 315,862,500	1					
	TOTAL medunik specific risks	3 313,002,500	1					
	PRICE UNCERTAINTY	1	1					
	Upper Bound (+25%)	\$ 394,828,125	-					
	Opper Bouriu (+25%)	⇒ 354,8∠8,1∠5	1					

PRICE UNCERTAINTY
Upper Bound (+25%)

Parker North

\$ 407,639,125

Process costs are concept level. Civil costs are preliminary level.

The estimates are in the order of minus 15% to plus 25% accuracy overall.

See below for additional notes and exclusions.

		Danalia - Cast		101101	C:6::-!	Ic	[a	1
	hu . =		Max Additional Cost	Likelinood	Specific risks	Comments	Assumptions	
1 01	Water Treatment Plant	146,400,000						
1.01		1,200,000						
1.02	·	900,000	0.700.000	500/	4.250.000	* 1 Pr 1 Pr 1 Pr	D 1 50000 0 15 1 1405/	
1.03		4,600,000	8,700,000	50%	4,350,000		Based on 50,000m2 at 5m deep and \$35/m	
1.04		8,600,000	2,580,000	30%	774,000		30% of cost estimate	
	DAF	14,000,000	1,400,000	30%	420,000		10% of cost estimate	
1.06		22,400,000	2,240,000	30%	672,000		10% of cost estimate	
1.07		11,200,000	1,120,000	30%	336,000	<u> </u>	10% of cost estimate	
1.08		25,600,000	2,560,000	30%	768,000	Detailed design adds process and mechanical complexity	10% of cost estimate	
1.09		-						
1.10		12,300,000	2,000,000	20%	400,000	Additional Noise Control needed	Additional structural noise barriers	
1.11	711 (011	5,300,000						
1.12	11.7	5,000,000	500,000	30%	150,000	ů ů	10% of cost estimate	
1.13		1,400,000	500,000	30%	150,000	Additional Scope from technology, fit out etc		
1.14	0	1,400,000]
1.15		100,000	500,000	10%	50,000	, ,	Costs of temporary and permenant relocation for	multiple servic
1.16		4,400,000	5,000,000	20%	1,000,000	Additional Landscaping mitigation needed	As per Runciman Reservoir	
1.17	. ,	1,700,000						
1.18		9,300,000	2,325,000	30%	697,500	Detailed design adds control complexity	25% of cost estimate	
1.19	ŭ 11	600,000						
1.20		700,000						
	O&M manuals and training	300,000						
1.22	P+G (Contractors onsite Overheads)	15,400,000						
Ancil	ary Structures (inc P&G)							
2	Reservoirs (civil structure only)	21,700,000	8,000,000	50%	4,000,000	Additional preload requirements following geotech investigation	As per Runciman Reservoir	
3	Raw water tunnel	26,000,000	8,356,000	50%	4,178,000	Risks due to tunnel length and uncertainty regarding ground conditions	McDow estimate doubled	
							\$1500 for install from MacDow plus \$1700 for	
			9,191,600	50%	4,595,800	Internal pipe to tunnel needed to prevent water losses to groundwater	pipe purchase plus on costs plus contingency	
4	Connection to aqueduct	3,700,000	2,000,000	20%	400,000	Additional communications needed to provide control at the raw water sources		
5	Gravity supply from Upper Nihotupu RWM	4,300,000						
6	Off-spec discharge	1,500,000	500,000	50%	250,000	Ecological remediation needed due to location of discharge		
7	Wastewater pipeline	800,000	2,000,000	20%	400,000	Wastewater pipeline needs to be deeper to be gravity or a pump station is needed	Approximate pump station cost	
8	Treated water tunnel	-						
9	Treated water pipeline	30,200,000	2,040,000	50%	1,020,000	Full road reinstatement needed in Parker Rd due to narrow roac	\$1200/m of road lane	
10	Offsite Power Upgrades	1,100,000	2,000,000	20%	400,000	Back-up supply from a second sub-station needed	As per Woodlands sites	
11	Fibre communications on raw and treated water network	2,300,000			-			1
	SUB-TOTAL	238,000,000			-			1
								1
	Design, management, construction and contract		1				7	
	supervision (15%)	35,700,000			_			
	Consent and regulatory fees (2%)	4,800,000	8,000,000	50%	4,000,000	Consenting costs in line with Central Interceptor	1	
	Client internal costs (3%)	7,100,000	5,555,666	5570	-,000,000		1	
		7,200,000					1	
	Land purchase	12,100,000					1	
	Land sale	- 4,500,000	4,500,000	20%	900 000	Land sale unsuccessful- (contaminated land/heritage value)	┪	
	Demolition of existing site	2,000,000	2,000,000	50%		Demolition around existing heritage building adds costs and complexity	1	
	TOTAL	\$ 295,200,000	78,012,600	30%	30,911,300	Demonstron around existing heritage building adds costs and complexity	1	
	IVIAL	7 293,200,000	75,012,000		30,311,300		-	
	Capaifia Biaka	20.011.200	1					
	Specific Risks	30,911,300	ĺ					
	TOTAL traduction are efficiented.	£ 226 444 222	1					
	TOTAL including specific risks	\$ 326,111,300	1					

PRICE UNCERTAINTY
Upper Bound (+25%)

Parker South

\$ 416,651,125

Process costs are concept level. Civil costs are preliminary level.

The estimates are in the order of minus 15% to plus 25% accuracy overall.

See below for additional notes and exclusions.

						T		i
-			Max Additional Cost	Likelihood	Specific risks	Comments	Assumptions	
1	Water Treatment Plant	147,100,000						
	Site Clearance and Demolition	1,000,000						
	Environmental Compliance and Management	900,000						
1.03	General Earthworks	5,000,000	8,700,000	50%	4,350,000	Additional piling across the site	Based on 50,000m2 at 5m deep and \$35/m	
	Chemical Systems	8,600,000	2,580,000	30%	774,000	<u> </u>	30% of cost estimate	
1.05		14,000,000	1,400,000	30%	420,000	Detailed design adds process and mechanical complexity	10% of cost estimate	
1.06	BAC filters	22,400,000	2,240,000	30%	672,000	Detailed design adds process and mechanical complexity	10% of cost estimate	
1.07	Ozone	11,200,000	1,120,000	30%	336,000	Detailed design adds process and mechanical complexity	10% of cost estimate	
1.08	Residuals management	26,100,000	2,610,000	30%	783,000	Detailed design adds process and mechanical complexity	10% of cost estimate	
1.09	Raw water pump station	-						
1.10	Chlorine contact tank + treated water pump station	12,300,000	2,000,000	20%	400,000	Additional Noise Control needed	Additional structural noise barriers	
1.11	Ancillary pipework (interconnecting pipework and services)	5,300,000						
1.12	Power supply and generation	5,000,000	500,000	30%	150,000	Detailed design results in greater load from site	10% of cost estimate	
1.13	Administration building	1,400,000	500,000	30%	150,000	Additional Scope from technology, fit out etc		
1.14	Lagoon	900,000						
	Services relocation	100,000	500,000	10%	50,000	Full survey indicates significant services relocation	Costs of temporary and permenant relocation for	multiple services
1.16	Roading and finishing works (inc landscaping)	4,800,000	5,000,000	20%	1,000,000	Additional Landscaping mitigation needed	As per Runciman Reservoir	
	Traffic management and temporary works	1,700,000						
1.18	Instrumentation and Control and SCADA	9,300,000	2,325,000	30%	697,500	Detailed design adds control complexity	25% of cost estimate	
1.19	Process commissioning and support	600,000						
1.20	Project closeout	700,000						
1.21	O&M manuals and training	300,000						
1.22	P+G (Contractors onsite Overheads)	15,500,000						
Ancill	ry Structures (inc P&G)							
2	Reservoirs (civil structure only)	20,200,000	8,000,000	50%	4,000,000	Additional preload requirements following geotech investigation	As per Runciman Reservoir	
3	Raw water tunnel	23,200,000	7,208,000	50%	3,604,000	Risks due to tunnel length and uncertainty regarding ground conditions	McDow estimate doubled	
							\$1500 for install from MacDow plus \$1700 for	
			7,928,800	50%	3,964,400	Internal pipe to tunnel needed to prevent water losses to groundwater	pipe purchase plus on costs plus contingency	
4	Connection to aqueduct	3,700,000	2,000,000	20%	400,000	Additional communications needed to provide control at the raw water sources		
5	Gravity supply from Upper Nihotupu RWM	4,300,000						
6	Off-spec discharge	1,900,000	500,000	50%	250,000	Ecological remediation needed due to location of discharge		
7	Wastewater pipeline	900,000	2,000,000	20%	400,000	Wastewater pipeline needs to be deeper to be gravity or a pump station is needed	Approximate pump station cost	
8	Treated water tunnel	-						
9	Treated water pipeline	31,800,000	2,640,000	50%	1,320,000	Full road reinstatement needed in Parker Rd due to narrow roac	\$1200/m of road lane	
10	Offsite Power Upgrades	1,800,000	2,000,000	20%	400,000	Back-up supply from a second sub-station needed	As per Woodlands sites	
11	Fibre communications on raw and treated water network	2,100,000			-			
	SUB-TOTAL	237,000,000			-			
					-		_	•
	Design, management, construction and contract						7	
	supervision (15%)	35,400,000			-			
	Consent and regulatory fees (2%)	4,700,000	8,000,000	50%	4,000,000	Consenting costs in line with Central Interceptor	1	
	Client internal costs (3%)	7,100,000			-	·	1	
	, ,						1	
	Land purchase	23,500,000					1	
	Land sale	- 4,500,000	4,500,000	20%	900,000	Land sale unsuccessful- (contaminated land/heritage value)	1	
	Demolition of existing site	2,000,000	2,000,000	50%	1,000,000		1	
	TOTAL	\$ 305,200,000	69,751,800		28,120,900	1	_	
		,,	11, 1,400		-, -,		_	
	Specific Risks	28,120,900	1					
	- - - - - - - - - -	20,120,500	1					
	TOTAL including specific risks	\$ 333,320,900	1					

Appendix C

NPV Summary

Existing Site			Manuka Road			Parker Rd North			Parker Rd South	
Huia WTP	\$	311,000,000	Huia WTP	\$	316,000,000	Huia WTP	\$	326,000,000	Huia WTP	\$ 333,000,000
Huia Opex	\$	3,660,000	Huia Opex	\$	3,660,000	Huia Opex	\$	3,660,000	Huia Opex	\$ 3,660,000
	_	racted from total)	Cost Savings (sul	_		Cost Savings (subtra		ed from total)	Cost Savings (subtra	d from total)
TW Aqueduct	\$	14,000,000	TW Aqueduct	\$	14,000,000	TW Aqueduct	\$	-	TW Aqueduct	\$ -
RW Aqueduct	\$	13,300,000	RW Aqueduct	\$	13,300,000	RW Aqueduct	\$	-	RW Aqueduct	\$ -
Upper Niho	\$	36,000,000	Upper Niho	\$	36,000,000	Upper Niho	\$	35,000,000	Upper Niho	\$ 35,000,000
Waitakere	\$	-	Waitakere	\$	-	Waitakere	\$	-	Waitakere	\$ -
NPV (20yr) ¹	\$	368,000,000	NPV (20vr) ¹	\$	369,000,000	NPV (20vr) ¹	\$	359,000,000	NPV (20vr) ¹	\$ 367,000,000
2016	_	6,220,000	2016	_	6,320,000	2016	\$	6,520,000	2016	\$ 6,660,000
2017	-	26,210,000	2017	\$	26,610,000	2017	\$	26,080,000	2017	\$ 26,640,000
2018	\$	32,430,000	2018	\$	32,930,000	2018	\$	32,600,000	2018	\$ 33,300,000
2019	_	62,200,000	2019	_	63,200,000	2019	_	65,200,000	2019	\$ 66,600,000
2020	•	77,750,000	2020	\$	79,000,000	2020	\$	81,500,000	2020	\$ 83,250,000
2021	\$	62,200,000	2021 2022	\$	63,200,000	2021 2022	\$	65,200,000	2021	\$ 66,600,000
2022 2023	\$	31,100,000 22,550,000	2022	\$	31,600,000 22,800,000	2022	\$	32,600,000 16,300,000	2022 2023	\$ 33,300,000 16,650,000
2023	\$	10,660,000	2023	\$	10,660,000	2023	\$	3,660,000	2023	\$ 3,660,000
2025	_	3,660,000	2025	\$	3,660,000	2025	\$	3,660,000	2025	\$ 3,660,000
2026	_	6,320,000	2026	\$	6,320,000	2026	\$	3,660,000	2026	\$ 3,660,000
2027	\$	6,320,000	2027	\$	6,320,000	2027	\$	3,660,000	2027	\$ 3,660,000
2028	\$	3,660,000	2028	\$	3,660,000	2028	\$	3,660,000	2028	\$ 3,660,000
2029	\$	7,260,000	2029	\$	7,260,000	2029	\$	7,160,000	2029	\$ 7,160,000
2030	_	9,060,000	2030	\$	9,060,000	2030	\$	8,910,000	2030	\$ 8,910,000
2031	\$	14,460,000	2031	\$	14,460,000	2031	\$	14,160,000	2031	\$ 14,160,000
2032 2033	\$	10,860,000 10,860,000	2032 2033	\$	10,860,000	2032 2033	\$	10,660,000	2032 2033	\$ 10,660,000
2033	\$	8,120,000	2033	\$	8,120,000	2033	\$	5,410,000	2033	\$ 5,410,000
2035	\$	6,320,000	2035	\$	6,320,000	2035	\$	3,660,000	2035	\$ 3,660,000
2036	_	3,660,000	2036	\$	3,660,000	2036	\$	3,660,000	2036	\$ 3,660,000
2037	\$	3,660,000	2037	\$	3,660,000	2037	\$	3,660,000	2037	\$ 3,660,000
2038	\$	3,660,000	2038	\$	3,660,000	2038	\$	3,660,000	2038	\$ 3,660,000
2039	\$	3,660,000	2039	\$	3,660,000	2039	\$	3,660,000	2039	\$ 3,660,000
2040		3,660,000	2040	\$	3,660,000	2040	\$	3,660,000	2040	\$ 3,660,000
2041	\$	3,660,000	2041	\$	3,660,000	2041	\$	3,660,000	2041	\$ 3,660,000
2042	\$	3,660,000	2042	\$	3,660,000	2042	\$	3,660,000	2042	\$ 3,660,000
2043 2044	\$	3,660,000	2043 2044	\$	3,660,000	2043 2044	\$	3,660,000	2043	\$ 3,660,000
2044	\$	3,660,000 3,660,000	2044	\$	3,660,000 3,660,000	2044	\$	3,660,000 3,660,000	2044 2045	\$ 3,660,000 3,660,000
2046	\$	3,660,000	2046	\$	3,660,000	2046	\$	3,660,000	2045	\$ 3,660,000
2047	\$	3,660,000	2047	\$	3,660,000	2047	\$	3,660,000	2047	\$ 3,660,000
2048	_	3,660,000	2048	\$	3,660,000	2048	\$	3,660,000	2048	\$ 3,660,000
2049	\$	3,660,000	2049	\$	3,660,000	2049	\$	3,660,000	2049	\$ 3,660,000
2050	\$	3,660,000	2050	\$	3,660,000	2050	\$	3,660,000	2050	\$ 3,660,000
2051	\$	3,660,000	2051	\$	3,660,000	2051	\$	3,660,000	2051	\$ 3,660,000
2052		3,660,000	2052	\$	3,660,000	2052	\$	3,660,000	2052	\$ 3,660,000
2053	\$	3,660,000	2053	\$	3,660,000	2053	\$	3,660,000	2053	\$ 3,660,000
2054	\$	3,660,000	2054	\$	3,660,000	2054	\$	3,660,000	2054	\$ 3,660,000
2055		3,660,000	2055	\$	3,660,000	2055	\$	3,660,000	2055	\$ 3,660,000
2056	_	3,660,000	2056	\$	3,660,000	2056	\$	3,660,000	2056	\$ 3,660,000
2057 2058	_	3,660,000 3,660,000	2057 2058	\$	3,660,000	2057	\$	3,660,000	2057 2058	\$ 3,660,000
2058	-	3,660,000	2058	\$	3,660,000 3,660,000	2058 2059	\$	3,660,000 3,660,000	2058	\$ 3,660,000 3,660,000
2060	_	3,660,000	2060	\$	3,660,000	2060	\$	3,660,000	2060	\$ 3,660,000
2061	\$	3,660,000	2061	\$	3,660,000	2061	\$	3,660,000	2061	\$ 3,660,000
2062	_	3,660,000	2062	\$	3,660,000	2062	\$	3,660,000	2062	\$ 3,660,000
2063	_	3,660,000	2063	\$	3,660,000	2063	\$	3,660,000	2063	\$ 3,660,000
2064	_	3,660,000	2064	\$	3,660,000	2064	\$	3,660,000	2064	\$ 3,660,000
2065	\$	3,660,000	2065	\$	3,660,000	2065	\$	3,660,000	2065	\$ 3,660,000
		ing Watercares NPV								

¹NPV Calculated using Watercares NPV Spreadsheet

Appendix D

Detailed Site Cost Estimates

Appendix D1: Existing Site

GENERAL SUMMARY COMPANY: Beca

PROJECT : HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

DATE : Thu 08 Sep 2016 03:25pm SubTitle : July 2016 Bid Currency : NZD

	Title . July 2010				-
CO	SECTION NAME	UNIT	QTY	RATE	COST
	HUIA WATER TREATMENT PLANT OPTIONS				
	MIX OF CONCEPT (PROCESS) AND PRELIMINARY (CIVILS) DESIGN COST ESTIMATES: Note: These estimates are in the order of minus 15% to plus 25% accuracy overall.				
	EXISTING SITE OPTION				
	Civil Works				96,410,000
)	Process Plant and Equipment				76,820,000
}	Ancillary Structures				64,290,000
	Construction Subtota	ı			237,520,000
ļ	Implementation Costs				47,500,000
5	Land Costs - No Land Purchase				,,,,,,,
	Indirects Subtota				47,500,000
	munects outstote	•			47,300,000
	EXISTING SITE TOTAL	-			285,020,000
	NOTES These estimates are based on the GHD civils drawings and information and the Beca information for the process mechanical, electrical and ancillary structures. Rates used in these estimates are based on a mixture of the following: - CH2M Beca database - First principles - Costs from suppliers - Similar historical projects An estimating contingency has been included in the estimate to cover items of unforeseen detail and design development. This contingency is expected to be converted to scope and therefore should not be regarded as discretionary.				
	EXCLUSIONS Excavation in hard rock / basalt				

GS/1 6511164 EXISTING REV 1

GENERAL SUMMARY COMPANY: Beca

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

DATE : Thu 08 Sep 2016 03:25pm SubTitle : July 2016 Bid Currency : NZD

со	SECTION NAME	UNIT	QTY	RATE	COST
	Night or after hours work				
	Cost for shutting down any existing plant.				
	Specific construction noise control measures				
	Asbestos removal / disposal				
	GST				
	Project Contingency				
	Escalation after September 2016				
	Capitalised interest				
	Costs to date				
	Operating and Maintenance cost				
	Insurance costs				
	Legal and finance fees				
	TOTALS OF SELECTED SECTIONS	NZ\$			285,020,000

GS/2 6511164 EXISTING REV 1

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

SubTitle: July 2016

COMPANY : Beca
DATE : Thu 08 Sep 2016 03:25pm

Bid Currency : NZD

	SubTitle : July 2016 Bid Currency : NZI					
QREF	DESCRIPTION		UNIT	QTY	RATE	СО
	CIVIL WORKS - EXISTING SITE OPTION					
	Site Clearance and Demolition					
	Clear site - remove vegetation, etc.		m2	53,000	7.00	371,
	Demolish buildings and plant		sum	1	2,000,000.00	2,000,
		Sub Total	**			2,371,
	Environmental Compliance and Management					
	Allowance for environmental compliance including erosion and sediment control		sum	1	850,000.00	850
		Sub Total		·	000,000.00	850,
	General Earthworks					
	Allowance for the contractors laydown area					
	- assume 300 thick hardfill including removal on complation		m2	2,500	50.00	125
	Total cut		m3	30,030		
	Total fill		m3	29,800		
	Remove topsoil and respeads on completion - say 150 thick		m3	7,950	45.00	357
	Cut to fill - assume 50% of fill can be obtained from cut material		m3	14,900	12.00	178
	Cut to waste		m3	15,130	40.00	605
	Imported fill		m3	14,900	50.00	745
	Allowance for undercut in soft spots including imported fill - assume 10% of					
	cut volume		m3	3,003	110.00	330
		Sub Total	**			2,342
	Chemical Storage Building					
	Piling - no piling needed		note			
	500 th reinforced concrete floor slab including foundation beams		m2	61	844.00	51
	250 th reinforced concrete floor slab including foundation beams		m2	793	695.00	551
	Allowance for plinths and miscellaneous works		sum	1	75,000.00	75
	Sealer to bunded floors		m2	757	150.00	113

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

SubTitle : July 2016

COMPANY : Beca

DATE : Thu 08 Sep 2016 03:25pm Bid Currency : NZD

Allowa includ Allowa suppo Allowa bollare Allowa Small Mecha	wance for 250 th concrete screen walls uding foundations wance for roofing including steel port wance for miscellaneous works - stairs, ards, etc. wance for roller door all power and lighting chanical ventilation inkler system including smoke and heat	m2 m2 sum no m2	1,534 252 903 1 10	560.00 790.00 500.00 50,000.00 12,000.00	859,040 199,080 451,500 50,000
Allowa suppo Allowa bollare Allowa Small Mecha	wance for roofing including steel port wance for miscellaneous works - stairs, ards, etc. wance for roller door all power and lighting chanical ventilation inkler system including smoke and heat	m2 sum no m2	903	500.00 50,000.00	451,500
Allowa bollard Allowa Small Mecha	wance for miscellaneous works - stairs, ards, etc. wance for roller door all power and lighting chanical ventilation inkler system including smoke and heat	sum no m2	1 10	50,000.00	
bollard Allowa Small Mecha	ards, etc. wance for roller door all power and lighting chanical ventilation inkler system including smoke and heat	no m2			50,000
Small Mecha	all power and lighting chanical ventilation inkler system including smoke and heat	m2		12,000.00	
Mecha	chanical ventilation inkler system including smoke and heat		054	l	120,000
	inkler system including smoke and heat		854	100.00	85,400
		m2	520	350.00	182,000
Sprink detect	ection	m2	854	110.00	93,940
Allowa	wance for drainage	sum	1	100,000.00	100,000
	Sub Total	**			2,932,129
	. O. D. 11.11				
	orine Storage Building				
the ch	e: Assume the building is the same as chemical storage building as there is design info for this building	note			
Piling	ng - no piling needed	note			
	e for Chemical Storage applied to this dings area	m2	189	3,400.00	642,600
	Sub Total	**			642,600
Electi	ctrical Compound				
Piling	ng - no piling needed	note			
	th reinforced concrete floor slab uding foundation beams	m2	215	595.00	127,925
	wance for plinths and miscellaneous		_	40,000,00	40.000
works		sum	1	10,000.00	10,000
		m2	60	300.00	18,000
	·	m2	499	540.00	269,460
suppo	wance for roofing including steel port	m2	215	450.00	96,750
	wance for miscellaneous works - stairs, ards, etc.	sum	1	20,000.00	20,000
Allowa high	wance for roller door - approx. 5m x 4m	no	1	12,000.00	12,000

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

SubTitle : July 2016

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BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Allowance for roller door - approx. 3m x 3m high	no	1	8,000.00	8,000
	Small power and lighting	m2	215	100.00	21,500
	Mechanical ventilation	m2	215	300.00	64,500
	Extra value for air conditioning to the 11kV switchroom	m2	53	600.00	31,800
	Sprinkler system including smoke and heat detection	m2	215	110.00	23,650
	Allowance for drainage	sum	1	25,000.00	25,000
	Sub Tota	al **			728,585
	DAF Tank				
	Piling - no piling needed	note			
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	1,526	800.00	1,220,800
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	852	45.00	38,340
	500 th reinforced concrete floor slab	m2	2,053	675.00	1,385,775
	300 th reinforced concrete walls	m2	3,818	755.00	2,882,590
	Allowance for walkways over the tank	m2	201	1,060.00	213,060
	Allowance for roof and wall cladding including structures - Colorsteel on epoxy coated structural steel	m2	2,053	570.00	1,170,210
	Small power and lighting	m2	2,053	70.00	143,710
	Mechanical ventilation	m2	2,053	100.00	205,300
	Extra value for air conditioning to the MCC room	m2	43	600.00	25,800
	Allowance for miscellaneous works	sum	1	500,000.00	500,000
	Allowance for drainage	sum	1	100,000.00	100,000
	Sub Tota	al **			7,885,585
	Ozone Generator Room				
	Piling - no piling needed	note			
	300 th reinforced concrete floor slab including foundation beams	m2	294	595.00	174,930
	Allowance for plinths and miscellaneous				

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PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

COMPANY: Beca

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BQREF DESCRIPTION UNIT QTY RATE COST 30,000.00 30,000 works sum m2 581 540.00 313,740 200 th precast concrete walls Allowance for roofing including steel 294 support m2 450.00 132,300 Allowance for miscellaneous works bollards, etc. sum 1 10,000.00 10,000 Allowance for roller door - approx. 5m x 4m 12,000.00 36,000 high no 3 m2 294 100.00 29.400 Small power and lighting Mechanical ventilation m2 294 300.00 88,200 Sprinkler system including smoke and heat detection m2 294 110.00 32,340 Allowance for drainage sum 25,000.00 25,000 Sub Total ** 871,910 **Ozone Contact Tank** Piling - no piling needed note Temporary sheet piles to average 10m BGL all round including waler beams and ties m2 600 730.00 438,000 Excavate and cart away - in general earthworks note Backfill with excavated material m3 522 45.00 23,490 500 th reinforced concrete floor slab 418 655.00 273,790 m2 618.00 500 th reinforced concrete upper floors m2 79 48,822 500 th reinforced concrete walls m2 682 870.00 593,340 400 th reinforced concrete walls 827 776.00 641,752 m2 Allowance for cover and walkways over the central area m2 116 630.00 73,080 Allowance for roof and wall cladding including structures - Colorsteel on epoxy m2 418 660.00 275,880 coated structural steel 70.00 Small power and lighting m2 418 29,260 Mechanical ventilation m2 418 100.00 41.800 Allowance for miscellaneous works 100,000.00 100,000 sum 35,000.00 35,000 Allowance for drainage sum Sub Total ** 2,574,214

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COMPANY : Beca PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION DATE: Thu 08 Sep 2016 03:25pm

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BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	BAC Filter Tank				
	Piling - no piling needed	note			
	Temporary sheet piles to average 10m BGL all round including waler beams and ties	m2	1,500	810.00	1,215,000
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	1,350	45.00	60,750
	400 th reinforced concrete floor slab	m2	2,085	608.00	1,267,680
	400 th reinforced concrete upper floors	m2	3,225	576.00	1,857,600
	400 th reinforced concrete walls	m2	4,837	830.00	4,014,710
	Inlet channnel works	sum	1	330,000.00	330,000
	Allowance for cover and walkways over the inlet channel/open gallery area	m2	523	540.00	282,420
	Allowance for roof and wall cladding including structures - Colorsteel on epoxy coated structural steel	m2	2,065	590.00	1,218,350
	Small power and lighting	m2	2,065	70.00	144,550
	Mechanical ventilation	m2	2,065	100.00	206,500
	Allowance for miscellaneous works	sum	1	300,000.00	300,000
	Allowance for drainage	sum	1	100,000.00	100,000
	Sub Tota	**			10,997,560
	Chlorine Contact Tank				
	Piling - no piling needed	note			
	Temporary sheet piles to average 15m BGL all round including waler beams and ties	m2	2,093	700.00	1,465,100
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	1,113	45.00	50,085
	500 th reinforced concrete floor slab	m2	1,553	655.00	1,017,215
	500 th reinforced concrete walls	m2	1,647	845.00	1,391,715
	300 th reinforced concrete walls	m2	1,078	734.00	791,252
	Allowance for a cover over the tank	m2	1,553	700.00	1,087,100
	Allowance for miscellaneous works	sum	1	200,000.00	200,000
	Allowance for drainage	sum	1	35,000.00	35,000
	Sub Tota	**			6,037,467

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

COMPANY : Beca

DATE: Thu 08 Sep 2016 03:25pm SubTitle : July 2016 Bid Currency : NZD

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Treated Water Pump Station				
	Piling - no piling needed	note			
	Temporary sheet piles to average 15m BGL				
	all round including water beams and ties	m2	893	800.00	714,400
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	471	45.00	21,195
	250 th reinforced concrete floor slab	m2	386	480.00	185,280
	400 th reinforced concrete upper floors	m2	386	576.00	222,336
	Allowance for pump plinths	sum	1	25,000.00	25,000
	250 th reinforced concrete walls	m2	476	590.00	280,840
	Allowance for upper structure and roofing including steel support	m2	386	1,300.00	501,800
	Allowance for miscellaneous works	sum	1	150,000.00	150,000
	Allowance for drainage	sum	1	35,000.00	35,000
	Sub Total	**			2,135,851
	Washout Balance Tank				
	Piling - assume 600mm dia x 15m long				
	in-situ concrete piles at average 4m c/c (no permanent liners)	no	15	10,500.00	157,500
	Temporary sheet piles to average 11m BGL all round including waler beams and ties	m2	990	750.00	742,500
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	510	45.00	22,950
	500 th reinforced concrete floor slab	m2	404	544.00	219,776
	400 th reinforced concrete walls	m2	628		
	Allowance for miscellaneous works	sum	1	25,000.00	·
	Sub Total			,	1,670,126
	Shidas Dalanas Touk				
	Sludge Balance Tank				
	Piling - assume 600mm dia x 15m long in-situ concrete piles at average 4m c/c (no permanent liners)	no	20	10,500.00	210,000
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	504	865.00	435,960

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PROJECT : HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

COMPANY : Beca
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SubTitle . Ju	tile . July 2010				
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	283	45.00	12,735
	250 th reinforced concrete floor slab	m2	272	432.00	117,504
	300 th reinforced concrete walls	m2	321	756.00	242,676
	Allowance for miscellaneous works	sum	1	25,000.00	25,000
	Sub Tota	l **			1,043,875
	Supernatant Return Tank				
	Piling - assume 600mm dia x 15m long in-situ concrete piles at average 4m c/c (no permanent liners)	no	20	10,500.00	210,000
	Temporary sheet piles to average 10m BGL all round including waler beams and ties	m2	760	770.00	585,200
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	402	45.00	18,090
	250 th reinforced concrete floor slab	m2	301	432.00	130,032
	300 th reinforced concrete walls	m2	471	756.00	356,076
	Allowance for miscellaneous works	sum	1	25,000.00	25,000
	Sub Tota	l **			1,324,398
	Sludge Thickener Feed Tank				
	Piling - no piling needed	note			
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	322	790.00	254,380
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	175	45.00	7,875
	250 th reinforced concrete floor slab	m2	86	432.00	37,152
	300 th reinforced concrete walls	m2	171	756.00	129,276
	Allowance for miscellaneous works	sum	1	15,000.00	
	Sub Total	l **			443,683
	Sludge Thickeners (2 No)				
	Note: The following cost is for one tank (see last item for second tank)	note			

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

SubTitle : July 2016

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SubTitle . Ju	DTITLE : JULY 2016 BIG CURRENCY : NZD				
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Piling - no piling needed	note			
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	385	890.00	342,650
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	390	45.00	17,550
	Average 700 th reinforced concrete floor slab	m2	144	760.00	109,440
	250 th reinforced concrete walls	m2	215	800.00	172,000
	250 th reinforced concrete channel floor	m2	45	560.00	25,200
	Allowance for miscellaneous works	sum	1	50,000.00	50,000
	Add the above total for the scond tank	sum	1	716,840.00	716,840
	Sub Tota	**			1,433,680
	Washwater Thickeners (2 No)				
	Note: The following cost is for one tank (see last item for second tank)	note			
	Piling - assume 600mm dia x 15m long in-situ concrete piles at average 4m c/c (no permanent liners)	no	22	10,500.00	231,000
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	385	890.00	342,650
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	390	45.00	17,550
	Average 700 th reinforced concrete floor slab	m2	144	760.00	109,440
	250 th reinforced concrete walls	m2	215	800.00	172,000
	250 th reinforced concrete channel floor	m2	45	560.00	25,200
	Allowance for miscellaneous works	sum	1	50,000.00	50,000
	Add the above total for the scond tank	sum	1	947,840.00	947,840
	Sub Tota	**			1,895,680
	Sludge Dewatering Building (Filter Press)				
	Piling - assume 600mm dia x 15m long in-situ concrete piles at average 4m c/c (no permanent liners)	no	20	10,500.00	210,000
	Building area	m2	656		

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

SubTitle : July 2016

COMPANY : Beca DATE : Thu 08 Sep 2016 03:25pm

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Sub little : .	oTitle: July 2016 Bid Currency: NZD					
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST	
	300 th reinforced concrete floor slab including foundation beams	m2	524	595.00	311,780	
	300 th reinforced concrete upper floor	m2	269	514.00	138,266	
	200 th precast concrete walls	m2	1,413	540.00	763,020	
	400 x 400 concrete columns	m	54	400.00	21,600	
	Allowance for roofing including structure	m2	404	450.00	181,800	
	Stair rising 6m	no	1	21,000.00	21,000	
	Allowance for plinths and miscellaneous works	sum	1	75,000.00	75,000	
	Allowance for roller door	no	3	12,000.00	36,000	
	Small power and lighting	m2	656	100.00	65,600	
	Mechanical ventilation	m2	656	350.00	229,600	
	Extra value for air conditioning to the MCC/office room	m2	34	400.00	13,600	
	Sprinkler system including smoke and heat detection	m2	656	110.00	72,160	
	Allowance for drainage	sum	1	100,000.00	100,000	
	Sul	b Total **			2,239,426	
	Reservoirs (2 No)					
	Note: The following cost is for one reservoir (see last item for second					
	reservoir)	note	00.005			
	Reservoir volume	m3	28,905			
	Retaining wall - say average 8m high x 80m long	m2	640	1,500.00	960,000	
	Piling - assume 600mm dia x 15m long in-situ concrete piles at average 5m c/c					
	(no permanent liners)	no	120	10,500.00	1,260,000	
	500 th reinforced concrete floor slab	m2	2,915	690.00	2,011,350	
	400 th reinforced concrete walls	m2	1,912	1,200.00	2,294,400	
	500 th reinforced concrete roof slab including allowance for internal colums, etc.	m2	2,915	845.00	2,463,175	
	Stairs rising 10m and balustrade around the top of the reservoir	sum	1	100,000.00	100,000	
	Allowance for miscellaneous works	sum	1	250,000.00	250,000	
	Allowance for fence and gates	sum	1	145,000.00	145,000	
]			

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

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COMPANY : Beca

Sub i lile . Ji	itie : July 2016 Bid Currency : NZD					
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST	
	Add the above total for the second tank	sum	1	9,483,925.00	9,483,925	
	Sub Tota	**			18,967,850	
	Administration Building					
	Existing building - no new construction	note				
	Allowance for fitout of existing building including amenities	sum	1	350,000.00	350,000	
	Allowance for paving and landscaping to					
	entrance and external areas	sum	1	75,000.00	75,000	
	Sub Tota	**			425,000	
	Services Relocation					
	Nominal allowance for services relocation	sum	1	500,000.00	500,000	
	Sub Tota	**			500,000	
	Roading and Finishing Works					
	New roads and parking including kerbs, drainage, etc 40mm AC14 on 2 coat chipseal on 150mm AP40 on 300mm AP40 on geotextile on prepared areas (AP 40 with cement stabilisation)	m2	8,900	180.00	1,602,000	
	Allowance for general site drainage works	sum	1	500,000.00	500,000	
	Allowance for general site retaining works	sum	1	500,000.00	500,000	
	Allowance for site lighting	no	40	10,000.00	400,000	
	Allowance for general landscaping	sum	1	750,000.00	750,000	
	Allowance for permanent noise control measures	sum	1	1,000,000.00	1,000,000	
	Security fence	m	1,000	250.00	250,000	
	Main entrance gate, gatehouse, etc.	note		existing		
	Secondary entrance gate	sum	1	50,000.00	50,000	
	Sub Tota	**			5,052,000	
	Traffic Management and Temporary Works					
	Allowance for traffic management and temporary works	sum	1	2,250,000.00	2,250,000	
	Sub Tota			_,,	2,250,000	
	Preliminaries & General				,,	
	1 Tommunos & Gonoral					
L	<u> </u>		1			

1/10 6511164 EXISTING REV 1

Section '1'-'Civil Works' COMPANY : Beca

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

DATE: Thu 08 Sep 2016 03:25pm Bid Currency : NZD SubTitle : July 2016

Contractors off-site overheads and margin (say 4%)		sia currority .				out the rought of
safety plan and a fulltime site supervision representative - assume 36 months Allowance for all as-built documentation sum 1 100,000.00 Contractors on-site overheads (P&G) (say 8% of construction cost) sum 78,035,000 0.08 Contractors off-site overheads and margin (say 4%) Sub Total *** Estimating Contingency Allowance for estimating contingency (10%) sum 87,649,000 0.10 Rounding Sub Total *** Sub Total	COST		RATE	QTY	UNIT	QREF DESCRIPTION
Contractors on-site overheads (P&G) (say 8% of construction cost) sum 78,035,000 0.08 6 (Say 8% of construction cost) sum 78,035,000 0.08 6 (Say 4%) sum 84,277,000 0.04 3 (Say 4%) sum 84,277,000 0.04 3 (Say 4%) sum 87,649,000 0.10 8 (Say 4%) sum 87,649,000 0.10 8 (Say 4%) sum 1 -3,479.00 Sub Total ***	320,000		320,000.00	1	sum	safety plan and a fulltime site supervision representative - assume 36
(say 8% of construction cost) sum 78,035,000 0.08 6 Contractors off-site overheads and margin (say 4%) sum 84,277,000 0.04 3 Estimating Contingency ** 10 Allowance for estimating contingency (10%) sum 87,649,000 0.10 8 Rounding sum 1 -3,479.00 -3,479.00	100,000		100,000.00	1	sum	
Contractors off-site overheads and margin (say 4%) Sub Total ** 10	6,242,800	6	0.08	78,035,000	sum	Contractors on-site overheads (P&G) (say 8% of construction cost)
Sub Total ** 10 Estimating Contingency Allowance for estimating contingency (10%) Rounding Sub Total ** 5 Sub Total ** 5	3,371,080		0.04	84,277,000	sum	Contractors off-site overheads and margin
Allowance for estimating contingency (10%) Rounding Sub Total ** 87,649,000 0.10 -3,479.00 8	0,033,880	10			**	
Rounding sum 1 -3,479.00						Estimating Contingency
Sub Total **	8,764,900	8	0.10	87,649,000	sum	Allowance for estimating contingency (10%)
	-3,479		-3,479.00	1	sum	Rounding
TOTAL #* 91	8,761,421	8			**	Sub Total
	6,410,000	96			#*	TOTAL
Totals for Section '1'-'Civil Works'	6,410,000	96				Totals for Section '1'-'Civil Works'

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

COMPANY : Beca DATE: Thu 08 Sep 2016 03:25pm

SubTitle : July 2016 Bid Currency : NZD

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
2	PROCESS PLANT AND EQUIPMENT - EXISTING SITE OPTION				
	CHEMICAL SYSTEMS				
	Alum				
	105m3 alum storage tank	no	2	180,000.00	360,000
	7m3 day tank	no	2	20,000.00	40,000
	Dosing pumps and associated pipework	no	2	60,000.00	120,000
	Dosing lines	m	100	120.00	12,000
	Sub Total	**			532,000
	Poly (Flocculant, Thickening and				
	Dewatering Aids) - 3 No				
	Make up skid	no	6	90,000.00	540,000
	Dosing pumps and associated pipework	no	3	60,000.00	180,000
	Dosing lines	m	300	120.00	36,000
	Sub Total	**			756,000
	Lime				
	30 tonne silo and associated transfer				
	batching	no	2	360,000.00	720,000
	30m3 day tank	no	2	72,000.00	144,000
	7.5kW mixers	no	2	30,000.00	60,000
	Dosing pumps and associated pipework	no	4	90,000.00	360,000
	Dosing lines	m	500	180.00	90,000
	2kL post lime tanks	no	2	50,000.00	100,000
	0.5kL pre lime tanks	no	2	30,000.00	60,000
	Sub Total	**			1,534,000
	Fluoride				
	10m3 bulk supply tank	no	2	30,000.00	60,000
	500L day tank	no	2	12,000.00	24,000
	Dosing pumps and associated pipework	no	2	60,000.00	120,000
	Dosing lines	m	200	120.00	24,000

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PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

SubTitle : July 2016

COMPANY : Beca

DATE : Thu 08 Sep 2016 03:25pm Bid Currency : NZD

QREF	DESCRIPTION		UNIT	QTY	RATE	COST
		Sub Total				228,000
	Carbon Dioxide (assume leased)					
	Dosing lines (4 x 200m)		m	800	120.00	96,000
		Sub Total	**			96,000
	Chlorine Gas					
	Chlorine gas		sum	1	1,000,000.00	1,000,000
		Sub Total	**			1,000,000
	Electrical, Instrumentation and Controls					
	Allowance for electrical, instrumentation					
	and controls		20%	4,146,000	0.20	829,200
		Sub Total	**			829,200
	DAF					
	Mechanical Supply and Installation					
	2kW mixers		no	16	25,000.00	400,000
	Subnatant collection		m2	700	1,200.00	840,000
	5000L pressure vessel		no	8	60,000.00	480,000
	Recycle pumps		no	10	60,000.00	600,000
	50kW air compressor and receiver		no	2	240,000.00	480,000
	Float scraper		no	8	90,000.00	720,000
	DAF nozzles (dispersion valve array)		no	8	30,000.00	240,000
	Allowance for pipework, valves and				960,000.00	000 000
	connections	Sub Total	sum	ı	960,000.00	960,000 4,720,000
		Sub rotar				4,720,000
	Electrical, Instrumentation and Controls					
	Allowance for electrical, instrumentation and controls		20%	4,720,000	0.20	944,000
	and dominoid	Sub Total		1,720,000	0.20	944,000
						,
	BAC FILTERS					
	Mechanical Supply and Installation					

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

SubTitle :	July 2016					Bid Currency : NZD
BQREF	DESCRIPTION		UNIT	QTY	RATE	COST
	Plenum floor		m2	1,135	2,400.00	2,724,000
	400mm th layer of sand		m3	450	800.00	360,000
	350mm th layer of gravel		m3	400	500.00	200,000
	1500mm th layer of BAC media		m3	1,700	1,450.00	2,465,000
	Upwash launders		no	14	50,000.00	700,000
	75kW upwash pumps		no	3	60,000.00	180,000
	175kW air scour blowers		no	2	100,000.00	200,000
	Allowance for pipework, valves and					
	connections		sum	1	2,400,000.00	2,400,000
		Sub Total	**			9,229,000
	Electrical, Instrumentation and Controls					
	Allowance for electrical, instrumentation					
	and controls		20%	9,229,000	0.20	1,845,800
		Sub Total	**			1,845,800
	<u>OZONE</u>					
	Mechanical Supply and Installation					
	VPSA ozone system		sum	1	4,800,000.00	4,800,000
	Allowance for associated work not covered in the basic price		25%	4,800,000	0.25	1,200,000
	Allowance for pipework, valves and connections		sum	1	580,000.00	580,000
	Connections	Sub Total		ı	300,000.00	6,580,000
	Electrical, Instrumentation and Controls					
	Allowance for electrical, instrumentation					
	and controls		20%	6,580,000	0.20	1,316,000
		Sub Total	**			1,316,000
	RESIDUALS MANAGEMENT					
	Washout Thickeners (2 No)					
	Floc chamber		no	2	50,000.00	100,000
	Floor rake		no	2	360,000.00	720,000
	Mixer paddles		no	2	25,000.00	50,000
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COMPANY : Beca

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2/3 6511164 EXISTING REV 1

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

SubTitle : July 2016

COMPANY : Beca
DATE : Thu 08 Sep 2016 03:25pm
Bid Currency : NZD

RATE COST

					•
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Launder	no	2	25,000.00	50,000
	Supernatant recycle pumps	no	4	90,000.00	360,000
	Sludge pumps	no	4	90,000.00	360,000
	Allowance for pipework, valves and connections	no	2	85,000.00	170,000
	Sub Total	**			1,810,000
	Sludge Thickeners (2 No)				
	Floc chamber	no	2	50,000.00	100,000
	Floor rake	no	2	360,000.00	720,000
	Mixer paddles	no	2	25,000.00	50,000
	Launder	no	2	25,000.00	50,000
	Supernatant recycle pumps	no	4	90,000.00	360,000
	Sludge pumps	no	4	90,000.00	360,000
	Allowance for pipework, valves and connections	no	2	85,000.00	170,000
	Sub Total	**			1,810,000
	Filter Presses				
	Filter press and ancillary equipment supply	no	2	1,700,000.00	3,400,000
	Filter press install and ancillaries	no	2	2,500,000.00	5,000,000
	Sub Total	**			8,400,000
	Other Pumps and Mixers				
	Washout balance tank mixers - 4kW submersible	no	2	60,000.00	120,000
	Washout thickener feed pumps - 15kW open impeller	no	2	45,000.00	90,000
	Filter to waste return pumps - 22kW centrifugal	no	2	60,000.00	120,000
	De-aeration tank mixers - 1kW submersible	no	2	30,000.00	60,000
	De-aeration tank pumps - 30kW progressive cavity	no	2	75,000.00	150,000
	Supernatant return pumps - 30kW centrifugal	no	2	75,000.00	150,000

6511164 EXISTING REV 1 2/4

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PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

Bid Currency: NZD SubTitle: July 2016 **BQREF** DESCRIPTION UNIT QTY **RATE** COST Sludge thickener feed pumps - 5kW 2 open impeller 30,000.00 60,000 no Sludge balance tank mixers - 2kW 45,000.00 180,000 submersible no 4 Sludge filter press feed pumps - 5kW 2 90,000.00 180,000 progressive cavity no Attenuation storage return pumps - 15kW 2 45,000.00 90,000 open impeller no Sub Total ** 1,260,000 Electrical, Instrumentation and Controls Allowance for electrical, instrumentation and controls 20% 13,280,000 0.20 2,656,000 Sub Total ** 2,656,000 TREATED WATER PUMP STATION Mechanical Supply and Installation Pumps and motors - 215kW 350,000.00 1,750,000 no 5 Allowance for pipework, valves and connections 1,200,000.00 1,200,000 sum Sub Total ** 2,950,000 **Electrical, Instrumentation and Controls** Allowance for electrical, instrumentation and controls 700,000.00 700,000 sum Sub Total ** 700,000 **ANCILLARIES** Service water 240,000.00 240,000 sum Air supply 540,000.00 540,000 sum Allowance for additional interconnecting 4,000,000.00 4,000,000 pipework, valves and connections sum Sub Total ** 4,780,000 **POWER SUPPLY** Standby diesel generator - 2.5MW 1,500,000.00 1,500,000 lno 11kV Vector power supply upgrade and HV

COMPANY: Beca

DATE: Thu 08 Sep 2016 03:25pm

2,320,000.00

2,320,000

6511164 EXISTING REV 1 2/5

sum

Section '2'-'Process Plant and Equipment' COMPANY : Beca PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION DATE: Thu 08 Sep 2016 03:25pm Bid Currency : NZD SubTitle: July 2016

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Allowance for power upgrade to the existing network	m	2,800	600.00	1,680,000
	Allowance for fibre along the new raw and treated water pipelines	m	4,820	300.00	1,446,000
	Sub Tota	ıl **			6,946,000
	OTHER				
	SCADA				
	Allowance for software development and commissioning	sum	1	1,000,000.00	1,000,000
	Sub Total	ıl **			1,000,000
	Process Commissioning and Support				
	Allowance for commissioning and support	sum	1	500,000.00	500,000
	Sub Tota			333,333.33	500,000
					,
	Project Closeout				
	Allowance for spare equipment	sum	1	500,000.00	500,000
	Allowance for project completion report including defects liability period coordination - Based on 10 hours/week over 52 weeks assuming majority of the defects				
	will be rectified over the first 3 months	sum	1	130,000.00	130,000
	Sub Total	ıl **			630,000
	O&M Manuals and Training				
	Allowance for O&M manuals	sum	1	100,000.00	100,000
	Allowance for O&M training	sum	1	200,000.00	200,000
	Sub Tota	ıl **			300,000
	Preliminaries & General				
	Contractors on-site overheads (P&G) (say 6% of construction cost)	sum	63,352,000	0.06	3,801,120
	Contractors off-site overheads and margin	sum	67,153,000	0.04	2,686,120
	(say 4%) Sub Tota	ıl **			6,487,240
	Estimating Contingency				
	Allowance for estimating contingency (10%)	sum	69,839,000	0.10	6,983,900

6511164 EXISTING REV 1 2/6 Section '2'-'Process Plant and Equipment'

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

COMPANY : Beca

DATE: Thu 08 Sep 2016 03:25pm SubTitle: July 2016 Bid Currency : NZD

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Rounding	sum	1	-3,140.00	
	Sub Total	**			6,980,760
	TOTAL	#*			76,820,000
	Totals for Section '2'-'Process Plant and Equipment'				76,820,000

6511164 EXISTING REV 1 2/7 PROJECT : HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

SubTitle: July 2016

COMPANY : Beca

DATE : Thu 08 Sep 2016 03:25pm Bid Currency : NZD

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
3	ANCILLARY STRUCTURES - EXISTING SITE OPTION				
	Raw Water Infrastructure				
	Connection to the raw water aqueduct - from the aqueduct to inlet - 1200mm dia	m	65	9,500.00	617,500
	Sub Tota			3,000.00	617,500
	Off-Spec Discharge				
	Allowance for Muddy Creek pipeline (cost from previous estimate) to inlet - 1200mm dia	sum	1	16,900,000.00	16,900,000
	Sub Tota	l **			16,900,000
	Treated Water Infrastructure				
	Treated Water Tunnel				
	Note: It is assumed that there are no basalt present in the area of the tunnel and shafts	note			
	Tunnel - 2m dia unlined tunnel	m	820	8,000.00	6,560,000
	Tunnel sleeve including 1200mm dia pipeline	m	820	6,300.00	5,166,000
	Jacking shaft at Treatment Plant - 5m x 8m x 10m deep	no	1	315,000.00	315,000
	Intermediate reception shaft - 5m dia x 35m deep	no	1	1,000,000.00	1,000,000
	Jacking shaft at Mackies Rest - 5m x 8m x 10m deep	no	1	315,000.00	315,000
İ	Tunnel fixed costs	sum	1	5,000,000.00	5,000,000
	Sub Tota	**			18,356,000
	Treated Water Pipeline				
	Pipeline from treated water pump station to reservoirs - 1200mm dia	m	150	4,800.00	720,000
	Reservoir pipework (1200mm dia - includes inlet manifold, outlet, overflow and scour)	sum	1	2,600,000.00	2,600,000
	Pipeline outlet to network - 1200mm dia	m	4,000	4,800.00	19,200,000
	Sub Tota	**			22,520,000
	Preliminaries & General				
	Allowance for all as-built documentation	sum	1	50,000.00	50,000

6511164 EXISTING REV 1 3/1

Section '3'-'Ancillary Structures'

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION

SubTitle: July 2016

COMPANY: Beca DATE: Thu 08 Sep 2016 03:25pm

Bid Currency : NZD

BQREF	DESCRIPTION		UNIT	QTY	RATE	COST
	Contractors on-site overheads		note		included	
	Contractors off-site overheads and margin		note		included	
		Sub Total	**			50,000
	Estimating Contingency					
	Allowance for estimating contingency (10%)		sum	58,444,000	0.10	5,844,400
	Rounding		sum	1	2,100.00	2,100
		Sub Total	**			5,846,500
		TOTAL	#*			64,290,000
	Totals for Section '3'-'Ancillary Structures'					64,290,000

6511164 EXISTING REV 1 3/2

Section '4'-'Implementation Costs'

SubTitle : July 2016

PROJECT: HUIA WATER TREATMENT PLANT - EXISTING SITE OPTION DATE: Thu 08 Sep 2016 03:25pm Bid Currency : NZD

COMPANY : Beca

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
4	IMPLEMENTATION COSTS - EXISTING SITE OPTION				
	Allowance for all Design, Management, Construction and Contract supervision, etc. (say 15%)	sum	237,520,000	0.15	35,628,000
	Allowance for consent and regulatory fees (say 2%)	sum	237,520,000	0.02	4,750,400
	Allowance for client internal costs (say 3%)	sum	237,520,000	0.03	7,125,600
	Rounding	sum	1	-4,000.00	
	Sub Total	**			47,500,000
	Totals for Section '4'-'Implementation Costs'				47,500,000

6511164 EXISTING REV 1 4/1

Appendix D2: Manuka Road

GENERAL SUMMARY COMPANY: Beca

PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

DATE : Thu 08 Sep 2016 03:34pm SubTitle : July 2016 Bid Currency : NZD

SECTION NAME		UNIT	QTY	RATE	со
HUIA WATER TREATMENT PLANT OPTIONS					
MIX OF CONCEPT (PROCESS) AND PRELIMINARY (CIVILS) DESIGN COST ESTIMATES:					
Note: These estimates are in the order of minus 15% to plus 25% accuracy overall.					
MANUKA ROAD OPTION					
Civil Works					100,870,
Process Plant and Equipment					78,910,
Ancillary Structures					56,080,
	Construction Subtotal				235,860,
Implementation Costs					47,170,
Land Costs - No Land Purchase					
	Indirects Subtotal				47,170
	MANUKA ROAD TOTAL				283,030
NOTES					
These estimates are based on the GHD					
civils drawings and information and the Beca information for the process					
mechanical, electrical and ancillary					
structures. This Rev 1 estimate is based on the					
following revised drawings:51-33575-3- A001 and -A002 (both Rev A and undated)					
Rates used in these estimates are based					
on a mixture of the following:					
- CH2M Beca database - First principles					
- Costs from suppliers					
- Similar historical projects					
An estimating contingency has been included in the estimate to cover items					
of unforeseen detail and design					
development. This contingency is expected to be converted to scope			I .	1	I
expected to be converted to scope and therefore should not be regarded					
expected to be converted to scope					

GS/1 6511164 MANUKA REV 1

GENERAL SUMMARY COMPANY: Beca

PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

DATE : Thu 08 Sep 2016 03:34pm SubTitle : July 2016 Bid Currency : NZD

СО	SECTION NAME	UNIT	QTY	RATE	COST
	EXCLUSIONS				
	Excavation in hard rock / basalt				
	Night or after hours work				
	Cost for shutting down any existing plant				
	Specific construction noise control measures				
	Asbestos removal / disposal				
	GST				
	Project Contingency				
	Escalation after September 2016				
	Capitalised interest				
	Costs to date				
	Operating and Maintenance cost				
	Insurance costs				
	Legal and finance fees				
	TOTALS OF SELECTED SECTIONS	NZ\$			283,030,000

GS/2 6511164 MANUKA REV 1

PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

COMPANY : Beca DATE: Thu 08 Sep 2016 03:34pm

SubTitle : July 2016 Bid Currency : NZD

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
1	CIVIL WORKS - MANUKA ROAD OPTION				
	Site Clearance and Demolition				
	Clear site - remove vegetation, etc.	m2	54,000	12.00	648,000
	Sub Tot	al **			648,000
	Environmental Compliance and Management				
	Allowance for environmental compliance				
	including erosion and sediment control	sum	1	870,000.00	
	Sub Tot	al **			870,000
	General Earthworks				
	Allowance for the contractors laydown area - assume 300 thick hardfill including				
	removal on complation	m2	2,300	50.00	115,000
	Total cut	m3	87,050		
	Total fill	m3	30,090		
	Remove topsoil and respeads on completion - say 150 thick	m3	8,100	45.00	364,500
	Cut to fill - assume 50% of fill can be obtained from cut material	m3	15,045	12.00	180,540
	Cut to waste	m3	72,005	40.00	2,880,200
	Imported fill	m3	15,045	50.00	752,250
	Allowance for undercut in soft spots including imported fill - assume 10% of cut volume	m3	8,705	110.00	957,550
	Allowance for disposal of contaminated material - assume from existing lagoon	m3	850	100.00	85,000
	Sub Tot		030	100.00	5,335,040
	Chemical Storage Building				
	Piling - no piling needed	note			
	500 th reinforced concrete floor slab including foundation beams	m2	61	844.00	51,484
	250 th reinforced concrete floor slab including foundation beams	m2	793	695.00	551,135
	Allowance for plinths and miscellaneous works	sum	1	75,000.00	75,000
	Sealer to bunded floors	m2	757	150.00	113,550

PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

SubTitle : July 2016

COMPANY : Beca

DATE : Thu 08 Sep 2016 03:34pm

Bid Currency : NZD

	e : July 2016 Bid Currency : NZ					
QREF	DESCRIPTION	UNIT	QTY	RATE	cos	
	250 th precast concrete walls	m2	1,534	560.00	859,04	
	Allowance for 250 th concrete screen walls including foundations	m2	252	790.00	199,08	
	Allowance for roofing including steel support	m2	903	500.00	451,50	
	Allowance for miscellaneous works - stairs, bollards, etc.	sum	1	50,000.00	50,00	
	Allowance for roller door	no	10	12,000.00	120,00	
	Small power and lighting	m2	854	100.00	85,40	
	Mechanical ventilation	m2	520	350.00	182,00	
	Sprinkler system including smoke and heat detection	m2	854	110.00	93,94	
	Allowance for drainage	sum	1	100,000.00	100,00	
	Sub Tota	l **			2,932,12	
	Chlorine Storage Building					
	Note: Assume the building is the same as the chemical storage building as there is no design info for this building	note				
	Piling - no piling needed	note				
	Rate for Chemical Storage applied to this buildings area	m2	189	3,400.00	642,60	
	Sub Tota			3, 03,03	642,60	
	Electrical Compound					
	Piling - no piling needed	note				
	300 th reinforced concrete floor slab including foundation beams	m2	215	595.00	127,92	
	Allowance for plinths and miscellaneous works	sum	1	10,000.00	10,00	
	Upper floor	m2	60	300.00	18,00	
	200 th precast concrete walls	m2	499	540.00	269,46	
	Allowance for roofing including steel support	m2	215	450.00	96,75	
	Allowance for miscellaneous works - stairs, bollards, etc.	sum	1	20,000.00	20,000	
	Allowance for roller door - approx. 5m x 4m high	no	1	12,000.00	12,000	
	Allowance for roller door - approx. 3m x					

PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

SubTitle : July 2016

COMPANY : Beca
DATE : Thu 08 Sep 2016 03:34pm

Bid Currency : NZD

SubTitle : .	July 2016 Bid Currency : NZD						
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST		
	3m high	no	1	8,000.00	8,000		
	Small power and lighting	m2	215	100.00	21,500		
	Mechanical ventilation	m2	215	300.00	64,500		
	Extra value for air conditioning to the 11kV switchroom	m2	53	600.00	31,800		
	Sprinkler system including smoke and heat detection	m2	215	110.00	23,650		
	Allowance for drainage	sum	1	25,000.00	25,000		
	Sub Tot	al **			728,585		
	DAF Tank						
	Piling - no piling needed	note					
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	1,526	800.00	1,220,800		
	Excavate and cart away - in general earthworks	note					
	Backfill with excavated material	m3	852	45.00	38,340		
	500 th reinforced concrete floor slab	m2	2,053	675.00	1,385,775		
	300 th reinforced concrete walls	m2	3,818	755.00	2,882,590		
	Allowance for walkways over the tank	m2	201	1,060.00	213,060		
	Allowance for roof and wall cladding including structures - Colorsteel on epoxy coated structural steel	m2	2,053	570.00	1,170,210		
	Small power and lighting	m2	2,053	70.00	143,710		
	Mechanical ventilation	m2	2,053	100.00	205,300		
	Extra value for air conditioning to the MCC room	m2	43	600.00	25,800		
	Allowance for miscellaneous works	sum	1	500,000.00	500,000		
	Allowance for drainage	sum	1	100,000.00	100,000		
	Sub Tot	al **			7,885,585		
	Ozone Generator Room						
	Piling - no piling needed	note					
	300 th reinforced concrete floor slab including foundation beams	m2	294	595.00	174,930		
	Allowance for plinths and miscellaneous works	sum	1	30,000.00	30,000		

PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

SubTitle : July 2016

COMPANY : Beca

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DESCRIPTION 200 th precast concrete walls Allowance for roofing including steel support Allowance for miscellaneous works - bollards, etc. Allowance for roller door - approx. 5m x 4m high Small power and lighting Mechanical ventilation Sprinkler system including smoke and heat detection Allowance for drainage Sub Total	m2 m2 m2 m2 m2 m2 sum **	QTY 581 294 1 3 294 294 294 1	RATE 540.00 450.00 10,000.00 12,000.00 100.00 300.00 110.00 25,000.00	132,300 10,000 36,000 29,400 88,200 32,340 25,000
Allowance for roofing including steel support Allowance for miscellaneous works - bollards, etc. Allowance for roller door - approx. 5m x 4m high Small power and lighting Mechanical ventilation Sprinkler system including smoke and heat detection Allowance for drainage Sub Total	m2 no m2 m2 m2 sum	294 1 3 294 294	450.00 10,000.00 12,000.00 100.00 300.00	313,740 132,300 10,000 36,000 29,400 88,200 32,340 25,000
support Allowance for miscellaneous works - bollards, etc. Allowance for roller door - approx. 5m x 4m high Small power and lighting Mechanical ventilation Sprinkler system including smoke and heat detection Allowance for drainage Sub Total	sum no m2 m2 m2 sum	1 3 294 294	10,000.00 12,000.00 100.00 300.00	10,000 36,000 29,400 88,200 32,340 25,000
bollards, etc. Allowance for roller door - approx. 5m x 4m high Small power and lighting Mechanical ventilation Sprinkler system including smoke and heat detection Allowance for drainage Sub Total	no m2 m2 m2 sum	294 294	12,000.00 100.00 300.00 110.00	36,000 29,400 88,200 32,340 25,000
high Small power and lighting Mechanical ventilation Sprinkler system including smoke and heat detection Allowance for drainage Sub Total	m2 m2 m2 sum	294 294	100.00 300.00 110.00	29,400 88,200 32,340 25,000
Mechanical ventilation Sprinkler system including smoke and heat detection Allowance for drainage Sub Total	m2 m2 sum	294	300.00 110.00	88,200 32,340 25,000
Sprinkler system including smoke and heat detection Allowance for drainage Sub Total	m2 sum		110.00	32,340 25,000
detection Allowance for drainage Sub Total	sum	294		25,000
Sub Total		1	25,000.00	
	**			
				871,910
Ozone Contact Tank				
Piling - no piling needed	note			
Temporary sheet piles to average 10m BGL all round including waler beams and ties	m2	600	730.00	438,000
Excavate and cart away - in general earthworks	note			
Backfill with excavated material	m3	522	45.00	23,490
500 th reinforced concrete floor slab	m2	418	655.00	273,790
500 th reinforced concrete upper floors	m2	79	618.00	48,822
500 th reinforced concrete walls	m2	682	870.00	593,340
400 th reinforced concrete walls	m2	827	776.00	641,752
Allowance for cover and walkways over the central area	m2	116	630.00	73,080
Allowance for roof and wall cladding including structures - Colorsteel on epoxy coated structural steel	m2	418	660.00	275,880
Small power and lighting	m2	418	70.00	29,260
Mechanical ventilation	m2	418	100.00	41,800
Allowance for miscellaneous works	sum	1	100,000.00	100,000
Allowance for drainage	sum	1	35,000.00	35,000
Sub Total	**			2,574,214
BAC Filter Tank				
	Temporary sheet piles to average 10m BGL all round including waler beams and ties Excavate and cart away - in general earthworks Backfill with excavated material 500 th reinforced concrete floor slab 500 th reinforced concrete upper floors 500 th reinforced concrete walls 400 th reinforced concrete walls Allowance for cover and walkways over the central area Allowance for roof and wall cladding including structures - Colorsteel on epoxy coated structural steel Small power and lighting Mechanical ventilation Allowance for miscellaneous works Allowance for drainage Sub Total	Piling - no piling needed Temporary sheet piles to average 10m BGL all round including waler beams and ties Excavate and cart away - in general earthworks Backfill with excavated material 500 th reinforced concrete floor slab 500 th reinforced concrete upper floors 500 th reinforced concrete walls 400 th reinforced concrete walls Allowance for cover and walkways over the central area Allowance for roof and wall cladding including structures - Colorsteel on epoxy coated structural steel Small power and lighting Mechanical ventilation Allowance for drainage Sub Total ***	Piling - no piling needed Temporary sheet piles to average 10m BGL all round including waler beams and ties Excavate and cart away - in general earthworks Backfill with excavated material 500 th reinforced concrete floor slab 500 th reinforced concrete upper floors 500 th reinforced concrete walls 418 500 th reinforced concrete walls 400 th reinforced concrete walls Allowance for cover and walkways over the central area Allowance for roof and wall cladding including structures - Colorsteel on epoxy coated structural steel Small power and lighting Mechanical ventilation Allowance for miscellaneous works Allowance for drainage Sub Total ** 100 100 100 100 100 100 100	Pilling - no pilling needed note

PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

SubTitle : July 2016

COMPANY : Beca

DATE : Thu 08 Sep 2016 03:34pm

Bid Currency : NZD

Jubine. J	Sub Title: July 2016 Bid Currency: NZD				
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Piling - no piling needed	note			
	Temporary sheet piles to average 10m BGL all round including waler beams and ties	m2	1,500	810.00	1,215,000
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	1,350	45.00	60,750
	400 th reinforced concrete floor slab	m2	2,085	608.00	1,267,680
	400 th reinforced concrete upper floors	m2	3,225	576.00	1,857,600
	400 th reinforced concrete walls	m2	4,837	830.00	4,014,710
	Inlet channnel works	sum	1	330,000.00	330,000
	Allowance for cover and walkways over the inlet channel/open gallery area	m2	523	540.00	282,420
	Allowance for roof and wall cladding including structures - Colorsteel on epoxy coated structural steel	m2	2,065	590.00	1,218,350
	Small power and lighting	m2	2,065	70.00	144,550
	Mechanical ventilation	m2	2,065	100.00	206,500
	Allowance for miscellaneous works	sum	1	300,000.00	300,000
	Allowance for drainage	sum	1	100,000.00	100,000
	Sub Total	**			10,997,560
	Chlorine Contact Tank				
	Piling - assume 600mm dia x 15m long in-situ concrete piles at 5m c/c (no permanent liners)	no	66	10,500.00	693,000
	Temporary sheet piles to average 15m BGL all round including waler beams and ties	m2	2,093	700.00	1,465,100
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	1,113	45.00	50,085
	500 th reinforced concrete floor slab	m2	1,553	655.00	1,017,215
	500 th reinforced concrete walls	m2	1,647	845.00	1,391,715
	300 th reinforced concrete walls	m2	1,078	734.00	791,252
	Allowance for a cover over the tank	m2	1,553	700.00	1,087,100
	Allowance for miscellaneous works	sum	1	200,000.00	200,000
	Allowance for drainage	sum	1	35,000.00	35,000
	-			•	

SubTitle: July 2016

PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

COMPANY: Beca

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BQREF DESCRIPTION UNIT QTY **RATE** COST Sub Total ** 6,730,467 Raw Water Pump Station Piling - assume 600mm dia x 15m long in-situ concrete piles at 4m c/c (no permanent liners) 20 10,500.00 210,000 no Temporary sheet piles to 18m BGL all round including waler beams and ties 680.00 m2 900 612,000 2,051 25.00 Excavate and stockpile on site m3 51,275 Backfill with excavated material m3 560 45.00 25,200 Cart away excess material 1,492 25.00 37,300 m3 1800 th reinforced concrete floor slab m2 111 1,585.00 175,935 500 th reinforced concrete floor slab m2 29 585.00 16,965 250 th reinforced concrete floor slab 108 465.00 50,220 m2 5,000 Allowance for pump plinths 1 5,000.00 sum 103,320 500 th reinforced concrete roof slab m2 140 738.00 500 th reinforced concrete walls including m2 497 835.00 414,995 cast-in pipe stubs, openings, etc. 590.00 250 th reinforced concrete walls m2 541 319,190 Allowance for roofing including steel m2 162 750.00 121,500 support Allowance for roller door no 12,000.00 12,000 Allow for double door 5,000.00 5,000 no Small power and lighting 162 120.00 19,440 m2 Mechanical ventilation m2 162 350.00 56,700 Extra value for air conditioning to the MCC m2 21 300.00 6,300 room Sprinkler system including smoke and heat detection 162 m2 110.00 17,820 25.000.00 25.000 Allowance for drainage sum Sub Total ** 2,285,160 Washout Balance Tank Piling - assume 600mm dia x 15m long in-situ concrete piles at 4m c/c (no permanent liners) 15 10,500.00 157,500 no Temporary sheet piles to average 11m BGL all round including waler beams and ties 990 750.00 742,500 m2

PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

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SubTitle . Jul	itie : July 2016 Bid Currency : NZD				
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	510	45.00	22,950
	500 th reinforced concrete floor slab	m2	404	544.00	219,776
	400 th reinforced concrete walls	m2	628	800.00	502,400
	Allowance for miscellaneous works	sum	1	25,000.00	25,000
	Sub Total	**			1,670,126
	Sludge Balance Tank				
	Piling - assume 600mm dia x 15m long in-situ concrete piles at average 4m c/c (no permanent liners)	no	20	7,000.00	140,000
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	504	865.00	435,960
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	283	45.00	12,735
	250 th reinforced concrete floor slab	m2	272	432.00	117,504
	300 th reinforced concrete walls	m2	321	756.00	242,676
	Allowance for miscellaneous works	sum	1	25,000.00	25,000
	Sub Total	**			973,875
	Supernatant Return Tank				
	Piling - no piling needed	note			
	Temporary sheet piles to average 10m BGL all round including waler beams and ties	m2	760	770.00	585,200
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	402	45.00	18,090
	250 th reinforced concrete floor slab	m2	301	432.00	130,032
	300 th reinforced concrete walls	m2	471	756.00	356,076
	Allowance for miscellaneous works	sum	1	25,000.00	25,000
	Sub Total	**			1,114,398
	Sludge Thickener Feed Tank				
	Piling - no piling needed	note			

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 $\ensuremath{\mathsf{PROJECT}}$: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

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QREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	322	790.00	254,380
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	175	45.00	7,875
	250 th reinforced concrete floor slab	m2	86	432.00	37,152
	300 th reinforced concrete walls	m2	171	756.00	129,276
	Allowance for miscellaneous works	sum	1	15,000.00	15,000
		Sub Total **			443,683
	Sludge Thickeners (2 No)				
	Note: The following cost is for one tank (see last item for second tank)	note			
	Piling - no piling needed	note			
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	385	890.00	342,650
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	390	45.00	17,550
	Average 700 th reinforced concrete floor slab	m2	144	760.00	109,440
	250 th reinforced concrete walls	m2	215	800.00	172,000
	250 th reinforced concrete channel floor	m2	45	560.00	25,200
	Allowance for miscellaneous works	sum	1	50,000.00	50,000
	Add the above total for the scond tank	sum	1	716,840.00	716,840
		Sub Total **			1,433,680
	Washwater Thickeners (2 No)				
	Note: The following cost is for one tank (see last item for second tank)	note			
	Piling - no piling needed	note			
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	385	890.00	342,650
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	390	45.00	17,550
	Average 700 th reinforced concrete floor slab	m2	144	760.00	109,440

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BQREF DESCRIPTION UNIT QTY RATE COST 250 th reinforced concrete walls m2 215 800.00 172,000 250 th reinforced concrete channel floor m2 45 560.00 25,200 Allowance for miscellaneous works sum 1 50,000.00 50,000 Add the above total for the scond tank 716,840.00 716,840 sum Sub Total ** 1,433,680 Sludge Dewatering Building (Filter Press) Building area m2 656 Piling - assume 600mm dia x 15m long in-situ concrete piles at average 5m c/c (no permanent liners) 20 10,500.00 210,000 no 300 th reinforced concrete floor slab including foundation beams m2 524 595.00 311,780 300 th reinforced concrete upper floor m2 269 514.00 138,266 200 th precast concrete walls m2 1,413 540.00 763,020 54 400.00 21,600 400 x 400 concrete columns m Allowance for roofing including structure 404 450.00 181,800 m2 21,000.00 21,000 Stair rising 6m no 1 Allowance for plinths and miscellaneous works 1 75,000.00 75,000 sum Allowance for roller door no 3 12,000.00 36,000 100.00 Small power and lighting 656 65,600 m2 Mechanical ventilation 656 350.00 229,600 m2 Extra value for air conditioning to the MCC/office room 400.00 13,600 m2 34 Sprinkler system including smoke and heat detection m2 656 110.00 72,160 Allowance for drainage sum 100,000.00 100,000 Sub Total ** 2.239.426 Reservoirs (2 No) Note: The following cost is for one reservoir (see last item for second reservoir) note Reservoir volume m3 28,905 Retaining wall - say average 8m high x 80m 640 1,500.00 960,000 long m2

PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

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	5.0 Sun (1.0.1)					
BQREF	DESCRIPTION		UNIT	QTY	RATE	COST
	Piling - assume 600mm dia x 15m long in-situ concrete piles at average 5m c/c					
	(no permanent liners)		no	120	10,500.00	1,260,000
	500 th reinforced concrete floor slab		m2	2,915	690.00	2,011,350
	400 th reinforced concrete walls		m2	1,912	1,200.00	2,294,400
	500 th reinforced concrete roof slab including allowance for internal colums,		0	2.045	945.00	0.400.475
	etc. Stairs rising 10m and balustrade around the		m2	2,915	845.00	2,463,175
	top of the reservoir		sum	1	100,000.00	100,000
	Allowance for miscellaneous works		sum	1	250,000.00	250,000
	Allowance for fence and gates		sum	1	145,000.00	145,000
	Add the above total for the second tank		sum	1	9,483,925.00	9,483,925
		Sub Total	**			18,967,850
	Lagoon					
	Allowance for lagoon finishing works - liner, inlet, outlet, planting, etc. (note excavation and fill are in general earthworks)		m2	7,500	175.00	1,312,500
	Allowance for retaining walls - assume 67m long x average 3m high		m2	201	1,500.00	301,500
		Sub Total	**			1,614,000
	Administration Building					
	Piling - no piling needed		note			
	Building area		m2	403		
	General building works		m2	403	2,200.00	886,600
	Allowance for fitout		m2	403	750.00	302,250
	Extra value for amenities fitout		m2	29	1,000.00	29,000
	Allowance for paving and landscaping to entrance and external areas		sum	1	75,000.00	75,000
		Sub Total			.,	1,292,850
	Services Relocation					
	Nominal allowance for services relocation		sum	1	250,000.00	250,000
	30.000	Sub Total		·		250,000
						·

PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

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REF	DESCRIPTION	UNIT	QTY	RATE	COST
	Roading and Finishing Works				
	New roads and parking including kerbs, drainage, etc 40mm AC14 on 2 coat chipseal on 150mm AP40 on 300mm AP40 on geotextile on prepared areas (AP 40 with cement stabilisation)	m2	8,000	180.00	1,440,000
	Allowance for general site drainage works	sum	1	500,000.00	500,000
	Allowance for general site retaining works	sum	1	500,000.00	500,000
	Allowance for site lighting	no	40	10,000.00	400,000
	Allowance for general landscaping	sum	1	750,000.00	750,000
	Allowance for permanent noise control measures	sum	1	1,000,000.00	1,000,000
	Security fence	m	1,000	250.00	250,000
	Main entrance gate, gatehouse, etc.	sum	1	150,000.00	150,000
	Secondary entrance gate	sum	1	50,000.00	50,000
	Sub Total	**			5,040,000
	Traffic Management and Temporary Works				
	Allowance for traffic management and	oum.	1	2,250,000.00	2,250,000
	temporary works Sub Total	sum	'	2,250,000.00	2,250,000 2,250,000
	Preliminaries & General				2,230,000
	Allowance for the contractor's health and				
	safety plan and a fulltime site supervision representative - assume 36 months	sum	1	320,000.00	320,000
	Allowance for all as-built documentation	sum	1	100,000.00	100,000
	Contractors on-site overheads (P&G) (say 8% of construction cost)	sum	81,645,000	0.08	6,531,600
	Contractors off-site overheads and margin (say 4%)	sum	88,176,000	0.04	3,527,040
	Sub Total	**			10,478,640
	Estimating Contingency				
	Allowance for estimating contingency (10%)	sum	91,703,000	0.10	9,170,300
	Rounding	sum	1	-3,758.00	-3,758
	Sub Total	**			9,166,542
	TOTAL	#*			100,870,000
	Totals for Section '1'-'Civil Works'				100,870,000

Dosing lines

PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

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SubTitle: July 2016 Bid Currency: NZD **BQREF** DESCRIPTION UNIT QTY RATE COST 2 PROCESS PLANT AND EQUIPMENT - MANUKA ROAD OPTION **CHEMICAL SYSTEMS** Alum 360,000 105m3 alum storage tank no 2 180,000.00 2 20,000.00 40,000 7m3 day tank no Dosing pumps and associated pipework 2 60,000.00 120,000 no 120.00 Dosing lines 100 12,000 m Sub Total ** 532,000 Poly (Flocculant, Thickening and Dewatering Aids) - 3 No Make up skid 6 90,000.00 540,000 no Dosing pumps and associated pipework no 3 60,000.00 180,000 Dosing lines m 300 120.00 36,000 Sub Total ** 756,000 Lime 30 tonne silo and associated transfer 2 batching no 360,000.00 720,000 2 72,000.00 144,000 30m3 day tank no 7.5kW mixers 2 30,000.00 60,000 lno Dosing pumps and associated pipework no 4 90,000.00 360,000 500 180.00 90,000 Dosing lines m 2 2kL post lime tanks 50,000.00 100,000 no 2 0.5kL pre lime tanks 30,000.00 60,000 lno Sub Total ** 1,534,000 Fluoride 10m3 bulk supply tank 2 30.000.00 60.000 lno 2 500L day tank 12,000.00 24,000 no Dosing pumps and associated pipework 2 60,000.00 120,000 lno

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SubTitle: July 2016 Bid Currency: NZD **BQREF** DESCRIPTION UNIT QTY RATE COST Sub Total ** 228,000 Carbon Dioxide (assume leased) 800 120.00 96,000 Dosing lines (4 x 200m) m Sub Total ** 96,000 Chlorine Gas 1,000,000.00 Chlorine gas 1,000,000 sum Sub Total ** 1,000,000 Electrical, Instrumentation and Controls Allowance for electrical, instrumentation and controls 20% 4,146,000 0.20 829,200 Sub Total ** 829,200 DAF Mechanical Supply and Installation 2kW mixers 16 25,000.00 400,000 no 700 Subnatant collection m2 1,200.00 840,000 5000L pressure vessel 8 60,000.00 480,000 lno Recycle pumps no 10 60,000.00 600,000 2 240,000.00 480,000 50kW air compressor and receiver no 8 90,000.00 720,000 Float scraper no DAF nozzles (dispersion valve array) no 8 30,000.00 240,000 Allowance for pipework, valves and connections 960,000.00 960,000 sum Sub Total ** 4,720,000 **Electrical, Instrumentation and Controls** Allowance for electrical, instrumentation and controls 20% 4,720,000 0.20 944,000 Sub Total ** 944.000 **BAC FILTERS** Mechanical Supply and Installation

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Section '2'-'Process Plant and Equipment' COMPANY : Beca PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION DATE: Thu 08 Sep 2016 03:34pm SubTitle: July 2016 Bid Currency : NZD

BQREF	DESCRIPTION		UNIT	QTY	RATE	COST
	Plenum floor		m2	1,135	2,400.00	2,724,000
	400mm th layer of sand		m3	450	800.00	360,000
	350mm th layer of gravel		m3	400	500.00	200,000
	1500mm th layer of BAC media		m3	1,700	1,450.00	2,465,000
	Upwash launders		no	14	50,000.00	700,000
	75kW upwash pumps		no	3	60,000.00	180,000
	175kW air scour blowers		no	2	100,000.00	200,000
	Allowance for pipework, valves and connections		sum	1	2,400,000.00	2,400,000
	Comections	Sub Total		'	2,400,000.00	9,229,000
						, ,
	Electrical, Instrumentation and Controls					
	Allowance for electrical, instrumentation and controls		20%	9,229,000	0.20	1,845,800
		Sub Total				1,845,800
	OZONE					
	Mechanical Supply and Installation					
	VPSA ozone system		sum	1	4,800,000.00	4,800,000
	Allowance for associated work not covered in the basic price		25%	4,800,000	0.25	1,200,000
	Allowance for pipework, valves and connections		sum	1	580,000.00	580,000
	Connections	Sub Total		1	380,000.00	6,580,000
		Sub Total				0,300,000
	Electrical, Instrumentation and Controls					
	Allowance for electrical, instrumentation and controls		20%	6,580,000	0.20	1,316,000
	and controls	Sub Total		0,000,000	0.20	1,316,000
		oub rotar				1,310,000
	RESIDUALS MANAGEMENT					
	Washout Thickeners (2 No)					
	Floc chamber		no	2	50,000.00	100,000
	Floor rake		no	2	360,000.00	720,000
	Mixer paddles		no	2	25,000.00	50,000

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Section '2'-'Process Plant and Equipment' COMPANY : Beca PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION DATE: Thu 08 Sep 2016 03:34pm Bid Currency : NZD SubTitle: July 2016

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Launder	no	2	25,000.00	50,000
	Supernatant recycle pumps	no	4	90,000.00	360,000
	Sludge pumps	no	4	90,000.00	360,000
	Allowance for pipework, valves and connections	no	2	85,000.00	170,000
	Sub Total	**			1,810,000
	Sludge Thickeners (2 No)				
	Floc chamber	no	2	50,000.00	100,000
	Floor rake	no	2	360,000.00	720,000
	Mixer paddles	no	2	25,000.00	50,000
	Launder	no	2	25,000.00	50,000
	Supernatant recycle pumps	no	4	90,000.00	360,000
	Sludge pumps	no	4	90,000.00	360,000
	Allowance for pipework, valves and connections	no	2	85,000.00	170,000
	Sub Total		2	65,000.00	1,810,000
	Sub Total				1,010,000
	Filter Presses				
	Filter press and ancillary equipment supply	no	2	1,700,000.00	3,400,000
	Filter press install and ancillaries	no	2	2,500,000.00	5,000,000
	Sub Total	**			8,400,000
	Other Pumps and Mixers				
	Washout balance tank mixers - 4kW submersible	no	2	60,000.00	120,000
	Washout thickener feed pumps - 15kW				
	open impeller	no	2	45,000.00	90,000
	Filter to waste return pumps - 22kW centrifugal	no	2	60,000.00	120,000
	De-aeration tank mixers - 1kW submersible	no	2	30,000.00	60,000
	De-aeration tank pumps - 30kW progressive cavity	no	2	75,000.00	150,000
	Supernatant return pumps - 30kW centrifugal	no	2	75,000.00	150,000
	Sludge thickener feed tank mixers - 1kW submersible	no	2	30,000.00	60,000

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Section '2'-'Process Plant and Equipment' COMPANY: Beca PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION DATE: Thu 08 Sep 2016 03:34pm SubTitle: July 2016 Bid Currency: NZD BQREF DESCRIPTION UNIT QTY **RATE** COST Sludge thickener feed pumps - 5kW 2 30,000.00 60,000 open impeller no

Sludge balance tank mixers - 2kW submersible	no	4	45,000.00	180,000
Sludge filter press feed pumps - 5kW progressive cavity	no	2	90,000.00	180,000
Attenuation storage return pumps - 15kW open impeller	no	2	45,000.00	90,000
Sub Total	**			1,260,000
Electrical, Instrumentation and Controls				
Allowance for electrical, instrumentation and controls	20%	13,280,000	0.20	2,656,000
Sub Total	**			2,656,000
RAW WATER PUMP STATION				
Mechanical Supply and Installation				
Raw water screen supply - band screens	no	2	400,000.00	800,000
Raw water screen install	sum	1	1,000,000.00	1,000,000
Raw water screens screenings handling	sum	1	100,000.00	100,000
Pumps and motors - 215kW	no	5	350,000.00	1,750,000
Allowance for pipework, valves and connections	sum	1	1,200,000.00	1,200,000
Sub Total	**			4,850,000
Electrical, Instrumentation and Controls				
Allowance for electrical, instrumentation			700 000 00	700 000
	sum	1	700,000.00	700,000
Sub Total	**			700,000
<u>ANCILLARIES</u>				
Service water	sum	1	240,000.00	240,000
Air supply	sum	1	540,000.00	540,000
Allowance for additional interconnecting pipework, valves and connections	sum	1	4,000,000.00	4,000,000
Sub Total	**			4,780,000
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SubTitle :	ubTitle : July 2016 Bid Currency : NZD					Bid Currency : NZD
BQREF	DESCRIPTION		UNIT	QTY	RATE	COST
	POWER SUPPLY					
				4	4 500 000 00	4 500 000
	Standby diesel generator - 2.5MW		no	1	1,500,000.00	1,500,000
	11kV Vector power supply upgrade and HV reticulation		sum	1	2,320,000.00	2,320,000
	Allowance for power upgrade to the existing network		m	2,500	600.00	1,500,000
	Allowance for fibre along the new raw and treated water pipelines		m	4,820	300.00	1,446,000
		Sub Total	**			6,766,000
	OTHER					
	SCADA					
	Allowance for software development and commissioning		sum	1	1,000,000.00	1,000,000
		Sub Total			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1,000,000
	Process Commissioning and Support					
	Allowance for commissioning and support		sum	1	500,000.00	500,000
		Sub Total	**			500,000
	Project Closeout					
	Allowance for spare equipment		sum	1	500,000.00	500,000
	Allowance for project completion report including defects liability period coordination - Based on 10 hours/week over 52 weeks assuming majority of the defects					
	will be rectified over the first 3 months		sum	1	130,000.00	130,000
		Sub Total	**			630,000
	O&M Manuals and Training					
	Allowance for O&M manuals		sum	1	100,000.00	100,000
	Allowance for O&M training		sum	1	200,000.00	200,000
		Sub Total	**			300,000
	Preliminaries & General					
	Contractors on-site overheads (P&G)					
	(say 6% of construction cost)		sum	65,072,000	0.06	3,904,320

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Section '2'-'Process Plant and Equipment'

PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

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Oub Hilo . oui	Title : July 2016 Bid Currency : NZD				
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Contractors off-site overheads and margin (say 4%)	sum	68,976,000	0.04	2,759,040
	Sub Total	**			6,663,360
	Estimating Contingency				
	Allowance for estimating contingency (10%)	sum	71,735,000	0.10	7,173,500
	Rounding	sum	1	1,140.00	1,140
	Sub Total	**			7,174,640
	TOTAL	#*			78,910,000
	Totals for Section '2'-'Process Plant and Equipment'				78,910,000

Section '3'-'Ancillary Structures' COMPANY : Beca PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION DATE: Thu 08 Sep 2016 03:34pm Bid Currency : NZD SubTitle : July 2016

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
3	ANCILLARY STRUCTURES - MANUKA ROAD OPTION				
	Raw Water Infrastructure				
	Connection to the raw water aqueduct - trenched section along Exhibition Drive - 550mm dia	m	400	5,300.00	2,120,000
	Gravity supply from Upper Nihotupu raw water main - trenched section along Exhibition Drive and via reservoir site - 550mm dia	m	2,037	2,500.00	5,092,500
	Sub Total		2,007	2,500.00	7,212,500
	Off-Spec Discharge				
	Overflow pipeline to lagoon - 1200mm dia	m	213	4,800.00	1,022,400
	Sub Total	**			1,022,400
	Treated Water Infrastructure				
	Treated Water Tunnel				
	Note: It is assumed that there are no basalt present in the area of the tunnel and shafts	note			
	Tunnel - 2m dia unlined tunnel	m	820	8,000.00	6,560,000
	Tunnel sleeve including 1200mm dia pipeline	m	820	6,300.00	5,166,000
	Jacking shaft at Treatment Plant - 5m x 8m x 10m deep	no	1	315,000.00	315,000
	Intermediate reception shaft - 5m dia x 35m deep	no	1	1,000,000.00	1,000,000
	Jacking shaft at Mackies Rest - 5m x 8m x 10m deep	no	1	315,000.00	315,000
	Tunnel fixed costs	sum	1	5,000,000.00	5,000,000
	Sub Total	**			18,356,000
	Treated Water Pipeline				
	Pipeline from treated water pump station to reservoirs - 1200mm dia	m	530	4,800.00	2,544,000
	Reservoir pipework (1200mm dia - includes inlet manifold, outlet, overflow and scour)	sum	1	2,600,000.00	2,600,000
	Pipeline outlet to network - 1200mm dia	m	4,000	4,800.00	19,200,000
	Sub Total	**			24,344,000

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Section '3'-'Ancillary Structures'

PROJECT : HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

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COMPANY : Beca
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Bid Currency : NZD

Sub little : July 2016 Bid Currency : N2D						
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST	
	Preliminaries & General					
	Allowance for all as-built documentation	sum	1	50,000.00	50,000	
	Contractors on-site overheads	note		included		
	Contractors off-site overheads and margin	note		included		
	Sub Total	**			50,000	
	Estimating Contingency					
	Allowance for estimating contingency (10%)	sum	50,985,000	0.10	5,098,500	
	Rounding	sum	1	-3,400.00	-3,400	
	Sub Total	**			5,095,100	
	TOTAL	#*			56,080,000	
	Totals for Section '3'-'Ancillary Structures'				56,080,000	
		L]			

Section '4'-'Implementation Costs'

PROJECT: HUIA WATER TREATMENT PLANT - MANUKA ROAD OPTION

SubTitle : July 2016

COMPANY : Beca
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Bid Currency : NZD

SubTitle : Suly 2010					
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
4	IMPLEMENTATION COSTS - MANUKA ROAD OPTION				
	Allowance for all Design, Management,				
	Construction and Contract supervision, etc. (say 15%)	sum	235,860,000	0.15	35,379,000
	Allowance for consent and regulatory fees (say 2%)	sum	235,860,000	0.02	4,717,200
	Allowance for client internal costs (say 3%)	sum	235,860,000	0.03	7,075,800
	Rounding	sum	1	-2,000.00	
	Sub Total	**			47,170,000
	Totals for Section '4'-'Implementation Costs'				47,170,000

Appendix D3: Parker North

GENERAL SUMMARY COMPANY: Beca

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD NORTH OPTION

DATE : Thu 08 Sep 2016 03:46pm SubTitle : July 2016 Bid Currency : NZD

	-				
00	SECTION NAME	UNIT	QTY	RATE	cos
	HUIA WATER TREATMENT PLANT OPTIONS				
	MIX OF CONCEPT (PROCESS) AND PRELIMINARY (CIVILS) DESIGN COST ESTIMATES: Note: These estimates are in the order of minus 15% to plus 25% accu-				
	racy overall.				
	PARKER ROAD NORTH OPTION				
	Civil Works				94,970,00
	Process Plant and Equipment				76,860,00
	Ancillary Structures				66,650,00
	Construction Subtota				238,480,00
	Implementation Costs				47,700,00
	Land Costs				9,570,00
	Indirects Subtota	I			57,270,00
	PARKER ROAD NORTH TOTAL				295,750,00
	NOTES				
	These estimates are based on the GHD civils drawings and information and the Beca information for the process mechanical, electrical and ancillary structures.				
	Rates used in these estimates are based on a mixture of the following: - CH2M Beca database - First principles - Costs from suppliers - Similar historical projects				
	An estimating contingency has been included in the estimate to cover items of unforeseen detail and design development. This contingency is expected to be converted to scope and therefore should not be regarded				
	as discretionary.				
	EXCLUSIONS				
	Excavation in hard rock / basalt				

GS/1 6511164 PARKER N REV 1

GENERAL SUMMARY COMPANY: Beca

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD NORTH OPTION

DATE : Thu 08 Sep 2016 03:46pm SubTitle : July 2016 Bid Currency : NZD

СО	SECTION NAME	UNIT	QTY	RATE	COST
	Night or after hours work				
	Cost for shutting down any existing plant.				
	Specific construction noise control measures				
	Asbestos removal / disposal				
	GST				
	Project contingency				
	Escalation after September 2016				
	Capitalised interest				
	Costs to date				
	Operating and Maintenance cost				
	Insurance costs				
	Legal and finance fees				
	TOTALS OF SELECTED SECTIONS	NZ\$			295,750,000

GS/2 6511164 PARKER N REV 1

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD NORTH OPTION

SubTitle : July 2016

COMPANY : Beca

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BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
1	CIVIL WORKS - PARKER ROAD NORTH OPTION				
	Site Clearance and Demolition				
	Clear site - remove vegetation, etc.	m2	60,000	6.00	360,000
	Demolish buildings -approximately 14 No houses and associated buildings	sum	1	700,000.00	700,000
	Sub	Total **			1,060,000
	Environmental Compliance and Management				
	Allowance for environmental compliance including erosion and sediment control	sum	1	850,000.00	850,000
	Sub	Total **			850,000
	General Earthworks				
	Allowance for the contractors laydown area - assume 300 thick hardfill including removal on complation	m2	2,500	50.00	125,000
	Total cut	m3	73,140		
	Total fill	m3	30,060		
	Remove topsoil and respeads on completion - say 150 thick	m3	9,000	45.00	405,000
	Cut to fill - assume 50% of fill can be obtained from cut material	m3	15,030	12.00	180,360
	Cut to waste	m3	58,110	40.00	2,324,400
	Imported fill	m3	15,030	50.00	751,500
	Allowance for undercut in soft spots including imported fill - assume 5% of cut volume	m3	3,657	110.00	402,270
		Total **	3,001		4,188,530
	Chemical Storage Building				
	Piling - no piling needed	note			
	500 th reinforced concrete floor slab including foundation beams	m2	61	844.00	51,484
	250 th reinforced concrete floor slab including foundation beams	m2	793	695.00	551,135
	Allowance for plinths and miscellaneous works	sum	1	75,000.00	75,000

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PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD NORTH OPTION

SubTitle : July 2016

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BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Sealer to bunded floors	m2	757	150.00	113,550
	250 th precast concrete walls	m2	1,534	560.00	859,040
	Allowance for 250 th concrete screen walls including foundations	m2	252	790.00	199,080
	Allowance for roofing including steel support	m2	903	500.00	451,500
	Allowance for miscellaneous works - stairs, bollards, etc.	sum	1	50,000.00	50,000
	Allowance for roller door	no	10	12,000.00	120,000
	Small power and lighting	m2	854	100.00	85,400
	Mechanical ventilation	m2	520	350.00	182,000
	Sprinkler system including smoke and heat detection	m2	854	110.00	93,940
	Allowance for drainage	sum	1	100,000.00	100,000
	Sub Tot	al **			2,932,129
	Chlorine Storage Building				
	Note: Assume the building is the same as the chemical storage building as there is no design info for this building	note			
	Piling - no piling needed	note			
	Rate for Chemical Storage applied to this buildings area	m2	189	3,400.00	642,600
	Sub Tot	al **			642,600
	Electrical Compound				
	Piling - no piling needed	note			
	300 th reinforced concrete floor slab including foundation beams	m2	215	595.00	127,925
	Allowance for plinths and miscellaneous works	sum	1	10,000.00	10,000
	Upper floor	m2	60	300.00	18,000
	200 th precast concrete walls	m2	499	540.00	269,460
	Allowance for roofing including steel support	m2	215	450.00	96,750
	Allowance for miscellaneous works - stairs, bollards, etc.	sum	1	20,000.00	20,000
	Allowance for roller door - approx. 5m x 4m high	no	1	12,000.00	12,000

SubTitle : July 2016

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD NORTH OPTION

COMPANY : Beca

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	· 		1		<u> </u>
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Allowance for roller door - approx. 3m x	200	1	8,000.00	8,000
	3m high	no	245		
	Small power and lighting Mechanical ventilation	m2	215	100.00 300.00	21,500
		m2	215	300.00	64,500
	Extra value for air conditioning to the 11kV switchroom	m2	53	600.00	31,800
	Sprinkler system including smoke and heat detection	m2	215	110.00	23,650
	Allowance for drainage	sum	1	25,000.00	25,000
		Sub Total **			728,585
	DAF Tank				
	Piling - no piling needed	note			
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	1,526	800.00	1,220,800
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	852	45.00	38,340
	500 th reinforced concrete floor slab	m2	2,053	675.00	1,385,775
	300 th reinforced concrete walls	m2	3,818	755.00	2,882,590
	Allowance for walkways over the tank	m2	201	1,060.00	213,060
	Allowance for roof and wall cladding including structures - Colorsteel on epoxy coated structural steel	m2	2,053	570.00	1,170,210
	Small power and lighting	m2	2,053	70.00	143,710
	Mechanical ventilation	m2	2,053	100.00	205,300
	Extra value for air conditioning to the MCC room	m2	43	600.00	25,800
	Allowance for miscellaneous works	sum	1	500,000.00	500,000
	Allowance for drainage	sum	1	100,000.00	100,000
		Sub Total **			7,885,585
	Ozone Generator Room				
	Piling - no piling needed	note			
	300 th reinforced concrete floor slab including foundation beams	m2	294	595.00	174,930

SubTitle : July 2016

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD NORTH OPTION DATE: Thu 08 Sep 2016 03:46pm

COMPANY : Beca

Bid Currency : NZD

IPTION	l	JNIT	QTY	RATE	COST
ce for plinths and miscellaneous	s	sum	1	30,000.00	30,000
recast concrete walls	n	m2	581	540.00	313,740
ce for roofing including steel	n	m2	294	450.00	132,300
ce for miscellaneous works - , etc.	s	sum	1	10,000.00	10,000
ce for roller door - approx. 5m x 4m	n	no	3	12,000.00	36,000
ower and lighting	n	m2	294	100.00	29,400
ical ventilation	n	m2	294	300.00	88,200
r system including smoke and heat n	n	m2	294	110.00	32,340
ce for drainage	s	sum	1	25,000.00	25,000
	Sub Total *	**			871,910
Contact Tank					
no piling needed	n	note			
ary sheet piles to average 10m BGL dincluding waler beams and ties	n	m2	600	730.00	438,000
e and cart away - in general rks	n	note			
with excavated material	n	m3	522	45.00	23,490
einforced concrete floor slab	n	m2	418	655.00	273,790
einforced concrete upper floors	n	m2	79	618.00	48,822
einforced concrete walls	n	m2	682	870.00	593,340
einforced concrete walls	n	m2	827	776.00	641,752
ce for cover and walkways over the area	n	m2	116	630.00	73,080
ce for roof and wall cladding g structures - Colorsteel on epoxy structural steel	n	m2	418	660.00	275,880
ower and lighting	n	m2	418	70.00	29,260
ical ventilation	n	m2	418	100.00	41,800
ce for miscellaneous works	s	sum	1	100,000.00	100,000
ce for drainage	s	sum	1	35,000.00	35,000
	Sub Total *	**			2,574,214
		age		age sum 1	age sum 1 35,000.00

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COMPANY : Beca

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BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	BAC Filter Tank				
	Piling - no piling needed	note			
	Temporary sheet piles to average 10m BGL all round including waler beams and ties	m2	1,500	810.00	1,215,00
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	1,350	45.00	60,75
	400 th reinforced concrete floor slab	m2	2,085	608.00	1,267,68
	400 th reinforced concrete upper floors	m2	3,225	576.00	1,857,60
	400 th reinforced concrete walls	m2	4,837	830.00	4,014,710
	Inlet channnel works	sum	1	330,000.00	330,000
	Allowance for cover and walkways over the inlet channel/open gallery area	m2	523	540.00	282,420
	Allowance for roof and wall cladding including structures - Colorsteel on epoxy coated structural steel	m2	2,065	590.00	1,218,350
	Small power and lighting	m2	2,065	70.00	144,55
	Mechanical ventilation	m2	2,065	100.00	206,50
	Allowance for miscellaneous works	sum	1	300,000.00	300,00
	Allowance for drainage	sum	1	100,000.00	100,00
	Sub Total	**			10,997,56
	Chlorine Contact Tank				
	Piling - no piling needed	note			
	Temporary sheet piles to average 15m BGL all round including waler beams and ties	m2	2,093	700.00	1,465,100
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	1,113	45.00	50,08
	500 th reinforced concrete floor slab	m2	1,553	655.00	1,017,215
	500 th reinforced concrete walls	m2	1,647	845.00	1,391,71
	300 th reinforced concrete walls	m2	1,078	734.00	791,252
	Allowance for a cover over the tank	m2	1,553	700.00	1,087,10
	Allowance for miscellaneous works	sum	1	200,000.00	200,00
	Allowance for drainage	sum	1	35,000.00	35,000

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD NORTH OPTION

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BQREF DESCRIPTION UNIT QTY **RATE** COST Sub Total ** 6,037,467 Treated Water Pump Station Piling - no piling needed note Temporary sheet piles to average 15m BGL 893 800.00 all round including waler beams and ties m2 714,400 Excavate and cart away - in general earthworks note Backfill with excavated material m3 471 45.00 21,195 250 th reinforced concrete floor slab m2 386 480.00 185,280 386 400 th reinforced concrete upper floors 576.00 222,336 m2 Allowance for pump plinths 25,000.00 25,000 sum 250 th reinforced concrete walls m2 476 590.00 280,840 Allowance for upper structure and roofing including steel support m2 386 1,300.00 501,800 150,000.00 Allowance for miscellaneous works sum 150,000 Allowance for drainage sum 35,000.00 35,000 Sub Total ** 2,135,851 Washout Balance Tank Piling - no piling needed note Temporary sheet piles to average 11m BGL all round including waler beams and ties 990 750.00 742,500 m2 Excavate and cart away - in general earthworks note Backfill with excavated material 510 45.00 22,950 m3 500 th reinforced concrete floor slab 404 544.00 219,776 m2 628 400 th reinforced concrete walls m2 800.00 502,400 Allowance for miscellaneous works sum 25,000.00 25,000 Sub Total ** 1,512,626 Sludge Balance Tank Piling - assume 600mm dia x 10m long in-situ concrete piles at average 4m c/c 20 7,000.00 140,000 (no permanent liners) no Temporary sheet piles to average 7m BGL all round including waler beams and ties m2 504 865.00 435,960

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BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	283	45.00	12,735
	250 th reinforced concrete floor slab	m2	272	432.00	117,504
	300 th reinforced concrete walls	m2	321	756.00	242,676
	Allowance for miscellaneous works	sum	1	25,000.00	25,000
	Su	b Total **			973,875
	Supernatant Return Tank				
	Piling - assume 600mm dia x 10m long in-situ concrete piles at average 4m c/c (no permanent liners)	no	20	7,000.00	140,000
	Temporary sheet piles to average 10m BGL all round including waler beams and ties	m2	760	770.00	585,200
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	402	45.00	18,090
	250 th reinforced concrete floor slab	m2	301	432.00	130,032
	300 th reinforced concrete walls	m2	471	756.00	356,076
	Allowance for miscellaneous works	sum	1	25,000.00	25,000
	Su	b Total **			1,254,398
	Sludge Thickener Feed Tank				
	Piling - assume 600mm dia x 10m long in-situ concrete piles at average 4m c/c (no permanent liners)	no	6	7,000.00	42,000
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	322	790.00	254,380
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	175	45.00	7,875
	250 th reinforced concrete floor slab	m2	86	432.00	37,152
	300 th reinforced concrete walls	m2	171	756.00	129,276
	Allowance for miscellaneous works	sum	1	15,000.00	15,000
	Su	b Total **			485,683
	Sludge Thickeners (2 No)				
	Note: The following cost is for one tank				
					_

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BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	(see last item for second tank)	note			
	Piling - assume 600mm dia x 10m long in-situ concrete piles at average 4m c/c (no permanent liners)	no	22	7,000.00	154,000
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	385	890.00	342,650
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	390	45.00	17,550
	Average 700 th reinforced concrete floor slab	m2	144	760.00	109,440
	250 th reinforced concrete walls	m2	215	800.00	172,000
	250 th reinforced concrete channel floor	m2	45	560.00	25,200
	Allowance for miscellaneous works	sum	1	50,000.00	50,000
	Add the above total for the scond tank	sum	1	870,840.00	870,840
	Sub Tota	**			1,741,680
	Washwater Thickeners (2 No)				
	Note: The following cost is for one tank (see last item for second tank)	note			
	Piling - assume 600mm dia x 10m long in-situ concrete piles at average 4m c/c (no permanent liners)	no	22	7,000.00	154,000
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	385	890.00	342,650
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	390	45.00	17,550
	Average 700 th reinforced concrete floor slab	m2	144	760.00	109,440
	250 th reinforced concrete walls	m2	215	800.00	172,000
	250 th reinforced concrete channel floor	m2	45	560.00	25,200
	Allowance for miscellaneous works	sum	1	50,000.00	50,000
	Add the above total for the scond tank	sum	1	870,840.00	870,840
	Sub Total	**			1,741,680
	Sludge Dewatering Building (Filter Press)				
	Piling - no piling needed	note			

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD NORTH OPTION

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BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Building area	m2	656		
	300 th reinforced concrete floor slab including foundation beams	m2	524	595.00	311,780
	300 th reinforced concrete upper floor	m2	269	514.00	138,266
	200 th precast concrete walls	m2	1,413	540.00	763,020
	400 x 400 concrete columns	m	54	400.00	21,600
	Allowance for roofing including structure	m2	404	450.00	181,800
	Stair rising 6m	no	1	21,000.00	21,000
	Allowance for plinths and miscellaneous works	sum	1	75,000.00	75,000
	Allowance for roller door	no	3	12,000.00	36,000
	Small power and lighting	m2	656	100.00	65,600
	Mechanical ventilation	m2	656	350.00	229,600
	Extra value for air conditioning to the MCC/office room	m2	34	400.00	13,600
	Sprinkler system including smoke and heat detection	m2	656	110.00	72,160
	Allowance for drainage	sum	1	100,000.00	100,000
	Sub Total	**			2,029,426
	Pasaryoirs (2 No.)				
	Reservoirs (2 No)				
	Note: The following cost is for one reservoir (see last item for second	note			
	Note: The following cost is for one reservoir (see last item for second reservoir)	note	28 905		
	Note: The following cost is for one reservoir (see last item for second reservoir) Reservoir volume	note m3	28,905		
	Note: The following cost is for one reservoir (see last item for second reservoir)		28,905 560		840,000
	Note: The following cost is for one reservoir (see last item for second reservoir) Reservoir volume Retaining wall - say average 7m high x 80m long Piling - assume 600mm dia x 10m long	m3			840,000
	Note: The following cost is for one reservoir (see last item for second reservoir) Reservoir volume Retaining wall - say average 7m high x 80m long	m3			840,000 840,000
	Note: The following cost is for one reservoir (see last item for second reservoir) Reservoir volume Retaining wall - say average 7m high x 80m long Piling - assume 600mm dia x 10m long in-situ concrete piles at average 5m c/c	m3 m2	560	1,500.00 7,000.00	
	Note: The following cost is for one reservoir (see last item for second reservoir) Reservoir volume Retaining wall - say average 7m high x 80m long Piling - assume 600mm dia x 10m long in-situ concrete piles at average 5m c/c (no permanent liners)	m3 m2 no	560 120	1,500.00 7,000.00 690.00	840,000 2,011,350
	Note: The following cost is for one reservoir (see last item for second reservoir) Reservoir volume Retaining wall - say average 7m high x 80m long Piling - assume 600mm dia x 10m long in-situ concrete piles at average 5m c/c (no permanent liners) 500 th reinforced concrete floor slab	m3 m2 no m2	560 120 2,915	1,500.00 7,000.00 690.00 1,200.00	840,000 2,011,350 2,294,400
	Note: The following cost is for one reservoir (see last item for second reservoir) Reservoir volume Retaining wall - say average 7m high x 80m long Piling - assume 600mm dia x 10m long in-situ concrete piles at average 5m c/c (no permanent liners) 500 th reinforced concrete floor slab 400 th reinforced concrete valls 500 th reinforced concrete roof slab including allowance for internal colums,	m3 m2 no m2 m2	560 120 2,915 1,912	1,500.00 7,000.00 690.00 1,200.00	840,000 2,011,350 2,294,400
	Note: The following cost is for one reservoir (see last item for second reservoir) Reservoir volume Retaining wall - say average 7m high x 80m long Piling - assume 600mm dia x 10m long in-situ concrete piles at average 5m c/c (no permanent liners) 500 th reinforced concrete floor slab 400 th reinforced concrete walls 500 th reinforced concrete roof slab including allowance for internal colums, etc. Stairs rising 10m and balustrade around the	m3 m2 no m2 m2 m2	560 120 2,915 1,912	1,500.00 7,000.00 690.00 1,200.00 845.00	840,000 2,011,350 2,294,400 2,463,175 100,000
	Note: The following cost is for one reservoir (see last item for second reservoir) Reservoir volume Retaining wall - say average 7m high x 80m long Piling - assume 600mm dia x 10m long in-situ concrete piles at average 5m c/c (no permanent liners) 500 th reinforced concrete floor slab 400 th reinforced concrete walls 500 th reinforced concrete roof slab including allowance for internal colums, etc. Stairs rising 10m and balustrade around the top of the reservoir	m3 m2 no m2 m2 m2 sum	560 120 2,915 1,912	1,500.00 7,000.00 690.00 1,200.00 845.00	840,000 2,011,350 2,294,400 2,463,175

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COMPANY : Beca

BQREF	DESCRIPTION		UNIT	QTY	RATE	COST
	Add the above total for the second tank		sum	1	8,798,925.00	8,798,925
		Sub Total	**			17,597,850
	Administration Building					
	Piling - no piling needed		note			
	Building area		m2	403		
	General building works		m2	403	2,200.00	886,600
	Allowance for fitout		m2	403	750.00	302,250
	Extra value for amenities fitout		m2	29	1,000.00	29,000
	Allowance for paving and landscaping to entrance and external areas		sum	1	75,000.00	75,000
		Sub Total	**			1,292,850
	Lagoon					
	Allowance for lagoon finishing works - liner, inlet, outlet, planting, etc. (note excavation and fill are in general earthworks)		m2	6,200	205.00	1,271,000
		Sub Total	**			1,271,000
	Services Relocation					
	Nominal allowance for services relocation		sum	1	100,000.00	100,000
		Sub Total	**			100,000
	Roading and Finishing Works					
	New roads and parking including kerbs, drainage, etc 40mm AC14 on 2 coat chipseal on 150mm AP40 on 300mm AP40 on geotextile on prepared areas (AP 40 with cement stabilisation)		m2	7,600	180.00	1,368,000
	Allowance for site lighting		no	40	10,000.00	400,000
	Allowance for general landscaping		sum	1	750,000.00	750,000
	Allowance for permanent noise control measures		sum	1	1,000,000.00	1,000,000
	Security fence		m	1,500	250.00	375,000
	Main entrance gate, gatehouse, etc.		sum	1	150,000.00	150,000
		Sub Total	**			4,043,000
	Traffic Management and Temporary Works					

Section '1'-'Civil Works'

COMPANY : Beca

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD NORTH OPTION

SubTitle : July 2016 Bid Currency : NZD

DATE: Thu 08 Sep 2016 03:46pm

BQREF	DESCRIPTION		UNIT	QTY	RATE	COST
	Allowance for traffic management and temporary works		sum	1	1,500,000.00	1,500,000
		Sub Total	**			1,500,000
	Preliminaries & General					
	Allowance for the contractor's health and safety plan and a fulltime site supervision representative - assume 36 months		sum	1	320,000.00	320,000
	Allowance for all as-built documentation		sum	1	100,000.00	100,000
	Contractors on-site overheads (P&G) (say 8% of construction cost)		sum	76,868,000	0.08	6,149,440
	Contractors off-site overheads and margin (say 4%)		sum	83,018,000	0.04	3,320,720
		Sub Total	**			9,890,160
	Estimating Contingency					
	Allowance for estimating contingency (10%)		sum	86,339,000	0.10	8,633,900
	Rounding		sum	1	-2,559.00	-2,559
		Sub Total	**			8,631,341
		TOTAL	#*			94,970,000
	Totals for Section '1'-'Civil Works'					94,970,000

SubTitle: July 2016

BQREF DESCRIPTION UNIT QTY RATE COST 2 PROCESS PLANT AND EQUIPMENT - PARKER ROAD **NORTH OPTION CHEMICAL SYSTEMS** Alum 360,000 105m3 alum storage tank no 2 180,000.00 2 40,000 20,000.00 7m3 day tank no Dosing pumps and associated pipework 2 60,000.00 120,000 no 120.00 Dosing lines 100 12,000 m Sub Total ** 532,000 Poly (Flocculant, Thickening and Dewatering Aids) - 3 No Make up skid 6 90,000.00 540,000 no Dosing pumps and associated pipework no 3 60,000.00 180,000 Dosing lines m 300 120.00 36,000 Sub Total ** 756,000 Lime 30 tonne silo and associated transfer 2 batching no 360,000.00 720,000 2 72,000.00 144,000 30m3 day tank no 7.5kW mixers 2 30,000.00 60,000 lno Dosing pumps and associated pipework no 4 90,000.00 360,000 500 180.00 90,000 Dosing lines lm 2 2kL post lime tanks 50,000.00 100,000 no 2 0.5kL pre lime tanks 30,000.00 60,000 lno Sub Total ** 1,534,000 Fluoride 10m3 bulk supply tank 2 30.000.00 60.000 lno 2 500L day tank 12,000.00 24,000 no Dosing pumps and associated pipework 2 60,000.00 120,000 lno Dosing lines m 200 120.00 24,000

COMPANY: Beca

Bid Currency: NZD

DATE: Thu 08 Sep 2016 03:46pm

SubTitle: July 2016

BQREF DESCRIPTION UNIT QTY RATE COST Sub Total ** 228,000 Carbon Dioxide (assume leased) 800 120.00 96,000 Dosing lines (4 x 200m) m Sub Total ** 96,000 Chlorine Gas 1,000,000.00 Chlorine gas 1,000,000 sum Sub Total ** 1,000,000 Electrical, Instrumentation and Controls Allowance for electrical, instrumentation and controls 20% 4,146,000 0.20 829,200 Sub Total ** 829,200 DAF Mechanical Supply and Installation 2kW mixers 16 25,000.00 400,000 no 700 Subnatant collection m2 1,200.00 840,000 5000L pressure vessel 8 60,000.00 480,000 lno Recycle pumps no 10 60,000.00 600,000 2 240,000.00 480,000 50kW air compressor and receiver no 8 90,000.00 720,000 Float scraper no DAF nozzles (dispersion valve array) no 8 30,000.00 240,000 Allowance for pipework, valves and connections 960,000.00 960,000 sum Sub Total ** 4,720,000 **Electrical, Instrumentation and Controls** Allowance for electrical, instrumentation and controls 20% 4,720,000 0.20 944,000 Sub Total ** 944.000 **BAC FILTERS** Mechanical Supply and Installation

COMPANY: Beca

Bid Currency: NZD

DATE: Thu 08 Sep 2016 03:46pm

SubTitle : July 2016

COMPANY : Beca

Bid Currency : NZD

DATE: Thu 08 Sep 2016 03:46pm

BQREF	DESCRIPTION		UNIT	QTY	RATE	COST
	Plenum floor		m2	1,135	2,400.00	2,724,000
	400mm th layer of sand		m3	450	800.00	360,000
	350mm th layer of gravel		m3	400	500.00	200,000
	1500mm th layer of BAC media		m3	1,700	1,450.00	2,465,000
	Upwash launders		no	14	50,000.00	700,000
	75kW upwash pumps		no	3	60,000.00	180,000
	175kW air scour blowers		no	2	100,000.00	200,000
	Allowance for pipework, valves and connections		sum	1	2,400,000.00	2,400,000
	Comections	Sub Total		'	2,400,000.00	9,229,000
						, ,
	Electrical, Instrumentation and Controls					
	Allowance for electrical, instrumentation and controls		20%	9,229,000	0.20	1,845,800
		Sub Total				1,845,800
	OZONE					
	Mechanical Supply and Installation					
	VPSA ozone system		sum	1	4,800,000.00	4,800,000
	Allowance for associated work not covered in the basic price		25%	4,800,000	0.25	1,200,000
	Allowance for pipework, valves and connections		sum	1	580,000.00	580,000
	Connections	Sub Total		1	380,000.00	6,580,000
		Sub Total				0,300,000
	Electrical, Instrumentation and Controls					
	Allowance for electrical, instrumentation and controls		20%	6,580,000	0.20	1,316,000
	and controls	Sub Total		0,000,000	0.20	1,316,000
		oub rotar				1,310,000
	RESIDUALS MANAGEMENT					
	Washout Thickeners (2 No)					
	Floc chamber		no	2	50,000.00	100,000
	Floor rake		no	2	360,000.00	720,000
	Mixer paddles		no	2	25,000.00	50,000

SubTitle : July 2016

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Launder	no	2	25,000.00	50,000
	Supernatant recycle pumps	no	4	90,000.00	360,000
	Sludge pumps	no	4	90,000.00	360,000
	Allowance for pipework, valves and connections	no	2	85,000.00	170,000
	Sub Tota	**		·	1,810,000
	Sludge Thickeners (2 No)				
	Floc chamber	no	2	50,000.00	100,000
	Floor rake	no	2	360,000.00	720,000
	Mixer paddles	no	2	25,000.00	50,000
	Launder	no	2	25,000.00	50,000
	Supernatant recycle pumps	no	4	90,000.00	360,000
	Sludge pumps	no	4	90,000.00	360,000
	Allowance for pipework, valves and connections	no	2	85,000.00	170,000
	Sub Tota	**			1,810,000
	E14 D				
	Filter Presses			4 700 000 00	0.400.000
	Filter press and ancillary equipment supply	no	2		3,400,000
	Filter press install and ancillaries	no	2	2,500,000.00	5,000,000
	Sub Tota	**			8,400,000
	Other Pumps and Mixers				
	Washout balance tank mixers - 4kW submersible	no	2	60,000.00	120,000
	Washout thickener feed pumps - 15kW open impeller	no	2	45,000.00	90,000
	Filter to waste return pumps - 22kW centrifugal	no	2	60,000.00	120,000
	De-aeration tank mixers - 1kW submersible	no	2		60,000
	De-aeration tank pumps - 30kW progressive cavity	no	2		150,000
	Supernatant return pumps - 30kW			70,000.00	100,000
	centrifugal	no	2	75,000.00	150,000
	Sludge thickener feed tank mixers - 1kW submersible	no	2	30,000.00	60,000

COMPANY : Beca

Bid Currency : NZD

DATE: Thu 08 Sep 2016 03:46pm

THOUSE THOUSE WATER THE ATTENDED TO THOU

Bid Currency: NZD SubTitle: July 2016 **BQREF** DESCRIPTION UNIT QTY **RATE** COST Sludge thickener feed pumps - 5kW 2 open impeller 30,000.00 60,000 no Sludge balance tank mixers - 2kW 45,000.00 180,000 submersible no 4 Sludge filter press feed pumps - 5kW 2 90,000.00 180,000 progressive cavity no Attenuation storage return pumps - 15kW 2 45,000.00 90,000 open impeller no Sub Total ** 1,260,000 Electrical, Instrumentation and Controls Allowance for electrical, instrumentation and controls 20% 13,280,000 0.20 2,656,000 Sub Total ** 2,656,000 TREATED WATER PUMP STATION Mechanical Supply and Installation Pumps and motors - 215kW 350,000.00 1,750,000 no 5 Allowance for pipework, valves and connections 1,200,000.00 1,200,000 sum Sub Total ** 2,950,000 Electrical, Instrumentation and Controls Allowance for electrical, instrumentation and controls 700,000.00 700,000 sum Sub Total ** 700,000 **ANCILLARIES** Service water 240,000.00 240,000 sum Air supply 540,000.00 540,000 sum Allowance for additional interconnecting 4,000,000.00 4,000,000 pipework, valves and connections sum Sub Total ** 4.780.000 **POWER SUPPLY** Standby diesel generator - 2.5MW 1,500,000.00 1,500,000 lno 11kV Vector power supply upgrade and HV 2,320,000.00 2,320,000 reticulation sum

COMPANY: Beca

DATE: Thu 08 Sep 2016 03:46pm

SubTitle: July 2016

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Allowance for power upgrade to the existing network	m	1,700	600.00	1,020,000
		"	1,700	000.00	1,020,000
	Allowance for fibre along the new raw and treated water pipelines	m	7,110	300.00	2,133,000
	Sub Tota	**			6,973,000
	<u>OTHER</u>				
	SCADA				
	Allowance for software development and commissioning	sum	1	1,000,000.00	1,000,000
	Sub Tota			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1,000,000
	Sub Total				1,000,000
	Process Commissioning and Support				
	Allowance for commissioning and support	sum	1	500,000.00	500,000
	Sub Tota	**			500,000
	Project Closeout				
	Allowance for spare equipment	sum	1	500,000.00	500,000
	Allowance for project completion report including defects liability period coordination - Based on 10 hours/week over 52 weeks assuming majority of the defects				
	will be rectified over the first 3 months	sum	1	130,000.00	130,000
	Sub Tota	**			630,000
	O&M Manuals and Training				
	Allowance for O&M manuals	sum	1	100,000.00	100,000
	Allowance for O&M training	sum	1	200,000.00	200,000
	Sub Tota	**			300,000
	Preliminaries & General				
	Contractors on-site overheads (P&G) (say 6% of construction cost)	sum	63,379,000	0.06	3,802,740
	Contractors off-site overheads and margin (say 4%)	sum	67,182,000		
	Sub Tota	**			6,490,020
	Estimating Contingency				
	Allowance for estimating contingency (10%)	sum	69,869,000	0.10	6,986,900
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COMPANY : Beca

Bid Currency : NZD

DATE: Thu 08 Sep 2016 03:46pm

COMPANY : Beca PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD NORTH OPTION DATE: Thu 08 Sep 2016 03:46pm SubTitle: July 2016 Bid Currency : NZD

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
		sum	1	4,080.00	
	Sub Total				6,990,980
	TOTAL	#*			76,860,000
	Totals for Section '2'-'Process Plant and Equipment'				76,860,000

THOUSE OF THOUSE WATER TREATMENT FEATURE TARRECT ROAD NORTH OF HOL

SubTitle: July 2016 Bid Currency: NZD **BQREF** DESCRIPTION UNIT QTY **RATE** COST 3 **ANCILLARY STRUCTURES - PARKER ROAD NORTH** OPTION Raw Water Infrastructure Raw Water Tunnel Note: It is assumed that there are no basalt present in the area of the tunnel and shafts note Tunnel - 2m dia unlined tunnel 2.089 8.000.00 16.712.000 m Jacking shaft at Treatment Plant - 5m x 8m x 15m deep 1 470,000.00 470,000 no Intermediate reception shaft - 5m dia x 40m 1,100,000.00 1,100,000 no 1 Jacking shaft at Mackies Rest - 5m x 8m x 10m deep 315,000.00 315,000 no Tunnel fixed costs sum 5,000,000.00 5,000,000 Sub Total ** 23,597,000 Gravity Supply from Upper Nihotupu Raw Water Main Trenched section along Exhibition Drive -1,580 2,500.00 m 3,950,000 55mm dia Sub Total ** 3,950,000 Access Road Upgrade to Mackies Rest Road - 780m x 8m wide 6,240 300.00 1,872,000 m2 Sub Total ** 1,872,000 Connection to Raw Water Infrastructure Nominal allowance for connecting the Huia Raw Watermain and Lower Niho Raw Watermain 1,500,000.00 1,500,000 sum Sub Total ** 1,500,000 Off-Spec Discharge Discharge pipework to Allen Swamp - 1200mm 40 9,500.00 380,000 dia m Nominal allowance for the outfall structure 1.000.000.00 1.000.000 sum 1 Sewer - waste water connection to network -250.00 3,000 750,000 150mm dia gravity sewer lm Sub Total ** 2,130,000

COMPANY: Beca

DATE: Thu 08 Sep 2016 03:46pm

Section '3'-'Ancillary Structures' COMPANY : Beca PROJECT : HUIA WATER TREATMENT PLANT - PARKER ROAD NORTH OPTION DATE: Thu 08 Sep 2016 03:46pm SubTitle : July 2016 Bid Currency : NZD

BQREF	DESCRIPTION		UNIT	QTY	RATE	COST
	Treated Water Transmission					
	Pipeline from treated water pump station to reservoirs - 1200mm dia		m	165	4,800.00	792,000
	Reservoir pipework (1200mm dia - includes inlet manifold, outlet, overflow and scour)		sum	1	2,600,000.00	2,600,000
	Pipeline outlet to network - 1200mm dia		m	5,021	4,800.00	24,100,800
		Sub Total	**			27,492,800
	Preliminaries & General					
	Allowance for all as-built documentation		sum	1	50,000.00	50,000
	Contractors on-site overheads		note		included	
	Contractors off-site overheads and margin		note		included	
		Sub Total	**			50,000
	Estimating Contingency					
	Allowance for estimating contingency (10%)		sum	60,592,000	0.10	6,059,200
	Rounding		sum	1	-1,000.00	-1,000
		Sub Total	**			6,058,200
		TOTAL	#*			66,650,000
	Totals for Section '3'-'Ancillary Structures'					66,650,000

3/2 6511164 PARKER N REV 1

Section '4'-'Implementation Costs' COMPANY: Beca PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD NORTH OPTION DATE: Thu 08 Sep 2016 03:46pm SubTitle: July 2016 Bid Currency: NZD BQREF UNIT DESCRIPTION QTY **RATE** COST 4 IMPLEMENTATION COSTS - PARKER ROAD NORTH OPTION Allowance for all Design, Management, Construction and Contract supervision, etc. (say 15%) 238,480,000 0.15 35,772,000 sum Allowance for consent and regulatory fees (say 2%) 238,480,000 0.02 4,769,600 sum Allowance for client internal costs (say 3%) 238,480,000 0.03 7,154,400 sum 4,000.00 Rounding sum 4,000 Sub Total ** 47,700,000

6511164 PARKER N REV 1 4/1

Totals for Section '4'-'Implementation Costs'

47,700,000

Section '5'-'Land Costs' COMPANY : Beca

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD NORTH OPTION

DATE: Thu 08 Sep 2016 03:46pm SubTitle : July 2016 Bid Currency : NZD

Cub i iiio . cui	Sub little : July 2016 Bid Currency : NZD				
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
5	LAND CONSTS - PARKER ROAD NORTH OPTION				
	Allowance for all property purchase costs - say 135% of CV	sum	1	11,792,000.00	11,792,000
	Allowance for legal fees (say \$25,000 per property)	no	11	25,000.00	275,000
	Allowance to sell Existing and Manuka sites	sum	-1	4,500,000.00	-4,500,000
	Demolition of existing plant at Existing Woodlands Park site before selling the land	sum	1	2,000,000.00	2,000,000
	Rounding	sum	1	3,000.00	3,000
	Sub Total	**			9,570,000
	Totals for Section '5'-'Land Costs'				9,570,000

Appendix D4: Parker South

GENERAL SUMMARY COMPANY: Beca

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION

DATE : Thu 08 Sep 2016 03:57pm SubTitle: July 2016 Bid Currency : NZD

	Title . July 2010		1	T		Currency . NZD
Ю	SECTION NAME		UNIT	QTY	RATE	COS
	HUIA WATER TREATMENT PLANT OPTIONS	<u>1</u>				
	MIX OF CONCEPT (PROCESS) AND PRELIMINARY (CIVILS) DESIGN COST ESTIMATES: Note: These estimates are in the order of minus 15% to plus 25% accuracy overall.					
	PARKER ROAD SOUTH OPTION					
	Civil Works					94,160,00
	Process Plant and Equipment					77,410,00
	Ancillary Structures					65,910,00
		Construction Subtotal				237,480,00
	Implementation Costs					47,500,00
	Land Costs					21,010,00
		Indirects Subtotal				68,510,00
		PARKER ROAD SOUTH TOTAL				305,990,00
	NOTES These estimates are based on the GHD civils drawings and information and the Beca information for the process mechanical, electrical and ancillary structures. Rates used in these estimates are based on a mixture of the following: - CH2M Beca database - First principles - Costs from suppliers - Similar historical projects An estimating contingency has been included in the estimate to cover items of unforeseen detail and design development. This contingency is expected to be converted to scope and therefore should not be regarded as discretionary.					
	EXCLUSIONS					

GS/1 6511164 PARKER S REV 1

GENERAL SUMMARY COMPANY: Beca

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION

DATE : Thu 08 Sep 2016 03:57pm Bid Currency : NZD SubTitle: July 2016

со	SECTION NAME	UNIT	QTY	RATE	COST
	Night or after hours work				
	Cost for shutting down any existing plant.				
	Specific construction noise control measures				
	Asbestos removal / disposal				
	GST				
	Project contingency				
	Escalation after September 2016				
	Capitalised interest				
	Costs to date				
	Operating and Maintenance cost				
	Insurance costs				
	Legal and finance fees				
	TOTALS OF SELECTED SECTIONS	NZ\$			305,990,000

6511164 PARKER S REV 1 GS/2

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION

SubTitle : July 2016

COMPANY : Beca DATE: Thu 08 Sep 2016 03:57pm

Bid Currency : NZD

SubTitle . 0	wy 2010			,	
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
1	CIVIL WORKS - PARKER ROAD SOUTH OPTION				
	Site Clearance and Demolition				
	Clear site - remove vegetation, etc.	m2	66,000	6.00	396,000
	Demolish buildings -approximately 11 No houses and associated buildings	sum	1	550,000.00	550,000
	Sub Total	**			946,000
	Environmental Compliance and Management				
	Allowance for environmental compliance including erosion and sediment control	sum	1	850,000.00	850,000
	Sub Total	**			850,000
	General Earthworks				
	Allowance for the contractors laydown area				
	- assume 300 thick hardfill including removal on complation	m2	2,525	50.00	126,250
	Total cut	m3	80,270		
	Total fill	m3	28,360		
	Remove topsoil and respeads on completion - say 150 thick	m3	9,900	45.00	445,500
	Cut to fill - assume 50% of fill can be obtained from cut material	m3	14,180	12.00	170,160
	Cut to waste	m3	66,090	40.00	2,643,600
	Imported fill	m3	14,180	50.00	709,000
	Allowance for undercut in soft spots				
	including imported fill - assume 5% of cut volume	m3	4,014	110.00	441,540
	Sub Total	**			4,536,050
	Chemical Storage Building				
	Piling - no piling needed	note			
	500 th reinforced concrete floor slab including foundation beams	m2	61	844.00	51,484
	250 th reinforced concrete floor slab including foundation beams	m2	793	695.00	551,135
	Allowance for plinths and miscellaneous works	sum	1	75,000.00	75,000

SubTitle : July 2016

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION

COMPANY : Beca

Bid Currency : NZD

DATE : Thu 08 Sep 2016 03:57pm

REF	DESCRIPTION		UNIT	QTY	RATE	COS
	Sealer to bunded floors		m2	757	150.00	113,550
	250 th precast concrete walls		m2	1,534	560.00	859,040
	Allowance for 250 th concrete screen walls including foundations		m2	252	790.00	199,080
	Allowance for roofing including steel support		m2	903	500.00	451,500
	Allowance for miscellaneous works - stairs, bollards, etc.		sum	1	50,000.00	50,000
	Allowance for roller door		no	10	12,000.00	120,000
	Small power and lighting		m2	854	100.00	85,400
	Mechanical ventilation		m2	520	350.00	182,000
	Sprinkler system including smoke and heat detection		m2	854	110.00	93,940
	Allowance for drainage		sum	1	100,000.00	100,000
		Sub Total	**			2,932,129
	Chlorine Storage Building					
	Note: Assume the building is the same as the chemical storage building as there is no design info for this building		note			
	Piling - no piling needed		note			
	Rate for Chemical Storage applied to this buildings area		m2	189	3,400.00	642,600
	buildings area	Sub Total		103	0,400.00	642,600
	Electrical Compound					
	Piling - no piling needed		note			
	300 th reinforced concrete floor slab including foundation beams		m2	215	595.00	127,925
	Allowance for plinths and miscellaneous works		sum	1	10,000.00	10,000
	Upper floor		m2	60	300.00	18,000
	200 th precast concrete walls		m2	499	540.00	269,460
	Allowance for roofing including steel support		m2	215	450.00	96,750
	Allowance for miscellaneous works - stairs, bollards, etc.		sum	1	20,000.00	20,000
	Allowance for roller door - approx. 5m x 4m high		no	1	12,000.00	12,000
	'"9''		110	ı	12,000.00	12,000

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION

TROJECT . HOLA WATER TREATMENT LANT - LARRER ROAD SOUTH OF HOL

SubTitle: July 2016

COMPANY: Beca
DATE: Thu 08 Sep 2016 03:57pm

Bid Currency: NZD

BQREF DESCRIPTION UNIT QTY RATE COST Allowance for roller door - approx. 3m x 3m high 8,000.00 8,000 no 1 Small power and lighting 215 100.00 21,500 m2 300.00 64,500 Mechanical ventilation m2 215 Extra value for air conditioning to the 11kV switchroom m2 53 600.00 31.800 Sprinkler system including smoke and heat detection m2 215 110.00 23,650 Allowance for drainage sum 1 25,000.00 25,000 Sub Total ** 728,585 **DAF Tank** Piling - no piling needed note Temporary sheet piles to average 7m BGL all round including waler beams and ties m2 1,526 800.00 1,220,800 Excavate and cart away - in general earthworks note Backfill with excavated material 45.00 m3 852 38,340 675.00 500 th reinforced concrete floor slab 2,053 m2 1,385,775 300 th reinforced concrete walls m2 3,818 755.00 2,882,590 Allowance for walkways over the tank m2 201 1,060.00 213,060 Allowance for roof and wall cladding including structures - Colorsteel on epoxy 2,053 570.00 m2 1,170,210 coated structural steel Small power and lighting m2 2,053 70.00 143,710 Mechanical ventilation m2 2,053 100.00 205,300 Extra value for air conditioning to the MCC room m2 43 600.00 25,800 Allowance for miscellaneous works 1 500,000.00 500,000 sum Allowance for drainage sum 100,000.00 100,000 Sub Total ** 7,885,585 **Ozone Generator Room** Piling - no piling needed note 300 th reinforced concrete floor slab including foundation beams m2 294 595.00 174,930

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION

SubTitle : July 2016

COMPANY : Beca DATE: Thu 08 Sep 2016 03:57pm Bid Currency : NZD

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Allowance for plinths and miscellaneous works	sum	1	30,000.00	30,000
	200 th precast concrete walls	m2	581	540.00	313,740
	Allowance for roofing including steel support	m2	294	450.00	132,300
	Allowance for miscellaneous works - bollards, etc.	sum	1	10,000.00	10,000
	Allowance for roller door - approx. 5m x 4m high	no	3	12,000.00	36,000
	Small power and lighting	m2	294	100.00	29,400
	Mechanical ventilation	m2	294	300.00	88,200
	Sprinkler system including smoke and heat detection	m2	294	110.00	32,340
	Allowance for drainage	sum	1	25,000.00	25,000
	Sub Total	**			871,910
	Ozone Contact Tank				
	Piling - no piling needed	note			
	Temporary sheet piles to average 10m BGL all round including waler beams and ties	m2	600	730.00	438,000
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	522	45.00	23,490
	500 th reinforced concrete floor slab	m2	418	655.00	273,790
	500 th reinforced concrete upper floors	m2	79	618.00	48,822
	500 th reinforced concrete walls	m2	682	870.00	593,340
	400 th reinforced concrete walls	m2	827	776.00	641,752
	Allowance for cover and walkways over the central area	m2	116	630.00	73,080
	Allowance for roof and wall cladding including structures - Colorsteel on epoxy coated structural steel	m2	418	660.00	275,880
	Small power and lighting	m2	418	70.00	29,260
	Mechanical ventilation	m2	418	100.00	41,800
	Allowance for miscellaneous works	sum	1	100,000.00	100,000
	Allowance for drainage	sum	1	35,000.00	35,000
	Sub Tota	**			2,574,214

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PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION

SubTitle : July 2016

COMPANY : Beca DATE: Thu 08 Sep 2016 03:57pm

Bid Currency : NZD

BAC Filter Tank		duffile . July 2010				
Piling - no piling needed note	BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
Temporary sheet piles to average 10m BGL all round including water beams and ties		BAC Filter Tank				
Second S		Piling - no piling needed	note			
Backfill with excavated material			m2	1,500	810.00	1,215,000
400 th reinforced concrete filoor slab			note			
400 th reinforced concrete upper floors		Backfill with excavated material	m3	1,350	45.00	60,750
### ##################################		400 th reinforced concrete floor slab	m2	2,085	608.00	1,267,680
Inlet channel works Allowance for cover and walkways over the inlet channel/open gallery area Allowance for roof and wall cladding including structures - Colorsteel on epoxy coated structural steel Small power and lighting Mechanical ventilation Allowance for miscellaneous works Allowance for drainage Sub Total Chlorine Contact Tank Piling - no piling needed Temporary sheet piles to average 15m BGL all round including waler beams and ties Excavate and cart away - in general earthworks Backfill with excavated material South Total Mechanical concrete walls Allowance for drainage Backfill with excavated material Material Concrete walls Material Concrete wall canding the wall canding the wall candi		400 th reinforced concrete upper floors	m2	3,225	576.00	1,857,600
Allowance for cover and walkways over the inlet channel open gallery area m2 523 540.00 282.42 Allowance for roof and wall cladding including structures - Colorsteel on epoxy coated structural steel m2 2,065 590.00 1,218,31 coated structural steel m6 2,065 70.00 144,51 m2 2,065 100.00 206,51 m2 2,065 100.00 206,51 m2 2,065 100.00 206,51 m2 2,065 M2 m2 2,065 100.00 206,51 m2 2,065 M2 m2 2,065 M2 m2 2,065 M2 m2 100,000 300,000 M2 m2 m2 100,000 00 100,000 m2 m2 m2 100,000 00 100,000 m2 m2 m2 m2 m2 m2 m2 m2 m2 m2 m2 m2 m2		400 th reinforced concrete walls	m2	4,837	830.00	4,014,710
inlet channel/open gallery area im2 523 540.00 282.4; Allowance for roof and wall cladding including structures - Colorsteel on epoxy coated structural steel		Inlet channnel works	sum	1	330,000.00	330,000
including structures - Colorsteel on epoxy coated structural steel Small power and lighting Mechanical ventilation Mechanic			m2	523	540.00	282,420
Mechanical ventilation m2 2,065 100.00 206,56 Allowance for miscellaneous works sum 1 300,000.00 300,00 Allowance for drainage sum 1 100,000.00 100,00 Sub Total *** 100,000.00 100,00 Chlorine Contact Tank Piling - no piling needed note m2 2,093 700.00 1,465,10 Excavate and cart away - in general earthworks note note note 1,465,10 Backfill with excavated material m3 1,113 45.00 50,00 500 th reinforced concrete floor slab m2 1,553 655.00 1,017,2 500 th reinforced concrete walls m2 1,647 845.00 1,391,7 300 th reinforced concrete walls m2 1,078 734.00 791,25 Allowance for a cover over the tank m2 1,553 700.00 1,087,11 Allowance for miscellaneous works sum 1 200,000.00 200,00		including structures - Colorsteel on epoxy	m2	2,065	590.00	1,218,350
Allowance for miscellaneous works Allowance for drainage Sub Total Chlorine Contact Tank Piling - no piling needed Temporary sheet piles to average 15m BGL all round including water beams and ties Excavate and cart away - in general earthworks Backfill with excavated material Backfill with excavated material m3 1,113 45.00 50.00 500 th reinforced concrete floor slab m2 1,647 845.00 1,391,71 300 th reinforced concrete walls m2 1,078 734.00 791,21 Allowance for a cover over the tank m2 1,553 700.00 1,087,10 Allowance for miscellaneous works sum 1 200,000.00 200,00		Small power and lighting	m2	2,065	70.00	144,550
Allowance for drainage Sub Total 1 100,000.00 100,00 100,00		Mechanical ventilation	m2	2,065	100.00	206,500
** ** ** ** ** ** ** *		Allowance for miscellaneous works	sum	1	300,000.00	300,000
Chlorine Contact Tank Piling - no piling needed note Temporary sheet piles to average 15m BGL all round including water beams and ties m2 2,093 700.00 1,465,10 Excavate and cart away - in general earthworks note note 1,113 45.00 50,00 Backfill with excavated material m3 1,113 45.00 50,00 500 th reinforced concrete floor slab m2 1,553 655.00 1,017,2° 500 th reinforced concrete walls m2 1,647 845.00 1,391,7° 300 th reinforced concrete walls m2 1,078 734.00 791,2° Allowance for a cover over the tank m2 1,553 700.00 1,087,10° Allowance for miscellaneous works sum 1 200,000.00 200,00°		Allowance for drainage	sum	1	100,000.00	100,000
Piling - no piling needed note Temporary sheet piles to average 15m BGL all round including waler beams and ties m2 2,093 700.00 1,465,10 Excavate and cart away - in general earthworks note note Backfill with excavated material m3 1,113 45.00 50,00 500 th reinforced concrete floor slab m2 1,553 655.00 1,017,2° 500 th reinforced concrete walls m2 1,647 845.00 1,391,7° 300 th reinforced concrete walls m2 1,078 734.00 791,28° Allowance for a cover over the tank m2 1,553 700.00 1,087,10° Allowance for miscellaneous works sum 1 200,000.00 200,00°		Sub Total	l **			10,997,560
Temporary sheet piles to average 15m BGL all round including water beams and ties m2 2,093 700.00 1,465,10 Excavate and cart away - in general earthworks note Backfill with excavated material m3 1,113 45.00 50,00 500 th reinforced concrete floor slab m2 1,553 655.00 1,017,20 500 th reinforced concrete walls m2 1,647 845.00 1,391,70 300 th reinforced concrete walls m2 1,078 734.00 791,20 Allowance for a cover over the tank m2 1,553 700.00 1,087,10 Allowance for miscellaneous works sum 1 200,000.00 200,000		Chlorine Contact Tank				
all round including water beams and ties m2 2,093 700.00 1,465,10 Excavate and cart away - in general earthworks note Backfill with excavated material m3 1,113 45.00 50,08 500 th reinforced concrete floor slab m2 1,553 655.00 1,017,2 500 th reinforced concrete walls m2 1,647 845.00 1,391,7 300 th reinforced concrete walls m2 1,078 734.00 791,28 Allowance for a cover over the tank m2 1,553 700.00 1,087,10 Allowance for miscellaneous works sum 1 200,000.00 200,000		Piling - no piling needed	note			
Backfill with excavated material m3 1,113 45.00 50,08 500 th reinforced concrete floor slab m2 1,553 655.00 1,017,2 500 th reinforced concrete walls m2 1,647 845.00 1,391,7 300 th reinforced concrete walls m2 1,078 734.00 791,28 Allowance for a cover over the tank m2 1,553 700.00 1,087,10 Allowance for miscellaneous works sum 1 200,000.00 200,000 1,000.0			m2	2,093	700.00	1,465,100
500 th reinforced concrete floor slab m2 1,553 655.00 1,017,21 500 th reinforced concrete walls m2 1,647 845.00 1,391,71 300 th reinforced concrete walls m2 1,078 734.00 791,25 Allowance for a cover over the tank m2 1,553 700.00 1,087,10 Allowance for miscellaneous works sum 1 200,000.00 200,00			note			
500 th reinforced concrete walls m2 1,647 845.00 1,391,77 300 th reinforced concrete walls m2 1,078 734.00 791,25 Allowance for a cover over the tank m2 1,553 700.00 1,087,10 Allowance for miscellaneous works sum 1 200,000.00 200,00		Backfill with excavated material	m3	1,113	45.00	50,085
300 th reinforced concrete walls m2 1,078 734.00 791,29 Allowance for a cover over the tank m2 1,553 700.00 1,087,10 Allowance for miscellaneous works sum 1 200,000.00 200,00		500 th reinforced concrete floor slab	m2	1,553	655.00	1,017,215
Allowance for a cover over the tank m2 1,553 700.00 1,087,10 Allowance for miscellaneous works sum 1 200,000.00 200,00		500 th reinforced concrete walls	m2	1,647	845.00	1,391,715
Allowance for miscellaneous works sum 1 200,000.00 200,00		300 th reinforced concrete walls	m2	1,078	734.00	791,252
		Allowance for a cover over the tank	m2	1,553	700.00	1,087,100
Allowance for drainage sum 1 35,000.00 35,00		Allowance for miscellaneous works	sum	1	200,000.00	200,000
		Allowance for drainage	sum	1	35,000.00	35,000

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION

SubTitle: July 2016

Bid Currency: NZD **BQREF** DESCRIPTION UNIT QTY **RATE** COST Sub Total ** 6,037,467 Treated Water Pump Station Piling - no piling needed note Temporary sheet piles to average 15m BGL 893 800.00 all round including waler beams and ties m2 714,400 Excavate and cart away - in general earthworks note Backfill with excavated material m3 471 45.00 21,195 250 th reinforced concrete floor slab m2 386 480.00 185,280 386 400 th reinforced concrete upper floors 576.00 222,336 m2 Allowance for pump plinths 25,000.00 25,000 sum 250 th reinforced concrete walls m2 476 590.00 280,840 Allowance for upper structure and roofing including steel support m2 386 1,300.00 501,800 150,000.00 Allowance for miscellaneous works sum 150,000 Allowance for drainage sum 35,000.00 35,000 Sub Total ** 2,135,851 Washout Balance Tank Piling - no piling needed note Temporary sheet piles to average 11m BGL all round including waler beams and ties 990 750.00 742,500 m2 Excavate and cart away - in general earthworks note Backfill with excavated material 510 45.00 22,950 m3 500 th reinforced concrete floor slab 404 544.00 219,776 m2 628 400 th reinforced concrete walls m2 800.00 502,400 Allowance for miscellaneous works sum 25,000.00 25,000 Sub Total ** 1,512,626 Sludge Balance Tank Piling - assume 600mm dia x 10m long in-situ concrete piles at average 4m c/c 20 7,000.00 140,000 (no permanent liners) no Temporary sheet piles to average 7m BGL all round including waler beams and ties m2 504 865.00 435,960

COMPANY: Beca

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COMPANY : Beca PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION DATE: Thu 08 Sep 2016 03:57pm Bid Currency : NZD

SubTitle	July 2010				bid Currency . NZD
BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	283	45.00	12,735
	250 th reinforced concrete floor slab	m2	272	432.00	117,504
	300 th reinforced concrete walls	m2	321	756.00	242,676
	Allowance for miscellaneous works	sum	1	25,000.00	25,000
	s	Sub Total **			973,875
	Supernatant Return Tank				
	Piling - assume 600mm dia x 10m long in-situ concrete piles at average 4m c/c (no permanent liners)	no	20	7,000.00	140,000
	Temporary sheet piles to average 10m BGL all round including waler beams and ties	m2	760	770.00	585,200
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	402	45.00	18,090
	250 th reinforced concrete floor slab	m2	301	432.00	130,032
	300 th reinforced concrete walls	m2	471	756.00	356,076
	Allowance for miscellaneous works	sum	1	25,000.00	25,000
	s	Sub Total **			1,254,398
	Sludge Thickener Feed Tank				
	Piling - assume 600mm dia x 10m long in-situ concrete piles at average 4m c/c (no permanent liners)	no	6	7,000.00	42,000
	Temporary sheet piles to average 7m BGL all round including waler beams and ties	m2	322	790.00	254,380
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	175	45.00	7,875
	250 th reinforced concrete floor slab	m2	86	432.00	37,152
	300 th reinforced concrete walls	m2	171	756.00	129,276
	Allowance for miscellaneous works	sum	1	15,000.00	15,000
	s	Sub Total **			485,683
	Sludge Thickeners (2 No)				
	Note: The following cost is for one tank				

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION

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BQREF	DESCRIPTION	UNIT	QTY	RATE	COS
	(see last item for second tank)	note			
	Piling - assume 600mm dia x 10m long in-situ concrete piles at average 4m c/c (no permanent liners)	no	22	7,000.00	154,00
	Temporary sheet piles to average 7m BGL all round including water beams and ties	m2	385	890.00	342,65
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	390	45.00	17,55
	Average 700 th reinforced concrete floor slab	m2	144	760.00	109,44
	250 th reinforced concrete walls	m2	215	800.00	172,00
	250 th reinforced concrete channel floor	m2	45	560.00	25,20
	Allowance for miscellaneous works	sum	1	50,000.00	50,00
	Add the above total for the scond tank	sum	1	870,840.00	870,84
	Sub Tota	**			1,741,68
	Washwater Thickeners (2 No)				
	Note: The following cost is for one tank (see last item for second tank)	note			
	Piling - assume 600mm dia x 10m long in-situ concrete piles at average 4m c/c (no permanent liners)	no	22	7,000.00	154,00
	Temporary sheet piles to average 7m BGL all round including water beams and ties	m2	385	890.00	342,65
	Excavate and cart away - in general earthworks	note			
	Backfill with excavated material	m3	390	45.00	17,55
	Average 700 th reinforced concrete floor slab	m2	144	760.00	109,44
	250 th reinforced concrete walls	m2	215	800.00	172,00
	250 th reinforced concrete channel floor	m2	45	560.00	25,20
	Allowance for miscellaneous works	sum	1	50,000.00	50,00
	Add the above total for the scond tank	sum	1	870,840.00	870,84
	Sub Tota	**			1,741,68
	Sludge Dewatering Building (Filter Press)				
	Piling - assume 600mm dia x 10m long in-situ concrete piles				

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QREF	DESCRIPTION	UNIT	QTY	RATE	COST
	(no permanent liners)	no	20	7,000.00	140,000
	Building area	m2	656		
	Retaining wall - say average 5m high x 40m long	m2	200	1,500.00	300,000
	300 th reinforced concrete floor slab including foundation beams	m2	524	595.00	311,780
	300 th reinforced concrete upper floor	m2	269	514.00	138,266
	200 th precast concrete walls	m2	1,413	540.00	763,020
	400 x 400 concrete columns	m	54	400.00	21,600
	Allowance for roofing including structure	m2	404	450.00	181,800
	Stair rising 6m	no	1	21,000.00	21,000
	Allowance for plinths and miscellaneous works	sum	1	75,000.00	75,000
	Allowance for roller door	no	3	12,000.00	36,000
	Small power and lighting	m2	656	100.00	65,600
	Mechanical ventilation	m2	656	350.00	229,600
	Extra value for air conditioning to the MCC/office room	m2	34	400.00	13,600
	Sprinkler system including smoke and heat detection	m2	656	110.00	72,160
	Allowance for drainage	sum	1	100,000.00	100,000
		Sub Total **			2,469,426
	Reservoirs (2 No)				
	Note: The following cost is for one reservoir (see last item for second reservoir)	note			
	Reservoir volume	m3	28,905		
	Retaining wall - say average 3m high x 50m long	m2	150	1,500.00	225,000
	Piling - assume 600mm dia x 10m long in-situ concrete piles at average 5m c/c (no permanent liners)	no	120	7,000.00	840,000
	500 th reinforced concrete floor slab	m2	2,915	690.00	2,011,350
	400 th reinforced concrete walls	m2	1,912	1,200.00	2,294,400
	500 th reinforced concrete roof slab		1,512	1,200.00	2,201,100
	including allowance for internal colums, etc.	m2	2,915	845.00	2,463,175

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION

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BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Stairs rising 10m and balustrade around the top of the reservoir	sum	1	100,000.00	100,000
	Allowance for miscellaneous works	sum	1	250,000.00	250,000
	Add the above total for the second tank	sum	1	8,183,925.00	8,183,925
	Sub Tota	**			16,367,850
	Administration Building				
	Piling - no piling needed	note			
	Building area	m2	403		
	General building works	m2	403	2,200.00	886,600
	Allowance for fitout	m2	403	750.00	302,250
	Extra value for amenities fitout	m2	29	1,000.00	29,000
	Allowance for paving and landscaping to entrance and external areas	sum	1	75,000.00	75,000
	Sub Tota	**			1,292,850
	Lagoon				
	Allowance for lagoon finishing works - liner, inlet, outlet, planting, etc. (note	0	4 000	005.00	004 000
	excavation and fill are in general earthworks)	m2	4,200	205.00	861,000
	Sub Tota	**			861,000
	Services Relocation				
	Nominal allowance for services relocation	sum	1	100,000.00	100,000
	Sub Tota	**			100,000
	Roading and Finishing Works				
	New roads and parking including kerbs, drainage, etc 40mm AC14 on 2 coat chipseal on 150mm AP40 on 300mm AP40 on geotextile on prepared areas (AP 40 with cement stabilisation)	m2	7,800	180.00	1,404,000
	Allowance for general retaining works	sum	1	350,000.00	350,000
	Allowance for site lighting	no	40	10,000.00	400,000
	Allowance for general landscaping	sum	1	750,000.00	750,000
	Allowance for permanent noise control measures	sum	1	1,000,000.00	1,000,000
	Security fence	m	1,200	250.00	300,000

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PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION

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BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
	Main entrance gate, gatehouse, etc.	sum	1	150,000.00	150,000
	Sub Total	**			4,354,000
	Traffic Management and Temporary Works				
	Allowance for traffic management and temporary works	sum	1	1,500,000.00	1,500,000
	Sub Total			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1,500,000
	Preliminaries & General				
	Allowance for the contractor's health and				
	safety plan and a fulltime site supervision representative - assume 36 months	sum	1	320,000.00	320,000
	Allowance for all as-built documentation	sum	1	100,000.00	100,000
	Contractors on-site overheads (P&G) (say 8% of construction cost)	sum	76,213,000	0.08	6,097,040
	Contractors off-site overheads and margin	sum	82,310,000	0.04	3,292,400
	(say 4%)	**			9,809,440
					2,222,113
	Estimating Contingency				
	Allowance for estimating contingency (10%)	sum	85,602,000	0.10	8,560,200
	Rounding	sum	1	-2,659.00	-2,659
	Sub Total	**			8,557,541
	TOTAL	#*			94,160,000
	Totals for Section '1'-'Civil Works'				94,160,000

SubTitle: July 2016

BQREF DESCRIPTION UNIT QTY RATE COST 2 PROCESS PLANT AND EQUIPMENT - PARKER ROAD **SOUTH OPTION CHEMICAL SYSTEMS** Alum 360,000 105m3 alum storage tank no 2 180,000.00 2 40,000 20,000.00 7m3 day tank no Dosing pumps and associated pipework 2 60,000.00 120,000 no 120.00 Dosing lines 100 12,000 m Sub Total ** 532,000 Poly (Flocculant, Thickening and Dewatering Aids) - 3 No Make up skid 6 90,000.00 540,000 no Dosing pumps and associated pipework no 3 60,000.00 180,000 Dosing lines m 300 120.00 36,000 Sub Total ** 756,000 Lime 30 tonne silo and associated transfer 2 batching no 360,000.00 720,000 2 72,000.00 144,000 30m3 day tank no 7.5kW mixers 2 30,000.00 60,000 lno Dosing pumps and associated pipework no 4 90,000.00 360,000 500 180.00 90,000 Dosing lines lm 2 2kL post lime tanks 50,000.00 100,000 no 2 0.5kL pre lime tanks 30,000.00 60,000 lno Sub Total ** 1,534,000 Fluoride 10m3 bulk supply tank 2 30.000.00 60.000 lno 2 500L day tank 12,000.00 24,000 no Dosing pumps and associated pipework 2 60,000.00 120,000 lno Dosing lines m 200 120.00 24,000

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BQREF DESCRIPTION UNIT QTY RATE COST Sub Total ** 228,000 Carbon Dioxide (assume leased) 800 120.00 96,000 Dosing lines (4 x 200m) m Sub Total ** 96,000 Chlorine Gas 1,000,000.00 Chlorine gas 1,000,000 sum Sub Total ** 1,000,000 Electrical, Instrumentation and Controls Allowance for electrical, instrumentation and controls 20% 4,146,000 0.20 829,200 Sub Total ** 829,200 DAF Mechanical Supply and Installation 2kW mixers 16 25,000.00 400,000 no 700 840,000 Subnatant collection m2 1,200.00 5000L pressure vessel 8 60,000.00 480,000 lno Recycle pumps no 10 60,000.00 600,000 2 240,000.00 480,000 50kW air compressor and receiver no 8 90,000.00 720,000 Float scraper no DAF nozzles (dispersion valve array) no 8 30,000.00 240,000 Allowance for pipework, valves and connections 960,000.00 960,000 sum Sub Total ** 4,720,000 **Electrical, Instrumentation and Controls** Allowance for electrical, instrumentation and controls 20% 4,720,000 0.20 944,000 Sub Total ** 944.000 **BAC FILTERS** Mechanical Supply and Installation

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BQREF	DESCRIPTION		UNIT	QTY	RATE	COST
	Plenum floor		m2	1,135	2,400.00	2,724,000
	400mm th layer of sand		m3	450	800.00	360,000
	350mm th layer of gravel		m3	400	500.00	200,000
	1500mm th layer of BAC media		m3	1,700	1,450.00	2,465,000
	Upwash launders		no	14	50,000.00	700,000
	75kW upwash pumps		no	3	60,000.00	180,000
	175kW air scour blowers		no	2	100,000.00	200,000
	Allowance for pipework, valves and connections		sum	1	2,400,000.00	2,400,000
		Sub Total	**		, ,	9,229,000
	Electrical, Instrumentation and Controls					
	Allowance for electrical, instrumentation and controls		20%	9,229,000	0.20	1,845,800
	and controls	Sub Total		3,223,000	0.20	1,845,800
		Sub Total				1,043,000
	<u>OZONE</u>					
	Mechanical Supply and Installation					
	VPSA ozone system		sum	1	4,800,000.00	4,800,000
	Allowance for associated work not covered in the basic price		25%	4,800,000	0.25	1,200,000
	Allowance for pipework, valves and connections		sum	1	580,000.00	580,000
	Connections	Sub Total		'	300,000.00	6,580,000
		oub rotar				0,300,000
	Electrical, Instrumentation and Controls					
	Allowance for electrical, instrumentation and controls		20%	6,580,000	0.20	1,316,000
		Sub Total		0,000,000	0.20	1,316,000
		oub rotar				1,510,000
	RESIDUALS MANAGEMENT					
	Washout Thickeners (2 No)					
	Floc chamber		no	2	50,000.00	100,000
	Floor rake		no	2	360,000.00	720,000
	Mixer paddles			2	25,000.00	E0 000
	IVIIACI Paddies		no		25,000.00	50,000

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SubTitle: July 2016 Bid Currency: NZD **BQREF** DESCRIPTION UNIT QTY RATE COST 25,000.00 50,000 Launder no 2 4 90,000.00 360,000 Supernatant recycle pumps no Sludge pumps 90,000.00 360,000 no Allowance for pipework, valves and connections 2 85,000.00 170,000 no Sub Total ** 1,810,000 Sludge Thickeners (2 No) Floc chamber no 2 50,000.00 100,000 Floor rake 2 360,000.00 720,000 no 2 25,000.00 Mixer paddles 50,000 no Launder 2 25,000.00 50,000 no 90,000.00 360,000 Supernatant recycle pumps no Sludge pumps 90,000.00 360,000 no Allowance for pipework, valves and 2 85,000.00 170,000 connections no Sub Total ** 1,810,000 Filter Presses Filter press and ancillary equipment supply 2 1,700,000.00 3,400,000 no 2 5,000,000 Filter press install and ancillaries no 2,500,000.00 Sub Total ** 8,400,000 Other Pumps and Mixers Washout balance tank mixers - 4kW submersible 2 60,000.00 120,000 no Washout thickener feed pumps - 15kW 2 open impeller 45,000.00 90,000 no Filter to waste return pumps - 22kW centrifugal 2 60.000.00 120,000 nο De-aeration tank mixers - 1kW submersible 2 30,000.00 60,000 no De-aeration tank pumps - 30kW progressive cavity 2 75,000.00 150,000 no Supernatant return pumps - 30kW centrifugal 2 75,000.00 150,000

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60,000

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Sludge thickener feed tank mixers - 1kW

submersible

lno

no

2

30,000.00

SubTitle: July 2016

Bid Currency: NZD **BQREF** DESCRIPTION UNIT QTY **RATE** COST Sludge thickener feed pumps - 5kW 2 open impeller 30,000.00 60,000 no Sludge balance tank mixers - 2kW 45,000.00 180,000 submersible no 4 Sludge filter press feed pumps - 5kW 2 90,000.00 180,000 progressive cavity no Attenuation storage return pumps - 15kW 2 45,000.00 90,000 open impeller no Sub Total ** 1,260,000 Electrical, Instrumentation and Controls Allowance for electrical, instrumentation and controls 20% 13,280,000 0.20 2,656,000 Sub Total ** 2,656,000 TREATED WATER PUMP STATION Mechanical Supply and Installation Pumps and motors - 215kW 350,000.00 1,750,000 no 5 Allowance for pipework, valves and connections 1,200,000.00 1,200,000 sum Sub Total ** 2,950,000 Electrical, Instrumentation and Controls Allowance for electrical, instrumentation and controls 700,000.00 700,000 sum Sub Total ** 700,000 **ANCILLARIES** Service water 240,000.00 240,000 sum Air supply 540,000.00 540,000 sum Allowance for additional interconnecting 4,000,000.00 4,000,000 pipework, valves and connections sum Sub Total ** 4.780.000 **POWER SUPPLY** Standby diesel generator - 2.5MW 1,500,000.00 1,500,000 lno 11kV Vector power supply upgrade and HV 2,320,000.00 2,320,000 reticulation sum

COMPANY: Beca

DATE: Thu 08 Sep 2016 03:57pm

SubTitle : July 2016

BQREF DESCRIPTION UNIT QTY RATE COST Allowance for power upgrade to the existing 2,800 600.00 1,680,000 network m Allowance for fibre along the new raw and 6,434 300.00 treated water pipelines 1,930,200 m Sub Total ** 7,430,200 OTHER SCADA Allowance for software development and commissioning sum 1,000,000.00 1,000,000 Sub Total ** 1,000,000 **Process Commissioning and Support** 500,000.00 500,000 Allowance for commissioning and support sum Sub Total ** 500,000 **Project Closeout** 500,000.00 500,000 Allowance for spare equipment sum Allowance for project completion report including defects liability period coordination - Based on 10 hours/week over 52 weeks assuming majority of the defects will be rectified over the first 3 months sum 130,000.00 130,000 Sub Total ** 630,000 **O&M Manuals and Training** Allowance for O&M manuals sum 100,000.00 100,000 Allowance for O&M training 200,000.00 200,000 sum Sub Total ** 300,000 Preliminaries & General Contractors on-site overheads (P&G) 0.06 (say 6% of construction cost) sum 63,836,000 3,830,160 Contractors off-site overheads and margin 67,666,000 0.04 2,706,640 sum (say 4%) Sub Total ** 6,536,800 **Estimating Contingency** 0.10 7,037,300 Allowance for estimating contingency (10%) sum 70,373,000

COMPANY: Beca

Bid Currency: NZD

DATE: Thu 08 Sep 2016 03:57pm

SubTitle: July 2016 Bid Currency: NZD BQREF DESCRIPTION UNIT QTY RATE COST -300.00 -300 Rounding sum Sub Total ** 7,037,000 TOTAL #* 77,410,000

COMPANY: Beca

77,410,000

DATE: Thu 08 Sep 2016 03:57pm

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Totals for Section '2'-'Process Plant and Equipment'

Section '3'-'Ancillary Structures' COMPANY : Beca PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION DATE: Thu 08 Sep 2016 03:57pm Bid Currency : NZD SubTitle: July 2016

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
3	ANCILLARY STRUCTURES - PARKER ROAD SOUTH OPTION				
	Raw Water Infrastructure				
	Raw Water Tunnel				
	Note: It is assumed that there are no basalt present in the area of the tunnel and shafts	note			
	Tunnel - 2m dia unlined tunnel	m	1,802	8,000.00	14,416,000
	Jacking shaft at Treatment Plant - 5m x 8m x 10m deep	no	1	315,000.00	315,000
	Intermediate reception shaft - 5m dia x 35m deep	no	1	1,000,000.00	1,000,000
	Jacking shaft at Mackies Rest - 5m x 8m x 10m deep	no	1	315,000.00	315,000
	Tunnel fixed costs	sum	1	5,000,000.00	5,000,000
	Sub Total	**			21,046,000
	Gravity Supply from Upper Nihotupu Raw Water Main				
	Trenched section along Exhibition Drive - 550mm dia	m	1,580	2,500.00	3,950,000
	Sub Total	**			3,950,000
	Access Road Upgrade to Mackies Rest				
	Road - 780m x 8m wide	m2	6,240	300.00	1,872,000
	Sub Total	**			1,872,000
	Connection to Raw Water Infrastructure				
	Nominal allowance for connecting the Huia Raw Watermain and Lower Niho Raw Watermain	sum	1	1,500,000.00	1,500,000
	Sub Total	**			1,500,000
	Off-Spec Discharge				
	Discharge pipework to Allen Swamp - 1200mm dia	m	150	4,800.00	720,000
	Nominal allowance for the outfall structure	sum	1	1,000,000.00	1,000,000
	Sewer - waste water connection to network - 150mm dia gravity sewer	m	3,342	250.00	835,500
	Sub Total	**			2,555,500

Section '3'-'Ancillary Structures'

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION

SubTitle: July 2016

BQREF DESCRIPTION UNIT QTY RATE COST **Treated Water Transmission** Pipeline from treated water pump station to reservoirs - 1200mm dia 137 4,800.00 657,600 m Reservoir pipework (1200mm dia - includes inlet manifold, outlet, overflow and scour) 2,600,000.00 2,600,000 sum 5,352 4,800.00 25,689,600 Pipeline outlet to network - 1200mm dia m Sub Total ** 28,947,200 Preliminaries & General 50,000.00 Allowance for all as-built documentation sum 50,000 Contractors on-site overheads included note Contractors off-site overheads and margin note included Sub Total ** 50,000 **Estimating Contingency** Allowance for estimating contingency (10%) sum 59,921,000 0.10 5,992,100 Rounding sum -2,800.00 -2,800 Sub Total ** 5,989,300 65,910,000 TOTAL #* 65,910,000 Totals for Section '3'-'Ancillary Structures'

COMPANY: Beca

Bid Currency: NZD

DATE: Thu 08 Sep 2016 03:57pm

Section '4'-'Implementation Costs' COMPANY : Beca PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION DATE : Thu 08 Sep 2016 03:57pm Bid Currency : NZD SubTitle: July 2016

BQREF	DESCRIPTION	UNIT	QTY	RATE	COST
4	IMPLEMENTATION COSTS - PARKER ROAD SOUTH				
	<u>OPTION</u>				
	Allowance for all Design, Management, Construction and Contract supervision, etc. (say 15%)	sum	237,480,000	0.15	35,622,000
	Allowance for consent and regulatory fees				
	(say 2%) Allowance for client internal costs	sum	237,480,000		4,749,600
	(say 3%) Rounding	sum	237,480,000	0.03 4,000.00	
	Sub Total		'	1,000.00	47,500,000
	Totals for Section '4'-'Implementation Costs'				47,500,000

Section '5'-'Land Costs' COMPANY : Beca

PROJECT: HUIA WATER TREATMENT PLANT - PARKER ROAD SOUTH OPTION

DATE: Thu 08 Sep 2016 03:57pm SubTitle : July 2016 Bid Currency : NZD

BQREF	DESCRIPTION	UNI	T QTY	RATE	COST
5	LAND CONSTS - PARKER ROAD SOUTH OPTION				
	OFTION				
	Allowance for all property purchase costs - say 135% of CV	sum	1	23,132,000.00	23,132,000
	Allowance for legal fees (say \$25,000 per property)	no	15	25,000.00	375,000
	Allowance to sell Existing and Manuka sites	sum	-1	4,500,000.00	-4,500,000
	Demolition of existing plant at Existing Woodlands Park site before selling the land	sum	1	2,000,000.00	2,000,000
	Rounding	sum	1	3,000.00	3,000
		Sub Total **			21,010,000
	Totals for Section '5'-'Land Costs'				21,010,000
	Totals for Section 3 - Land Costs				21,010,000