
SUMMARY DOCUMENT

TO: Glenorchy Community Residents

FROM: Queenstown Lakes District Council

DATE: 18 April 2016

SUBJECT: Glenorchy Sewerage Scheme – Assessment Update

- 1.1 This document is a response to queries raised and discussed between the Glenorchy community and QLDC representatives in December 2015.
- 1.2 The Peninsular site remains the preferred location for the wastewater treatment plant and land application area. The Council has committed to developing a high quality wastewater treatment system and in order to minimise the risks associated with poor treatment performance and odours that could lead to unnecessary environmental impacts, a pond based treatment system has been ruled out. Pond based treatment options will not be considered further in scheme development and design.
- 1.3 It remains that it is intended that a package treatment plant from a reputable supplier will be utilised to treat wastewater prior to land disposal. A number of possible treatment plant suppliers and processes are available in New Zealand and it is important to note that no final decision has been made on the exact type of plant, treatment process or supplier. It is expected that the final treatment plant selection will be undertaken in conjunction with reticulation options and formal tender evaluation.

2.0 Reticulation Options Under Consideration

- 2.1 Several possible reticulation options remain under consideration to connect the Glenorchy township to the proposed wastewater treatment plant. Specifically these include:
 - Gravity-Hybrid reticulation;
 - A Pressure Sewer System (PSS) serving the entire township;
 - A Septic Tank Effluent Pumping (STEP) system providing primary treatment on individual properties with partially treated effluent pumped individually to the treatment plant.
- 2.2 The Gravity – Hybrid reticulation option consists of gravity pipework throughout the majority of the township with the low lying areas being served by a Pressure Sewer System (PSS). Communal pump stations convey wastewater to the proposed treatment plant at the Peninsular site. Under this option the initial reticulation network construction would be sized to cater for the fully developed township. Any necessary expansion to cater for future or

staged growth would largely be restricted to expansion of only the treatment plant and land disposal area.

- 2.3 The PSS option involves individual property pump stations all independently pumping through a pressure network to the treatment plant located at the Peninsular site. The key advantages with this option are that smaller diameter pipe work is used throughout the entire reticulation network and the increased opportunity for reusing pre-existing sections of gravity pipework in conjunction with pre-existing small communal pump stations. A disadvantage of the PSS option is that as growth in Glenorchy occurs each new additional dwelling requires its own pump station and this is relatively costly. Again, similar to other options, the trunk pressure reticulation network would be sized to cater for the fully developed township flows.
- 2.4 The Septic Tank Effluent Pumping (STEP) option involves individual septic tank pump stations serving each dwelling. The pipes and reticulation network providing connection to the Peninsula site would be similar to that for the PSS option. The key advantage with this option is that primary treatment is provided on-site which results in cost savings at the treatment plant as it receives partially treated effluent (principally due to solids removal and accumulation in the septic tank located on the private property). A disadvantage is the cost of providing and installing the individual STEP tanks required for each property. Unlike the PSS system there is less scope to utilise sections of existing gravity reticulation due to the need for primary treatment to be provided at each connection.
- 2.5 Queries were raised by the community regarding the ability to reuse existing septic tanks under some of the proposed options or to utilise these under an alternate option. This has been reviewed by Hadley Consultants and discussed with suppliers.
- 2.6 It is sometimes possible with STEP systems that the cost of installation of new septic tanks on private properties can be offset by retrofitting an external pump chamber to existing septic tanks. The retrofit of submersible grinder pumps within existing septic tanks is also possible. The primary risk with assuming this approach is that the existing septic tank may not be of an appropriate size and design to achieve the primary treatment necessary to be used as part a STEP system. Innoflow NZ, as the largest supplier of STEP systems in New Zealand, advise that it is their experience that only a small percentage of existing septic tanks end up being suitable for a retrofit solution. Our view is that due to the adoption of AS/NZS1547 in the year 2000, it is expected that most dwellings constructed after this date would have an appropriately sized septic tank, but each property would still need to be individually assessed prior to connection to a STEP scheme. Regardless, entry to each property will still be required for excavation and electrical connection and some disruption and cost risk will still exist and is difficult to quantify at this study level. Accordingly, this study update adopts a conservative cost approach and by assuming that new STEP tanks are installed to each property.

3.0 Revised Cost Estimates

- 3.1 It was agreed that the cost estimates previously presented were to be reviewed and the following is a summary of that review.
- 3.2 It is confirmed that allowance has been made in this update to service approximately 270 dwelling equivalents in the initial scheme development and 540 dwelling equivalents within the fully developed township under the ultimate scheme. This is made up of residential dwellings and commercial connections, some of which represent multiple dwelling equivalents.
- 3.3 HCL have updated the previous 2014 cost estimates prepared for the various potential reticulation options that are under consideration for the GSS. The revised 2016 cost estimates for both the initial and fully developed (ultimate) network are presented in the following table;

Table 1 - Cost Estimates for Various Reticulation Options Considered

Reticulation Option	Initial Scheme	Ultimate Scheme
Gravity-Hybrid	\$6.57M	\$9.84M
Pressure Sewer System (PSS)	\$6.13M	\$10.23M
Septic Tank Effluent Pumping (STEP)	\$5.93M	\$10.02M

All costings are in Present Value terms and include allowance for MSQA and contingencies, but exclude GST.

- 3.4 The revised 2016 estimates indicate that there has been a significant escalation in construction cost to develop the GSS regardless of the reticulation option selected. Several factors have contributed to this cost escalation as follows;
- a) A recent surge in growth within the township resulting in more dwellings to be connected to the Initial Scheme,
 - b) An increase in the disposal area requirements as a result of lower nitrogen loading limits applied by the ORC,
 - c) An increase in the number of low lying dwellings to be serviced via the PSS network which increases the number of pump stations required in the Initial Scheme (only significant to Gravity-Hybrid option),
 - d) A significant increase in general construction costs due to increased market activity and the volume of work available to the contracting market.
- 3.5 The Financial Model has also been updated for each option to assess the individual connection charges and ensure that costs are fairly apportioned between all parties whether they be current residents and business owners, owners of vacant land (some of which may be subdivided in the future) or the owners/developers of individual land parcels. The results of the financial model are presented in the following table;

Table 2 – Estimated Connection Charges

Reticulation Option	Individual Connection Charge (Dwelling Equivalent Basis)
Gravity-Hybrid	\$18,800
Pressure Sewer System (PSS)	\$19,600
Septic Tank Effluent Pumping (STEP)	\$19,200

Again, all costings are in Present Value terms and include allowance for MSQA and contingencies, but exclude GST.

- 3.6 The connection charges above are presented on a dwelling equivalent basis and are based on the estimated costs associated with the Ultimate Scheme, but factor in both the costs of borrowing to provide for future growth and the savings that are realisable by deferring some capital expenditure on treatment plant expansion. The projected connection charges for the PSS and STEP options are slightly higher due to the capital costs associated with providing the individual PSS/STEP systems for each additional property/dwelling as growth occurs and the township expands. The Gravity-Hybrid option requires less expensive connections for new dwellings (growth) as no pumps or tanks are required to be installed on private property.
- 3.7 In the case of future subdivisions it has been assumed that the developer will be responsible for the cost of providing all lateral connections. For the PSS and STEP options it has been assumed that in the case of future dwellings the PSS/STEP tank will be provided by Council (or the connection charge reduced by a similar amount), but the actual on-site installation and connection will be the responsibility of the homeowner. Future connection charges will be recovered by Council through a Development Contributions process at the time of subdivision or building consent.
- 3.8 The future connection charges for all systems are at risk from market forces and will be impacted by inflation and fluctuations in future cost. A PSS/STEP system is at a greater risk due to a higher portion of these costs being incurred at the time of connection, primarily the required tank and pumps. A hybrid system will have the majority of the infrastructure installed up front and the future cost being the actual connection of the site to the system.
- 3.9 It is noted that the predicted connection charges vary only slightly. Accordingly, there is a high degree of sensitivity associated with the option cost estimates and other minor variations between the options. This clearly demonstrates the importance of all options remaining under consideration and a procurement strategy being adopted to allow consideration of all options which will account for factors beyond the initial capital cost, such as the likely future expansion (growth) costs and other non-price factors.

4.0 Ongoing Operations and Maintenance Costs

- 4.1 It was noted that additional information was required on the different operational and maintenance costs involved under each of the proposed options that had been considered.
- 4.2 The ongoing operations and maintenance (O&M) costs are a function of a number of factors relating to both the reticulation option adopted and the type of treatment plant/process that is selected for the GSS. Ongoing O&M costs relating to the reticulation include items such as power usage by pumps, pump maintenance and replacements, routine and non-routine maintenance of the reticulation network and compliance and monitoring costs associated with land discharges.
- 4.3 Pressure Sewer and STEP reticulation systems typically have higher O&M costs due to the larger number of pumps that are required to be serviced and replaced. Periodic desludging and the cost of disposing of biosolids from individual property tanks also increases the ongoing O&M STEP reticulation costs, although this is typically offset by a reduction in the biosolids generated at the treatment plant. The relativity between these two costs will be a function of the method of biosolids disposal adopted by Council across the District. It is envisaged that the cost liability for STEP tank desludging will fall to individual property owners and that there will be additional costs to Council associated with compliance monitoring of desludging at individual properties.
- 4.4 In the case of both PSS and STEP systems it is expected that the cost of pump power usage would be the responsibility of individual property owners. The cost of pump power usage for the Gravity-Hybrid option would be the responsibility of the Council.
- 4.5 Ongoing O&M costs for the treatment plant depend on the type of treatment plant that is selected, the level of treatment required to incoming influent (for example, a lower treatment level is required for STEP reticulation), routine operational, monitoring and compliance requirements and the volume of biosolids that are generated and the costs associated with disposing of these biosolids. If the Council were to procure lower costs for biosolid disposal then this would have a greater impact on the Gravity-Hybrid option than the STEP option because these savings would apply to the whole scheme, but not to disposal from individual and privately owned STEP tanks.
- 4.6 The relative O&M cost of the different reticulation options are found to be similar, with the Gravity-Hybrid reticulation option being the least cost O&M option, subject to the cost of biosolid handling being confirmed. The volume of biosolids generated from any treatment process and the associated disposal costs are considered to be the largest single variable affecting the ongoing O&M costs for any GSS scheme. For this reason it is important that the procurement process for the GSS be able to take into account the differing biosolids generation rates from different reticulation and treatment processes.

5.0 Environmental and Non-Price Considerations

- 5.1 The following are comments regarding environmental and non-price factors which have been taken into consideration when reviewing the options available for this project.
- 5.2 The long-term environmental impacts are assessed to be similar for all options under consideration. Variation in the biosolids generation may lead to some variation in environmental impacts, but again this will depend on the disposal method employed by Council for dealing with biosolids in the long-term.
- 5.3 The Gravity-Hybrid and possibly also the PSS options will provide the opportunity for connection of areas of existing gravity reticulation that are in some areas of the township to be utilised and this would avoid the loss of these already installed pipe materials and pumps. Subject to individual site evaluation, the STEP option could result in the opportunity for some existing septic tanks to be retained, reconfigured and reutilised. These scenarios reduce the infrastructure requirements and impacts. However, it is noted that the largest STEP system provider in the country has indicated that the proportion of septic tanks suitable for reuse in an existing township situation is typically quite low. The need for individual assessment of existing tanks prior to connection or STEP retrofit, also generates further infrastructure impacts which are not quantified as part of this study.
- 5.4 Both the PSS and STEP systems allow for individual wastewater generation volumes to be measured relatively easily in comparison to the Gravity-Hybrid option. QLDC could use this as the basis of a user payers charging regime, or for Demand Management, although it is anticipated that significant additional costs would be involved in implementing an individual property flow metering system for wastewater alone. It should also be noted that if a charging regime in this order was implemented then the permanent residents would subsidise the costs for those who utilise their properties as a holiday home. Due to the annual maintenance and operational costs being fairly fixed and having small deviations depending on actual usage, the permanent residents will have higher volumes and will be charged the majority of these costs.
- 5.5 The PSS and STEP systems typically result in lower inflow and infiltration (I&I) rates due to the reticulation being better sealed when compared to rubber ring jointed and manholed gravity reticulation. This is particularly so when high groundwater is present. However, it should be noted that the Gravity-Hybrid system includes the use of a PSS system in the low lying areas of the township specifically in order to reduce the risk of significant groundwater infiltration occurring in the network and this offsets the relative advantages of PSS and STEP in this case. Notwithstanding the inclusion of the PSS portion in the Gravity-Hybrid option, conservatively a higher allowance has been made for I&I which in turns leads to a higher treatment plant cost estimate for this option.
- 5.6 The serviceability of the scheme is considered to be similar across all reticulation options considered. The greater tolerances in the smaller diameter reticulation network for the PSS and STEP systems is offset in normal situations by the significantly larger number of pumps associated with these options. Serviceability of the treatment plant selected will need to be

considered in more detail when comparing different types of plants and the treatment processes put forward in detailed design.

- 5.7 In all instances it has been assumed that reticulation would be sized in order to provide capacity for the fully developed township. As noted previously the costs associated with expansion of the scheme are anticipated to be higher for the PSS and STEP reticulation options due to the cost of providing the individual on-site infrastructure.
- 5.8 It is intended that irrespective of the reticulation option chosen the pipework will be sized to cater for the fully developed township. The ability of a wastewater treatment plant to be readily expanded and upgraded is another key non-price consideration that will be taken into account within the procurement process.
- 5.9 The PSS and STEP reticulation options are considered to provide a higher degree of seismic resilience and tolerance to minor ground movements/settlement due to the use of more flexible pipe material, being fully sealed and not grade critical.
- 5.10 A gravity network with communal pump stations will likely perform better in the event of prolonged power outages as it is easier to provide back-up power supplies by generator. While short duration power outages are not expected to cause issues with PSS or STEP reticulation options due to the emergency storage available on each lot, issues have occurred in some similar systems when power is restored due to a large number of pumps suddenly trying to start at the same time.
- 5.11 In the event that the boundaries of Glenorchy were altered and expanded in the future, the limitations associated with each reticulation option would be common in that the hydraulic capacity of trunk pipework would control or limit expansion proposals. The typical solution would be to upgrade these trunk sections of pipework or buffer flows by additional storage. All options could be configured to achieve flow buffering. The Gravity-Hybrid options would potentially offer more simplistic trunk upgrade options.
- 5.12 Irrespective of the reticulation option chosen there will be a degree of disruption to private properties during the construction phase of the project. The Gravity-Hybrid option will have the least overall impact on individual properties as items such as electrical connections, space for tanks on-site and excavation disruption is not required for all properties as it is for both the PSS and STEP options.

6.0 Wastewater Treatment Market Considerations

- 6.1 It is important to consider how the opportunity to construct a GSS will be received by the wastewater market in New Zealand and how schemes such as the GSS are typically implemented.
- 6.2 Regardless of the reticulation option advanced the physical construction of the GSS will comprise two primary components;
 - a) The in ground pipe reticulation and pumps,
 - b) The treatment plant and land disposal area.
- 6.3 These two components require very different contracting skill sets, particularly in the context if a performance based specification were to apply for the treatment plant and land disposal system. In a very crude sense a "Performance Based Specification" would outline the volume of wastewater to be treated and the treatment quality to be achieved prior to application to land.
- 6.4 The performance based specification would be used by a range of proprietary wastewater treatment companies to size and determine how their respective treatment processes will achieve the specified standards. This will in turn dictate final costs.
- 6.5 Various companies exist in New Zealand who utilise proprietary or licensed treatment technology based on international applications and process knowledge. Bespoke process designs and designers also exist and again it is expected that these companies will look to respond to the performance based specification for the treatment plant and land disposal system.
- 6.6 The solutions offered by these companies vary and QLDC does not wish, at this early stage, to advantage one company ahead of another by nominating a specific process technology. QLDC prefer to maintain flexibility so that the best possible technical and economic solution is found for the Glenorchy Community.
- 6.7 For a scheme the size of the proposed GSS we do not think it is likely that the market will see benefit in splitting the two (reticulation and treatment) construction components into separate contracts. Splitting physical works like this also introduces potential contract risk for QLDC. Additionally, given the potential design inter-relationship between reticulation and treatment in terms of treatment standards, we believe the market would prefer to see the GSS offered as one package to maximise the opportunity for inter-related solutions such as the PSS and STEP options.
- 6.8 QLDC would like to maintain flexibility in the procurement of solutions for the GSS project. However, feedback received from the recently completed tender process for the 'Shotover' project has indicated that there may not be a large appetite in the market for design, construct and operate contracts of a low value such as this project. This is due to the upfront costs involved from the tenderers to develop a design for their tender submission being high

compared to the value of the project itself and the number of competing tenders. To overcome and offset this market barrier, QLDC will provide specimen design information for the reticulation component of the project including all electronic data and models for use which will aid any alternative proposal. This is the best way to achieve engagement from the contracting market whilst maintaining procurement flexibility to ensure that different market process components are not excluded or unduly penalised.

- 6.9 A review of the current Queenstown construction market indicates that materials and construction costs are currently high; this is a reflection of the current shortage of contractors compared with the quantity of work available. Due to this we have seen less competition for recent projects and the ability for contractors to choose which projects they tender for. There is a risk that this may impact the quantity and quality of tender submissions received on this project depending how and when it is issued to the market.
- 6.10 It is likely that proprietary treatment technology companies will partner with civil contracting companies to deliver the project. These civil contracting companies could be local or they may be large multinational project management capable construction organisations.

7.0 Outline Procurement Process

- 7.1 As noted under Section 6.0, QLDC wish to maximise the opportunity to deliver value for the Glenorchy Community by maintaining some flexibility when procuring (tendering) the construction and implementation services required for the GSS. The purpose of this flexibility is to limit the risk of excluding certain suppliers, technology or proprietary suppliers.
- 7.2 At this juncture it is not appropriate to risk prejudicing the formal procurement process by outlining the exact details of the procurement strategy and evaluation provisions, but the process and evaluation considerations are outlined in general as follows;
- a) QLDC will run an "Open" tender for the GSS, not an Invited Tender. An Open Tender process involves advertising the project and calls for tenders to be submitted from appropriately qualified companies. This maximises the opportunity for the Glenorchy Community to receive proposals involving best practice solutions from the market and does not exclude any particular party or process.
 - b) The tender will be a Design, Construct, Operate and Transfer Tender inclusive of performance based specifications for both reticulation, treatment and disposal to land elements. It is envisaged that the documents will include a specimen design for the township reticulation that will assist tenderers to develop their own reticulation designs for their preferred treatment processes.
 - c) Tenderers will be required to submit, and will be evaluated on;
 - i. The relevant experience of the Tenderer including both their Design Teams and Construction Teams.
 - ii. The track record of the Tenderer in delivering projects of similar scale and complexity.
 - iii. The financial stability of the tendering organisation or consortium.
 - iv. The relevant skills of the personnel put forward by the Tenderer to deliver the project including the Operation and Transfer teams proposed and the method of operational transfer to Council or their agent.
 - v. The Methodology proposed by the Tenderer to deliver the project physical works.
 - vi. The stability and reliability of the treatment process. This evaluation component will specifically examine how robust the proposed treatment process will be and what risks are faced by Council in terms of consent compliance, O&M costs and generation of biosolids.
 - vii. The total price of the tendered solution.
 - d) The received tenders will be evaluated by a Tender Evaluation Team (TET) comprising appropriately qualified Council Staff, Technical Experts and an Independent Community Expert removed from Council Staff and Consultant advisors.

- e) Again, to maximise flexibility for the Glenorchy Community, Alternative Tenders will be permitted. An Alternative Tender will be one which does not meet or satisfy some aspects of the Performance Based Specification. It will be necessary for any Alternative Tender to identify where departure from the specification occurs and to outline how the risks of departure are managed. Evaluation of any Alternative Tender by the TET will be achieved by utilising the NZTA Price Quality Method which allows for the development of Alternative Tender Premiums and comparison against conforming Supplier Quality Premiums.
- f) The TET will complete their evaluation in accordance with the evaluation criteria to be listed in the Tender Document and will recommend a Tenderer to full Council for approval and contract award.
- g) Following contract award, Council will monitor the performance of the successful Tenderer against the provisions of the tender and contract documents.

Glenorchy Gravity Sewer Reticulation Schedule Preliminary Cost Estimate - Initial Scheme					Revision B March 2016
Item	Description	Units	Quantity	Rate	Total
A	Preliminary and General	%	7.5		\$410,894.59
				Subtotal	\$410,894.59
B	Traffic Control				
1.0	Preparation and implementation of site temporary traffic management plan	week	26	\$1,800.00	\$46,800.00
				Subtotal	\$46,800.00
C	Sanitary Gravity Sewers				
1.0	Supply, trench, lay and joint and test, including "first class" bedding, backfilling 150mm above pipe with imported granular material and backfill trench as required by QLDC Infrastructure Code				
	a) 150mm uPVC Class SN8 RRJ pipe	m	4,200	\$65.00	\$273,000.00
	b) 225mm uPVC Class SN8 RRJ pipe	m	650	\$85.00	\$55,250.00
2.0	Supply, construct and test 1050 diameter manhole complete with cast iron covers, benching and plastering in accordance with the QLDC Infrastructure Code:				
	a) 0-2m in depth	ea	55	\$2,500.00	\$137,500.00
	b) 2-3m in depth	ea	10	\$3,000.00	\$30,000.00
3.0	Supply and install lateral property connections:				
	a) 100mm uPVC class SN6 RRJ pipe and fittings as per Infrastructure Code standard detail D15	m	2,600	\$80.00	\$208,000.00
	b) where connection is to sewer pipe	ea	180	\$80.00	\$14,400.00
	c) where connection is to manhole	ea	40	\$50.00	\$2,000.00
4.0	Reinstatement				
	a) In roads trim grade roll, compact and supply 150mm AP 65 and 150mm M4AP40 and place Asphalt road surfacing in accordance with the QLDC Infrastructure Code over the following:	m	5,000	\$40.00	\$200,000.00
	b) In grass berm area upon completion including re-spreading topsoil and sowing grass seed as per the QLDC Infrastructure Code.	m	4,000	\$15.00	\$60,000.00
				Subtotal	\$980,150.00
D	Rising Main				
1.0	Supply, trench, lay and joint and test, including "first class" bedding, backfilling 150mm above pipe with imported granular material and backfill trench as required by QLDC Infrastructure Code				
	a) 110mm PE100 trunk rising main including fittings and fixtures	m	2,850	\$75.00	\$213,750.00
2.0	Supply, install, joint and test the following valves including thrust blocks, support and access chambers as required by QLDC Infrastructure Code				
	a) 100mm	ea	4	\$2,000.00	\$8,000.00
	b) Air/vacuum Valves	ea	4	\$3,500.00	\$14,000.00
3.0	Extra-over cost for Buckler Burn crossing	LS	1	\$75,000.00	\$75,000.00
				Subtotal	\$310,750.00
E	Pump Stations for Sanitary Gravity Sewer				
1.0	Supply and install PS1 pump station, including controls, electrical, comms and emergency storage	LS	1	\$200,000.00	\$200,000.00
2.0	Supply and install PS2 pump station including controls, electrical, comms and emergency storage	LS	1	\$100,000.00	\$100,000.00
3.0	Retrofit PS3 and upgrade controls	LS	1	\$50,000.00	\$50,000.00
4.0	Retrofit PS4 and upgrade controls	LS	1	\$50,000.00	\$50,000.00
				Subtotal	\$400,000.00
F	Pressure Sewer System for flood zone				
1.0	Supply, trench, lay and joint and test, including "first class" bedding, backfilling 150mm above pipe with imported granular material and backfill trench as required by QLDC Infrastructure Code				
	a) 40mm-75mm PE100 pressure main including fittings and fixtures	m	1,500	\$65.00	\$97,500.00
2.0	Individual pump station and connection to trunk rising main including installation, boundary kit, electrical connection, anti-flotation and external venting	ea	65	\$9,500.00	\$617,500.00
				Subtotal	\$715,000.00
G	Wastewater Treatment Plant				
1.0	Prepare site & upgrade access	LS	1	40,000.00	\$40,000.00
2.0	Supply and install new secondary treatment package plant to provide 25/25/25 mean effluent quality including primary sedimentation	m ³	260	8,000.00	\$2,080,000.00
3.0	UV disinfection	PS	1	15,000.00	\$15,000.00
4.0	Effluent dosing pumps and controls	LS	1	40,000.00	\$40,000.00
5.0	Plant control room	LS	1	30,000.00	\$30,000.00
				Subtotal	\$2,205,000.00
H	Disposal Field				
1.0	Construct & install subsurface disposal system utilising pressure compensating dripline into	m ²	40,000	6.00	\$240,000.00
				Subtotal	\$240,000.00
I	Miscellaneous				
1.0	Survey /service location costs	PS	1	30,000.00	\$30,000.00
2.0	Supply telecommunications to WWTP	PS	1	10,000.00	\$10,000.00
3.0	Power supply to WWTP	PS	1	50,000.00	\$50,000.00
4.0	Fencing & Landscaping around WWTP upon completion.	PS	1	30,000.00	\$30,000.00
5.0	Provision of monitoring systems to meet consent conditions	PS	1	50,000.00	\$50,000.00
				Subtotal	\$170,000.00
ITEM	DESCRIPTION				TOTAL
A	Preliminary and General				\$410,894.59
B	Traffic Control				\$46,800.00
C	Sanitary Gravity Sewers				\$980,150.00
D	Rising Main				\$310,750.00
E	Pump Stations for Sanitary Gravity Sewer				\$400,000.00
F	Pressure Sewer System for flood zone				\$715,000.00
G	Wastewater Treatment Plant				\$2,205,000.00
H	Disposal Field				\$240,000.00
I	Miscellaneous				\$170,000.00
Direct Works Total (ex GST)					\$5,478,594.59
Design and MSQA (10% of Direct Works)					\$547,859.46
Scope Contingency (10% of Direct Works)					\$547,859.46
Total (ex GST)					\$6,574,313.51

Notes:

- 1) Assumes 250 properties to be serviced and 185 connections at 2020 design horizon
- 2) Rising main and PSS reticulation include fittings and fixtures unless noted
- 3) Excludes consultation, consents and landowner approvals (by QLDC)
- 4) Design & MSQA allowance higher to account for lack of proprietary design and reduced construction flexibility

Glenorchy Pressure Sewer System Reticulation Schedule Preliminary Cost Estimate - Initial Scheme					Revision B March 2016
Item	Description	Units	Quantity	Rate	Total
A	Preliminary and General	%	7.5		\$389,343.24
				Subtotal	\$389,343.24
B	Traffic Control				
1.0	Preparation and implementation of site temporary traffic management plan	week	16	\$1,800.00	\$28,800.00
				Subtotal	\$28,800.00
C	Individual Hardware				
1.0	Supply, install, test and commission the following components: trench, lay and joint and test, including "first class" bedding, backfilling 150mm above pipe with imported granular material and backfill trench as required by QLDC Infrastructure Code				
	a) Boundary Kits	ea	250	\$600.00	\$150,000.00
	b) Flushing Point	ea	10	\$1,150.00	\$11,500.00
	c) Grinder Pump system	ea	140	\$5,500.00	\$770,000.00
	d) Installation private property Civil including lateral connections & reinstate	ea	140	\$1,800.00	\$252,000.00
	e) Installation private property Electrical	ea	140	\$500.00	\$70,000.00
	f) extra-overcost for installation within flood zone, including anti-floatation, sealed lids and external vents	PS	65	\$500.00	\$32,500.00
2.0	Supply, install, test and commission communal pump stations for existing gravity networks:				
	a) Quad Pumpstation using existing chamber	ea	1	\$10,000.00	\$10,000.00
	b) Quad Pumpstations including chamber	ea	5	\$20,000.00	\$100,000.00
	c) Electrical and comms for the above communal stations	ea	6	\$10,000.00	\$60,000.00
	d) Additional emergency storage for the above communal stations	ea	6	\$20,000.00	\$120,000.00
				Subtotal	\$1,576,000.00
D	Mainline Reticulation				
1.0	Supply, trench, lay and joint and test the following pipework including "first class" bedding, backfilling 150mm above pipe with imported granular material and backfill trench as required by QLDC Infrastructure Code				
	a) 40mm PE Pipe	m	2,200	\$45.00	\$99,000.00
	b) 50mm PE Pipe	m	200	\$45.00	\$9,000.00
	c) 63mm PE Pipe	m	2,900	\$55.00	\$159,500.00
	d) 75mm PE Pipe	m	700	\$60.00	\$42,000.00
	e) 90mm PE Pipe	m	250	\$70.00	\$17,500.00
	f) 110mm PE Pipe	m	2,650	\$80.00	\$212,000.00
3.0	Supply, install, joint and test the following valves including thrust blocks, support and access chambers as required by QLDC Infrastructure Code				
	a) 50mm	ea	3	\$700.00	\$2,100.00
	b) 65mm	ea	2	\$800.00	\$1,600.00
	c) 80mm	ea	10	\$1,100.00	\$11,000.00
	d) 100mm	ea	4	\$1,600.00	\$6,400.00
	e) Air/vacuum Valves	ea	4	\$3,500.00	\$14,000.00
4.0	Reinstatement				
	a) In roads trim grade roll, compact and supply 150mm AP 65 and 150mm M4AP40 and place Asphalt road surfacing in accordance with the QLDC Infrastructure Code over the following:	m	3,000	\$40.00	\$120,000.00
	b) in grass berm area upon completion including re-spreading topsoil and sowing grass	m	6,000	\$15.00	\$90,000.00
5.0	Extra-over cost for Buckler Burn crossing	LS	1	\$75,000.00	\$75,000.00
				Subtotal	\$859,100.00
E	Wastewater Treatment Plant				
1.0	Prepare site & upgrade access	LS	1	40,000.00	\$40,000.00
2.0	Supply and install new secondary treatment package plant to provide 25/25/25 mean effluent quality including primary sedimentation	m ³	230	8,000.00	\$1,840,000.00
3.0	UV disinfection	PS	1	15,000.00	\$15,000.00
4.0	Effluent dosing pumps and controls	LS	1	40,000.00	\$40,000.00
5.0	Plant control room	LS	1	30,000.00	\$30,000.00
				Subtotal	\$1,965,000.00
F	Disposal Field				
1.0	Construct & install subsurface disposal system utilising pressure compensating diaphane into in-situ soils.	m ²	35,500	6.00	\$213,000.00
				Subtotal	\$213,000.00
G	Miscellaneous				
1.0	Survey /service location costs	PS	1	20,000.00	\$20,000.00
2.0	Supply telecommunications to WWTP	PS	1	10,000.00	\$10,000.00
3.0	Power supply to WWTP	PS	1	50,000.00	\$50,000.00
4.0	Fencing & Landscaping around WWTP upon completion.	PS	1	30,000.00	\$30,000.00
5.0	Provision of monitoring systems to meet consent conditions	PS	1	50,000.00	\$50,000.00
				Subtotal	\$160,000.00
ITEM	DESCRIPTION				TOTAL
A	Preliminary and General				\$389,343.24
B	Traffic Control				\$28,800.00
C	Individual Hardware				\$1,576,000.00
D	Mainline Reticulation				\$859,100.00
E	Wastewater Treatment Plant				\$1,965,000.00
F	Disposal Field				\$213,000.00
G	Miscellaneous				\$160,000.00
Direct Works Total (ex GST)					\$5,191,243.24
Design and MSQA (8% of Direct Works)					\$415,299.46
Scope Contingency (10% of Direct Works)					\$519,124.32
Total (ex GST)					\$6,125,667.03

Notes:

- 1) Assumes 250 properties to be serviced and 185 connections at 2020 design horizon
- 2) Assumes utilisation of existing gravity reticulation in conjunction with some communal pump stations in these areas, still to be confirmed
- 3) Additional emergency storage needs to be specifically considered for communal pump stations
- 4) Excludes consultation, consents and landowner approvals (by QLDC)

Glenorchy STEP Reticulation Schedule Preliminary Cost Estimate - Initial Scheme					Revision B March 2016
Item	Description	Units	Quantity	Rate	Total
A	Preliminary and General	%	7.5		\$376,856.76
				Subtotal	\$376,856.76
B	Traffic Control				
1.0	Preparation and implementation of temporary site traffic management plan	week	16	\$1,800.00	\$28,800.00
				Subtotal	\$28,800.00
C	Individual Sytem Hardware				
1.0	Supply, install, test and commission the following components: trench, lay and joint and test, including "first class" bedding, backfilling 150mm above pipe with imported granular material and backfill trench as required by QLDC Infrastructure Code				
	a) Boundary Kits	ea	250	\$600.00	\$150,000.00
	b) Flushing Point	ea	10	\$1,150.00	\$11,500.00
	c) 3,800L STEP tank and pump system	ea	140	\$7,000.00	\$980,000.00
	d) 5,700L STEP tank and pump system	ea	15	\$7,500.00	\$112,500.00
	e) Retrofit STEP pump system into existing septic tank	ea	30	\$7,000.00	\$210,000.00
	f) Installation private property Civil including lateral connections & reinstate	ea	185	\$1,800.00	\$333,000.00
	g) Installation private property Electrical	ea	185	\$500.00	\$92,500.00
	h) extra-overcost for installation within flood zone, including anti-floatation, sealed lids and external vents	PS	65	\$500.00	\$32,500.00
				Subtotal	\$1,922,000.00
D	Mainline Reticulation				
1.0	Supply, trench, lay and joint and test the following pipework including fittings & fixtures, bedding, backfilling 150mm above pipe with imported granular material and backfill trench as required by QLDC Infrastructure Code				
	a) 40mm PE Pipe	m	2,200	\$45.00	\$99,000.00
	b) 50mm PE Pipe	m	200	\$45.00	\$9,000.00
	c) 63mm PE Pipe	m	2,900	\$55.00	\$159,500.00
	d) 75mm PE Pipe	m	700	\$60.00	\$42,000.00
	e) 90mm PE Pipe	m	250	\$70.00	\$17,500.00
	f) 110mm PE Pipe	m	2,650	\$80.00	\$212,000.00
3.0	Supply, install, joint and test the following valves including thrust blocks, support and access chambers as required by QLDC Infrastructure Code				
	a) 50mm	ea	3	\$700.00	\$2,100.00
	b) 65mm	ea	2	\$800.00	\$1,600.00
	c) 80mm	ea	10	\$1,100.00	\$11,000.00
	d) 100mm	ea	4	\$1,600.00	\$6,400.00
	e) Air/vacuum Valves	ea	4	\$3,500.00	\$14,000.00
4.0	Reinstatement				
	a) In roads trim grade roll, compact and supply 150mm AP 65 and 150mm M4AP40 and place Asphalt road surfacing in accordance with the QLDC Infrastructure Code over the following:	m	2,000	\$40.00	\$80,000.00
	b) in grass berm area upon completion including re-spreading topsoil and sowing grass seed as per the QLDC Infrastructure Code.	m	6,000	\$15.00	\$90,000.00
5.0	Extra-over cost for Buckler Burn crossing	LS	1	\$75,000.00	\$75,000.00
				Subtotal	\$819,100.00
E	Wastewater Treatment Plant				
1.0	Prepare site & upgrade access	LS	1	40,000.00	\$40,000.00
2.0	Supply and install new secondary treatment package plant to provide 25/25/25 mean effluent quality excluding primary sedimentation	m ³	230	6,000.00	\$1,380,000.00
3.0	UV disinfection	PS	1	15,000.00	\$15,000.00
4.0	Effluent dosing pumps and controls	LS	1	40,000.00	\$40,000.00
5.0	Plant control room	LS	1	30,000.00	\$30,000.00
				Subtotal	\$1,505,000.00
F	Disposal Field				
1.0	Construct & install subsurface disposal system utilising pressure compensating dripline into in-situ soils.	m ²	35,500	6.00	\$213,000.00
				Subtotal	\$213,000.00
G	Miscellaneous				
1.0	Survey /service location costs	PS	1	20,000.00	\$20,000.00
2.0	Supply telecommunications to WWTP	PS	1	10,000.00	\$10,000.00
3.0	Power supply to WWTP	PS	1	50,000.00	\$50,000.00
4.0	Fencing & Landscaping around WWTP upon completion.	PS	1	30,000.00	\$30,000.00
5.0	Provision of monitoring systems to meet consent conditions	PS	1	50,000.00	\$50,000.00
				Subtotal	\$160,000.00
ITEM	DESCRIPTION				TOTAL
A	Preliminary and General				\$376,856.76
B	Traffic Control				\$28,800.00
C	Individual Sytem Hardware				\$1,922,000.00
D	Mainline Reticulation				\$819,100.00
E	Wastewater Treatment Plant				\$1,505,000.00
F	Disposal Field				\$213,000.00
G	Miscellaneous				\$160,000.00
Direct Works Total (ex GST)					\$5,024,756.76
Design and MSQA (8% of Direct Works)					\$401,980.54
Scope Contingency (10% of Direct Works)					\$502,475.68
Total (ex GST)					\$5,929,212.97

Notes:

- 1) Assumes 250 properties to be serviced and 185 connections at 2020 design horizon
- 2) Assumes utilisation of existing gravity reticulation in conjunction with some communal pump stations in these areas, still to be confirmed
- 3) Additional emergency storage needs to be specifically considered for communal pump stations
- 4) Excludes consultation, consents and landowner approvals (by QLDC)

Glenorchy Gravity Sewer Reticulation Schedule Preliminary Cost Estimate - Ultimate Scheme					Revision B March 2016
Item	Description	Units	Quantity	Rate	Total
A	Preliminary and General	%	7.5		\$633,462.16
				Subtotal	\$633,462.16
B	Traffic Control				
1.0	Preparation and implementation of site temporary traffic management plan	week	26	\$1,800.00	\$46,800.00
				Subtotal	\$46,800.00
C	Sanitary Gravity Sewers				
1.0	Supply, trench, lay and joint and test, including "first class" bedding, backfilling 150mm above pipe with imported granular material and backfill trench as required by QLDC Infrastructure Code				
	a) 150mm uPVC Class SN8 RRJ pipe	m	4,200	\$65.00	\$273,000.00
	b) 225mm uPVC Class SN8 RRJ pipe	m	650	\$85.00	\$55,250.00
2.0	Supply, construct and test 1050 diameter manhole complete with cast iron covers, benching and plastering in accordance with the QLDC Infrastructure Code:				
	a) 0-2m in depth	ea	55	\$2,500.00	\$137,500.00
	b) 2-3m in depth	ea	10	\$3,000.00	\$30,000.00
3.0	Supply and install lateral property connections:				
	a) 100mm uPVC class SN6 RRJ pipe and fittings as per Infrastructure Code standard detail D15	m	2,600	\$80.00	\$208,000.00
	b) where connection is to sewer pipe	ea	180	\$80.00	\$14,400.00
	c) where connection is to manhole	ea	40	\$50.00	\$2,000.00
4.0	Reinstatement				
	a) In roads trim grade roll, compact and supply 150mm AP 65 and 150mm M4AP40 and place Asphalt road surfacing in accordance with the QLDC Infrastructure Code over the following:	m	5,000	\$40.00	\$200,000.00
	b) In grass berm area upon completion including re-spreading topsoil and sowing grass seed as per the QLDC Infrastructure Code.	m	4,000	\$15.00	\$60,000.00
				Subtotal	\$980,150.00
D	Rising Main				
1.0	Supply, trench, lay and joint and test, including "first class" bedding, backfilling 150mm above pipe with imported granular material and backfill trench as required by QLDC Infrastructure Code				
	a) 110mm PE100 trunk rising main including fittings and fixtures	m	2,850	\$75.00	\$213,750.00
2.0	Supply, install, joint and test the following valves including thrust blocks, support and access chambers as required by QLDC Infrastructure Code				
	a) 100mm	ea	4	\$2,000.00	\$8,000.00
	b) Air/vacuum Valves	ea	4	\$3,500.00	\$14,000.00
3.0	Extra-over cost for Buckler Burn crossing	LS	1	\$75,000.00	\$75,000.00
				Subtotal	\$310,750.00
E	Pump Stations for Sanitary Gravity Sewer				
1.0	Supply and install PS1 pump station, including controls, electrical, comms and emergency storage	LS	1.5	\$200,000.00	\$300,000.00
2.0	Supply and install PS2 pump station including controls, electrical, comms and emergency storage	LS	1.5	\$100,000.00	\$150,000.00
3.0	Retrofit PS3 and upgrade controls	LS	1.5	\$50,000.00	\$75,000.00
4.0	Retrofit PS4 and upgrade controls	LS	1.5	\$50,000.00	\$75,000.00
				Subtotal	\$600,000.00
F	Pressure Sewer System for flood zone				
1.0	Supply, trench, lay and joint and test, including "first class" bedding, backfilling 150mm above pipe with imported granular material and backfill trench as required by QLDC Infrastructure Code				
	a) 40mm-75mm PE100 pressure main including fittings and fixtures	m	1,500	\$65.00	\$97,500.00
2.0	Individual pump station and connection to trunk rising main including installation, boundary kit, electrical connection, anti-flotation and external venting	ea	80	\$9,500.00	\$760,000.00
				Subtotal	\$857,500.00
G	Wastewater Treatment Plant				
1.0	Prepare site & upgrade access	LS	1	40,000.00	\$40,000.00
2.0	Supply and install new secondary treatment package plant to provide 25/25/25 mean effluent quality including primary sedimentation	m ³	520	8,000.00	\$4,160,000.00
3.0	UV disinfection	PS	1.5	15,000.00	\$22,500.00
4.0	Effluent dosing pumps and controls	LS	1.5	40,000.00	\$60,000.00
5.0	Plant control room	LS	1.5	30,000.00	\$45,000.00
				Subtotal	\$4,327,500.00
H	Disposal Field				
1.0	Construct & install subsurface disposal system utilising pressure compensating dripline into	m ²	80,000	6.00	\$480,000.00
				Subtotal	\$480,000.00
H	Miscellaneous				
1.0	Survey /service location costs	PS	1	30,000.00	\$30,000.00
2.0	Supply telecommunications to WWTP	PS	1	10,000.00	\$10,000.00
3.0	Power supply to WWTP	PS	1.5	50,000.00	\$75,000.00
4.0	Fencing & Landscaping around WWTP upon completion.	PS	1.5	30,000.00	\$45,000.00
5.0	Provision of monitoring systems to meet consent conditions	PS	1	50,000.00	\$50,000.00
				Subtotal	\$210,000.00
ITEM	DESCRIPTION				TOTAL
A	Preliminary and General				\$633,462.16
B	Traffic Control				\$46,800.00
C	Sanitary Gravity Sewers				\$980,150.00
D	Rising Main				\$310,750.00
E	Pump Stations for Sanitary Gravity Sewer				\$600,000.00
F	Pressure Sewer System for flood zone				\$857,500.00
G	Wastewater Treatment Plant				\$4,327,500.00
H	Disposal Field				\$480,000.00
I	Miscellaneous				\$210,000.00
Direct Works Total (ex GST)					\$8,446,162.16
Design and MSQA (as per Initial Scheme estimate)					\$550,000.00
Scope Contingency (10% of Direct Works)					\$844,616.22
Total (ex GST)					\$9,840,778.38

Notes:

- 1) Assumes 430 properties/connections and 540 dwelling equivalents at 2065 design horizon
- 2) Assumes additional laterals & connection provided by developer at time of development (developers cost)
- 3) Assumes that pressure sewer systems are provided by Council at time of development or DCNs payable reduced by similar amount, installat
- 4) Pumpstation & Miscellaneous items factored by 1.5 to account for upgrades required to increase capacity.

Glenorchy Pressure Sewer System Reticulation Schedule Preliminary Cost Estimate - Ultimate Scheme					Revision B March 2016
Item	Description	Units	Quantity	Rate	Total
A	Preliminary and General	%	7.5		\$669,032.43
				Subtotal	\$669,032.43
B	Traffic Control				
1.0	Preparation and implementation of site temporary traffic management plan	week	16	\$1,800.00	\$28,800.00
				Subtotal	\$28,800.00
C	Individual Hardware				
1.0	Supply, install, test and commission the following components: trench, lay and joint and test, including "first class" bedding, backfilling 150mm above pipe with imported granular material and backfill trench as required by QLDC Infrastructure Code				
	a) Boundary Kits	ea	250	\$600.00	\$150,000.00
	b) Flushing Point	ea	10	\$1,150.00	\$11,500.00
	c) Grinder Pump system	ea	380	\$5,500.00	\$2,090,000.00
	d) Installation private property Civil including lateral connections & reinstate	ea	140	\$1,800.00	\$252,000.00
	e) Installation private property Electrical	ea	140	\$500.00	\$70,000.00
	f) extra-overcost for installation within flood zone, including anti-floatation, sealed lids and external vents	PS	65	\$500.00	\$32,500.00
2.0	Supply, install, test and commission communal pump stations for existing gravity networks:				
	a) Quad Pumpstation using existing chamber	ea	1	\$10,000.00	\$10,000.00
	b) Quad Pumpstations including chamber	ea	5	\$20,000.00	\$100,000.00
	c) Electrical and comms for the above communal stations	ea	6	\$10,000.00	\$60,000.00
	d) Additional emergency storage for the above communal stations	ea	6	\$20,000.00	\$120,000.00
				Subtotal	\$2,896,000.00
D	Mainline Reticulation				
1.0	Supply, trench, lay and joint and test the following pipework including "first class" bedding, backfilling 150mm above pipe with imported granular material and backfill trench as required by QLDC Infrastructure Code				
	a) 40mm PE Pipe	m	2,200	\$45.00	\$99,000.00
	b) 50mm PE Pipe	m	200	\$45.00	\$9,000.00
	c) 63mm PE Pipe	m	2,900	\$55.00	\$159,500.00
	d) 75mm PE Pipe	m	700	\$60.00	\$42,000.00
	e) 90mm PE Pipe	m	250	\$70.00	\$17,500.00
	f) 110mm PE Pipe	m	2,650	\$80.00	\$212,000.00
3.0	Supply, install, joint and test the following valves including thrust blocks, support and access chambers as required by QLDC Infrastructure Code				
	a) 50mm	ea	3	\$700.00	\$2,100.00
	b) 65mm	ea	2	\$800.00	\$1,600.00
	c) 80mm	ea	10	\$1,100.00	\$11,000.00
	d) 100mm	ea	4	\$1,600.00	\$6,400.00
	e) Air/vacuum Valves	ea	4	\$3,500.00	\$14,000.00
4.0	Reinstatement				
	a) In roads trim grade roll, compact and supply 150mm AP 65 and 150mm M4AP40 and place Asphalt road surfacing in accordance with the QLDC Infrastructure Code over the following:	m	3,000	\$40.00	\$120,000.00
	b) in grass berm area upon completion including re-spreading topsoil and sowing grass	m	6,000	\$15.00	\$90,000.00
5.0	Extra-over cost for Buckler Burn crossing	LS	1	\$75,000.00	\$75,000.00
				Subtotal	\$859,100.00
E	Wastewater Treatment Plant				
1.0	Prepare site & upgrade access	LS	1	40,000.00	\$40,000.00
2.0	Supply and install new secondary treatment package plant to provide 25/25/25 mean effluent quality including primary sedimentation	m ³	460	8,000.00	\$3,680,000.00
3.0	UV disinfection	PS	1.5	15,000.00	\$22,500.00
4.0	Effluent dosing pumps and controls	LS	1.5	40,000.00	\$60,000.00
5.0	Plant control room	LS	1.5	30,000.00	\$45,000.00
				Subtotal	\$3,847,500.00
F	Disposal Field				
1.0	Construct & install subsurface disposal system utilising pressure compensating diaphane into in-situ soils.	m ²	70,000	6.00	\$420,000.00
				Subtotal	\$420,000.00
G	Miscellaneous				
1.0	Survey /service location costs	PS	1	20,000.00	\$20,000.00
2.0	Supply telecommunications to WWTP	PS	1	10,000.00	\$10,000.00
3.0	Power supply to WWTP	PS	1.5	50,000.00	\$75,000.00
4.0	Fencing & Landscaping around WWTP upon completion.	PS	1.5	30,000.00	\$45,000.00
5.0	Provision of monitoring systems to meet consent conditions	PS	1	50,000.00	\$50,000.00
				Subtotal	\$200,000.00
ITEM	DESCRIPTION				TOTAL
A	Preliminary and General				\$669,032.43
B	Traffic Control				\$28,800.00
C	Individual Hardware				\$2,896,000.00
D	Mainline Reticulation				\$859,100.00
E	Wastewater Treatment Plant				\$3,847,500.00
F	Disposal Field				\$420,000.00
G	Miscellaneous				\$200,000.00
Direct Works Total (ex GST)					\$8,920,432.43
Design and MSQA (as per Initial Scheme estimate)					\$415,000.00
Scope Contingency (10% of Direct Works)					\$892,043.24
Total (ex GST)					\$10,227,475.68

Notes:

- 1) Assumes 430 properties/connections and 540 dwelling equivalents at 2065 design horizon
- 2) Assumes additional laterals & connection provided by developer at time of development (developers cost)
- 3) Assumes that pressure sewer systems are provided by Council at time of development or DCNs payable reduced by similar amount, installation and connection by developer
- 4) Pumpstation & Miscellaneous items factored by 1.5 to account for upgrades required to increase capacity.

Glenorchy STEP Reticulation Schedule Preliminary Cost Estimate - Ultimate Scheme					Revision B March 2016
Item	Description	Units	Quantity	Rate	Total
A	Preliminary and General	%	7.5		\$655,532.43
				Subtotal	\$655,532.43
B	Traffic Control				
1.0	Preparation and implementation of temporary site traffic management plan	week	16	\$1,800.00	\$28,800.00
				Subtotal	\$28,800.00
C	Individual Sytem Hardware				
1.0	Supply, install, test and commission the following components: trench, lay and joint and test, including "first class" bedding, backfilling 150mm above pipe with imported granular material and backfill trench as required by QLDC Infrastructure Code				
	a) Boundary Kits	ea	250	\$600.00	\$150,000.00
	b) Flushing Point	ea	10	\$1,150.00	\$11,500.00
	c) 3,800L STEP tank and pump system	ea	360	\$7,000.00	\$2,520,000.00
	d) 5,700L STEP tank and pump system	ea	40	\$7,500.00	\$300,000.00
	e) Retrofit STEP pump system into existing septic tank	ea	30	\$7,000.00	\$210,000.00
	f) Installation private property Civil including lateral connections & reinstate	ea	185	\$1,800.00	\$333,000.00
	g) Installation private property Electrical	ea	185	\$500.00	\$92,500.00
	h) extra-overcost for installation within flood zone, including anti-floatation, sealed lids and external vents	PS	65	\$500.00	\$32,500.00
				Subtotal	\$3,649,500.00
D	Mainline Reticulation				
1.0	Supply, trench, lay and joint and test the following pipework including fittings & fixtures, bedding, backfilling 150mm above pipe with imported granular material and backfill trench as required by QLDC Infrastructure Code				
	a) 40mm PE Pipe	m	2,200	\$45.00	\$99,000.00
	b) 50mm PE Pipe	m	200	\$45.00	\$9,000.00
	c) 63mm PE Pipe	m	2,900	\$55.00	\$159,500.00
	d) 75mm PE Pipe	m	700	\$60.00	\$42,000.00
	e) 90mm PE Pipe	m	250	\$70.00	\$17,500.00
	f) 110mm PE Pipe	m	2,650	\$80.00	\$212,000.00
3.0	Supply, install, joint and test the following valves including thrust blocks, support and access chambers as required by QLDC Infrastructure Code				
	a) 50mm	ea	3	\$700.00	\$2,100.00
	b) 65mm	ea	2	\$800.00	\$1,600.00
	c) 80mm	ea	10	\$1,100.00	\$11,000.00
	d) 100mm	ea	4	\$1,600.00	\$6,400.00
	e) Air/vacuum Valves	ea	4	\$3,500.00	\$14,000.00
4.0	Reinstatement				
	a) In roads trim grade roll, compact and supply 150mm AP 65 and 150mm M4AP40 and place Asphalt road surfacing in accordance with the QLDC Infrastructure Code over the following:	m	3,000	\$40.00	\$120,000.00
	b) in grass berm area upon completion including re-spreading topsoil and sowing grass seed as per the QLDC Infrastructure Code.	m	6,000	\$15.00	\$90,000.00
5.0	Extra-over cost for Buckler Burn crossing	LS	1	\$75,000.00	\$75,000.00
				Subtotal	\$859,100.00
E	Wastewater Treatment Plant				
1.0	Prepare site & upgrade access	LS	1	40,000.00	\$40,000.00
2.0	Supply and install new secondary treatment package plant to provide 25/25/25 mean effluent quality excluding primary sedimentation	m ³	460	6,000.00	\$2,760,000.00
3.0	UV disinfection	PS	1.5	15,000.00	\$22,500.00
4.0	Effluent dosing pumps and controls	LS	1.5	40,000.00	\$60,000.00
5.0	Plant control room	LS	1.5	30,000.00	\$45,000.00
				Subtotal	\$2,927,500.00
F	Disposal Field				
1.0	Construct & install subsurface disposal system utilising pressure compensating dripline into in-situ soils.	m ²	70,000	6.00	\$420,000.00
				Subtotal	\$420,000.00
G	Miscellaneous				
1.0	Survey /service location costs	PS	1	20,000.00	\$20,000.00
2.0	Supply telecommunications to WWTP	PS	1	10,000.00	\$10,000.00
3.0	Power supply to WWTP	PS	1.5	50,000.00	\$75,000.00
4.0	Fencing & Landscaping around WWTP upon completion.	PS	1.5	30,000.00	\$45,000.00
5.0	Provision of monitoring systems to meet consent conditions	PS	1	50,000.00	\$50,000.00
				Subtotal	\$200,000.00
ITEM	DESCRIPTION				TOTAL
A	Preliminary and General				\$655,532.43
B	Traffic Control				\$28,800.00
C	Individual Sytem Hardware				\$3,649,500.00
D	Mainline Reticulation				\$859,100.00
E	Wastewater Treatment Plant				\$2,927,500.00
F	Disposal Field				\$420,000.00
G	Miscellaneous				\$200,000.00
Direct Works Total (ex GST)					\$8,740,432.43
Design and MSQA (as per Initial Scheme estimate)					\$405,000.00
Scope Contingency (10% of Direct Works)					\$874,043.24
Total (ex GST)					\$10,019,475.68

Notes:

- 1) Assumes 250 properties to be serviced and 185 connections at 2020 design horizon
- 2) Assumes utilisation of existing gravity reticulation in conjunction with some communal pump stations in these areas, still to be confirmed
- 3) Additional emergency storage needs to be specifically considered for communal pump stations
- 4) Excludes consultation, consents and landowner approvals (by QLDC)