

Report No:	RESC11-08-08
File No:	
Date:	22 July 2011
Decision Required	

REPORT SUMMARY

Report to: Engineering Services
Meeting Date: 4 August 2011
Report Author: Jeff Cuthbertson
Subject: **Pressure Wastewater Systems**

EXECUTIVE SUMMARY

This report outlines the use of pressure wastewater systems in some areas of Tasman district where conventional gravity wastewater systems are difficult and expensive to construct and maintain. Pressure wastewater systems present a completely different way of managing wastewater in terms of ownership, maintenance and types of systems available on the market.

RECOMMENDATION/S

That the report be received.

DRAFT RESOLUTION

THAT the Engineering Services Committee receives the Pressure Wastewater Systems report, RESC11-08-08 and;

THAT the Engineering Services Committee approves the development of a pressure wastewater systems policy for inclusion in the review of the Engineering Standards in relation to the installation, ownership and maintenance of the pressure wastewater system as noted in RESC11-08-08.

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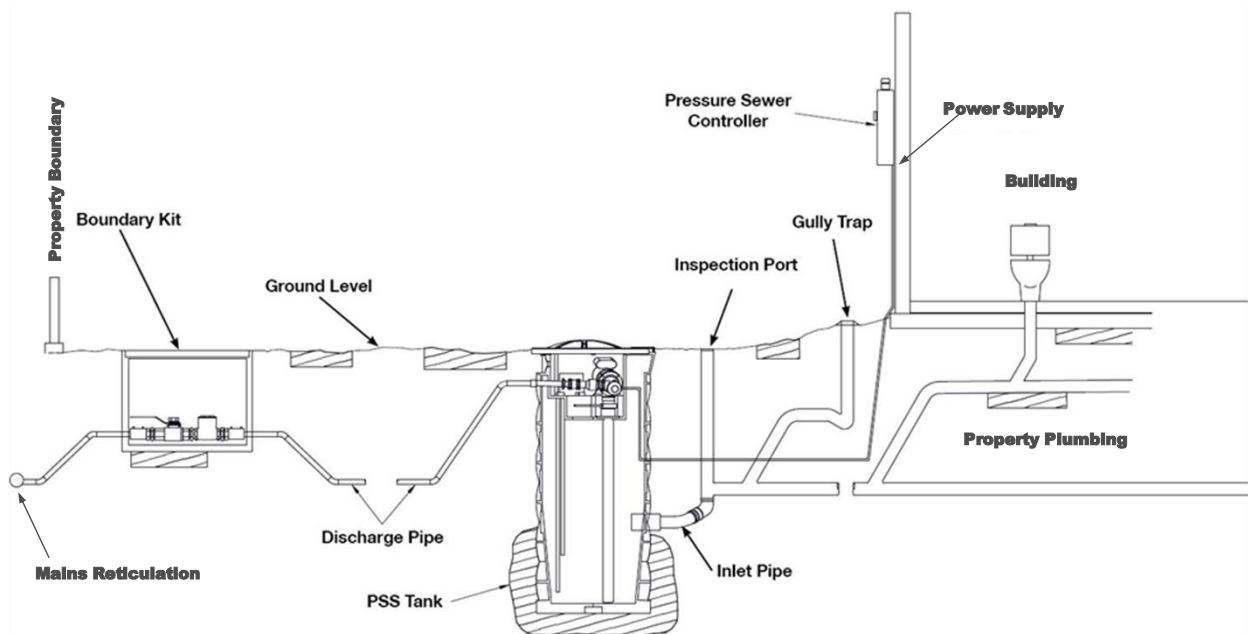
1. Purpose

- 1.1 The purpose of this report is to seek approval from the Engineering Services Committee to investigate a policy regarding pressurised wastewater pumping systems for inclusion in the next issue of the Tasman District Council Engineering Standards.

2. Background

- 2.1 A conventional wastewater reticulation system generally consists of pipes being laid at grade. Pipe size will depend on the potential number of lots being serviced by that reticulation system. The depth of most reticulated systems will vary but are generally between one metre to a maximum depth of 5-6 metres. Any excavation deeper than 1.5 metres is a notifiable excavation in accordance with the Department of Labour. These deep excavations need to be shored (ie, the sides supported) to protect workers laying the pipes at the base of the trench. An addition problem with depth is subsoil water. As trenches get deeper the potential for groundwater to enter increases. Similarly as trenches get deeper they also cost more to excavate and are more expensive to maintain.
- 2.2 As part of the Richmond West development, Council installed a pumpstation and main trunk wastewater reticulation system at Headingly Lane. The gravity wastewater system at the lower (seaward) end of Headingly Lane is 5.5 metres deep. Generally this results in the gravity reticulation being approximately three metres below normal groundwater level. This gravity wastewater system was laid under very strict criteria to ensure that groundwater did not enter the reticulation network. This also results in connections to the gravity network being restricted to connection to manholes (inspection chambers) only.

2.3 Pressure wastewater systems can be summarised as a pumping station located at each lot pumping effluent from that lot into a small diameter pressurised wastewater reticulation network. Pressure wastewater systems are an alternative to a conventional gravity wastewater system because each property/lot has an individual on-site pumping station.



2.4 A grinder pump is used to macerate the wastewater from the property and discharge the effluent into a small diameter reticulation network. The small diameter reticulation network does not need to be installed to grade (as with a gravity wastewater system) and can follow the natural terrain.

2.5 Only a minimum depth of cover (eg, one metre) is necessary to provide the required protection for the pressurised pipework.

3. Present Situation/Matters to be Considered

3.1 The issues around the pressurised wastewater system will be:

- Who should own the pumping station?
- Who will provide the power for the pumping station?
- Who will maintain the pumping station?
- Where should pumping stations be allowed, eg industrial, commercial or residential;
- Should Council use one specific model or multiple models/suppliers?

- 3.2 A pressure wastewater system includes both on-site (within private property) and off-site (within road reserve) infrastructure. Pipes in road reserve are dealt with under usual Council policies. The approach to ownership and operation of the pumpstation components has been treated differently by local authorities in New Zealand.
- 3.3 One option is for property owners to own and maintain the individual pumpstations with Council owning and maintaining the rising main in the road reserve, and the boundary kit to control flows into the rising main (the boundary kit includes an isolation valve). To implement this, Council would need to force owners to enter into pumpstation service agreements with approved providers, but there is still some risk that if the system fails Council would need to step in to resolve any issues.
- 3.4 Another option, and the approach more common for local authorities, is for Council to own, operate and maintain all assets through to and including the pumpstation, with the property owner paying the electricity bill for the pumpstation. This option minimises the input and requirements of individual property owners or occupiers.
- 3.5 Council is generally better placed to manage and maintain wastewater pumpstation assets than individual property owners. It is their core business and they employ professionals to perform it. Private property owners are not in the business of operating wastewater systems or mechanical equipment and are unlikely to maintain these systems as well. They are unlikely to respond as well to breaks, failures or breakdowns. This option should also offer better control for Council over pump type selection and integration of different pumps into one network.
- 3.6 Different mechanisms can be employed to pay for installation of pressure wastewater systems. One option is the developer pays and installs infrastructure in the road, up to and including the boundary kit. The on-site infrastructure can be paid for either by the developer or property owner and there are different mechanisms to implement either of these options.

4. Financial/Budgetary Considerations

- 4.1 The installation of the pressurised reticulation for the pressure wastewater system will be part of the development of the subdivision and a cost to the developers. The installation of the pumpstation should be a neutral cost to Council as the pumpstation should be paid for as either part of the development or the building consent, ie a connection fee.

5. Options

- 5.1 Option 1 – Council can stay with the conventional gravity reticulated network. In areas where groundwater depth of reticulation and distance between connections is an issue, the cost of both construction and maintenance will be a long term financial issue with Council.
- 5.2 Option 2 – the pressure wastewater system is a good alternative to reduce maintenance costs and infiltration issues with deep reticulation networks.

6. Pros and Cons of Options

- 6.1 Advantages of pressure wastewater systems include: not constructing below water table (dewatering issues); not constructing at depth (health and safety issues); lower initial construction cost (smaller diameter wastewater systems); construction tolerances much easier (since not laying to grade); construction costs spread over longer period (pumpstations not constructed until same time as buildings); infiltration less of an issue (assets mostly above groundwater and pressurised); generally more storage provided than conventional gravity system.
- 6.2 Risks with pressure wastewater systems include: more complex design issues; consequence of pipe bursts could be greater; inappropriate material put into pump stations can damage or block pumps (ie, not a flush and forget system); ownership models can be complex; lower cost to construct could lead to pressure from developers to install in locations not appropriate for pressurised wastewater systems.
- 6.3 This technology is not new in New Zealand; other councils using pressure wastewater systems include Rotorua, Rodney, Far North and Marlborough. The technology is also widely used internationally.

7. Evaluation of Options

- 7.1 Staff recommend Option 2, the use of pressure wastewater systems in some parts of the district where conventional reticulation is not practical.

8. Significance

8.1 This is not a significant decision according to the Council's Significance Policy.

9. Recommendation

9.1 It is important that Council control where and how pressure wastewater systems are implemented in Tasman District. Council needs to develop a pressure wastewater systems policy, Bylaw and update the Engineering Standards to achieve this. Council should also develop and implement a procurement strategy in order to optimise purchasing of on-site package pumpstation units.

10. Timeline/Next Steps

10.1 A decision needs to be made so that staff can create an appropriate policy focusing on ownership and maintenance of pressure wastewater systems and include that as part of the Engineering Standards.

10.2 Consultation with the developers and contractors will take place as part of the development of the Richmond West area and as part of the review of the Engineering Standards.

11. Draft Resolution

11.1 THAT the Engineering Services Committee receives the Pressure Wastewater Systems report, RESC11-08-08 and;

11.2 THAT the Engineering Services Committee approves the development of a pressure wastewater systems policy for inclusion in the review of the Engineering Standards in relation to the installation, ownership and maintenance of the pressure wastewater system as noted in the report RESC11-08-08.