

Glenorchy Community Association
Comparison of 2 community wastewater options



	Hybrid Gravity / Pressure	STEP (Septic Tank Effluent Pumping)
Description	This is a hybrid system because it uses both gravity and pumps to move the waste. Outside of the flood zone there is no infrastructure on each property, there is a connection at the property boundary and the waste moves downhill using gravity to pump stations. Within the flood zone a sealed tank is required on the property and waste is moved by pumps on each property to the gravity pipe system.	A septic tank on each property collects the waste and only the liquid from it is sent to the treatment station. The whole system uses pumps on each property to move the liquid effluent.
QLDC Cost Estimates for Initial Scheme - Excluding GST	Costs for decommissioning existing onsite waste system and new piping from house to boundary not included	Conservatively assumes low reuse of existing septic tanks
Reticulation Cost	\$1.80m	\$0.84m
Treatment and disposal	\$2.63m	\$1.88m
Grinder/Sertic tank	\$0.62m	\$1.92m
Other Costs	\$1.51m	\$1.28m
Total Capital Cost	\$6.57m	\$5.93m
Connection Charge	\$18,800	\$19,200
Operating Expense (annual rates)	Not provided	Not provided
Pipes	Gravity sections of pipe are PVC (ranging in diameter from 100mm-250mm), pressure sections of pipe are smaller diameter PE (or Poly Ethylene, typically 50mm)	PE (typically 50mm)
I&I, Inflow and infiltration (stormwater leaking into the system that has to be treated)	The PVC pipes and manholes used in the gravity pipe system are prone to leaving stormwater into the system. Because of this the treatment plant has to treat a greater volume and therefore needs to have more capacity. A sealed tank is required to prevent I&I in the flood zone.	The STEP pipes do not leak and there are no manholes so I&I is not an issue
Pump stations	3 or 4 small pump stations located within road reserves will collect and pump sewage to the treatment plant. Flood zone properties will have a sealed waste collection tank, a grinder pump will grind up and pump all the waste.	Each property has a pump, combined they pump the liquid effluent to the treatment plant.
Flood zone properties	Due to the risk of flood waters being contaminated, and flood water entering the pipes, properties in the flood zone will not have gravity based pipes. A sealed tank and grinder pump will grind up the waste and use a pressurised pipe to move solids and liquids to join with the gravity pipes.	A sealed STEP tank is required in floodzone properties. Reuse of existing septic tank not possible because it has to be sealed unit.
Treatment plant	A larger treatment plant than a STEP system is required because it has to treat solids and has not undergone any primary treatment.	Primary treatment occurs in the septic tank on the property. The treatment plant only treats liquid effluent. Compared to a gravity system there is less volume of effluent and it has already undergone some treatment so the treatment plant can be smaller (than the hybrid system treatment plant).
Land disposal	Larger area than STEP is required to dispose liquid to land because of stormwater inflow and infiltration in a gravity system that has to be treated.	Smaller area than Hybrid because there is no stormwater inflow and infiltration to treat.
Pipe under Buckler Burn	Because the treatment plant is higher than the township, waste will be pumped under pressure under the buckler burn.	Because the treatment plant is higher than the township, waste will be pumped under pressure under the buckler burn.
Seismic resilience	The PVC pipes and manholes used in the gravity pipe system will be badly damaged in a strong earthquake. Liquefaction and vertical movement would mean gravity pipes would need to be rebuilt to restore the gradient or replaced with a pressure pipe as was done in Christchurch.	Pressure pipes are made of a flexible material PE without regular joints and the pipes are generally shallower, therefore they are less damaged and easier to fix in a strong earthquake. A very strong earthquake will still create a lot of damage to a PE pipe system.
Ability to meter discharge volume	A gravity pipe system can not be metered, pressure pipes such as in the floodzone could be.	With a STEP system because the effluent is pumped under pressure it is possible to meter it. This would allow a user pays system. This could incentivise water conservation and the use of waste minimisation technology and operational practices. It also encourages people to dispose of waste inappropriately to avoid paying.
Composting toilets	Possible	Possible
Greywater separation and potential reuse for irrigation	Possible. If many properties chose this and/or composting toilets a gravity system would not have enough liquid for waste to flow by gravity to the pump stations.	Possible
Impact on your property during construction	Existing septic tank removed, or emptied and filled with gravel. New gravity pipe to be laid from house to boundary.	Properties with septic tanks that are large enough and do not leak (tanks would be tested) can be reused or they need to be replaced with a STEP tank.
Maintenance on your property	Nil unless in the flood zone and there will be grinder pump maintenance. Sludge is generated at the treatment plant and its removal costs form part of the rates.	Pump and control system maintenance, and septic tank sludge to be pumped out (TBD if by property owner or by QLDC). Costs variable and unknown.
Who pays for maintenance on your property	Property owner. PVC pipe on property only.	Property owner. Pumps, tank, electrical controls and PE pipe on property.
Existing septic tank primary treatment system	Decommissioned by removing or filling with gravel	Can be reused if large enough and do not leak.
Existing secondary treatment system (eg Oasis)	Decommissioned by removing or filling with gravel	Generally the tanks associated with these systems can not be reused with a STEP system and they will need to be removed.
Existing disposal fields	Can be removed or abandoned, up to the property owner.	Can be removed or abandoned, up to the property owner.
New tank on your property	Only required in the flood zone.	If existing septic tank can not be reused a new STEP tank is required
Reticulation electricity cost	Pump station electricity costs will form part of the operating costs included in rates	Property owners pay for the electricity to run the pump, estimated at 15c/day.
Easement on your property and access by QLDC	Connection is at property boundary so no easement is required	A sewer easement dedicated to the District is required to allow for access onto the property's containing a STEP system.
Control panel on your property for the pump	Only in flood zone	Yes, and the house electricity system needs to be compliant
Area required on your property	Pipe from house to boundary, and the grinder tank for the flood zone.	Tank area and pipe to boundary.
Impact on your property following construction	Can't build or plant trees above pipe to boundary. Flood zone properties also have the grinder tank.	Can't build or plant trees above tank or pipe. Tank replacement required over time. Maintain access and ability to get tank pumped.