

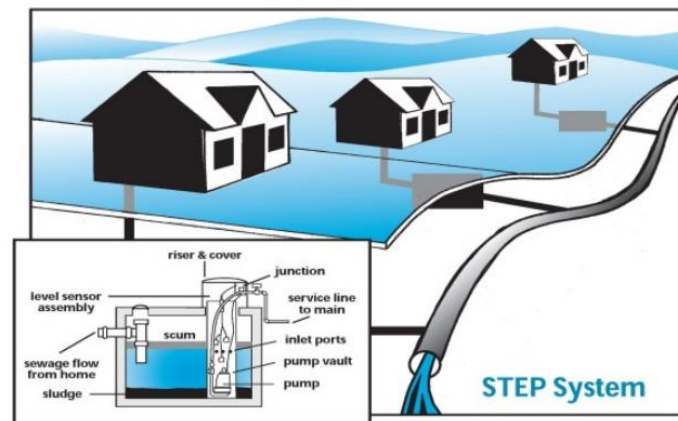
## Effluent Sewers

Effluent sewers are a more efficient and cost effective method of conveying sewage from multiple homes and premises to a treatment facility than gravity sewers. They are a viable option for many unserved communities currently without sewer systems.

### What are Effluent Sewers?

Sewage from each premises is piped to an interceptor septic tank which screens the effluent retaining the solid particles in the tank for de-sludging. The screened effluent is either pumped or flows by gravity to the pressurised PVC sewer line and from there to the location of the decentralised treatment system.

Effluent sewers can combine gravity and pressure connections to the collection pressure manifold.



An Effluent Sewer is a collection technology that has been optimised for more than 30 years in the US, Australia and elsewhere.

### Ash Environmental supported by Orenco

A US based engineering company Orenco pioneered the use of effluent sewers in the US in the 1980's. Orenco have teamed up with Ashtecs in Ireland and in the UK to provide technical and engineering support for the technology design, installation and long term operation of the collection networks.

### How does it Work?


The sewage flows from the building to a watertight underground tank, where primary treatment occurs via settling and natural biological processes. Solids remain in the tank, decreasing in volume, which reduces biosolids treatment costs at secondary treatment facilities. Filtered liquid effluent is then discharged by head pump or gravity through small-diameter PVC service pipes to small-diameter PVC collection lines. These service and collection lines are shallow buried and follow the contour of the land. The entire system is watertight, reducing infiltration costs in conveyance and at the treatment facility. No manholes or lift stations are required and energy consumption is minimal.

Small-diameter pipes can be used with pressure sewers because large and solid materials in the wastewater are separated out or ground up in initial treatment. The pipes are usually made of plastic, which gives them the advantage of being more flexible and more likely to remain watertight than sewers made of clay or concrete. Watertightness is important to maintaining pressurisation. The pressure in pressure sewers is created by the wastewater being pumped into the pipes at several connections. The pressurised lines eliminate the need for gravity as a force to move the wastewater to its destination. Because of this, the pipe can be laid to follow the natural contour of the land in shallow trenches just below the frost line and deep enough to be kept safe from the traffic above.

An excerpt from the US Water Environment Research Foundation is below:

Fact Sheet C3

Performance & Cost of  
Decentralized Unit Processes




Water Environment Research Foundation  
Collaboration. Innovation. Results.

DECENTRALIZED WASTEWATER SYSTEMS

COLLECTION SERIES

**EFFLUENT SEWER SYSTEMS**



### Effluent Sewer Systems and Their Use

The term effluent is commonly defined as *liquid flowing out of a component or device after undergoing treatment*. An effluent sewer carries wastewater that has undergone liquid/solid separation or primary treatment. Septic Tank Effluent Pump and Septic Tank Effluent Gravity sewers (commonly referred to as STEP or STEG) use on-lot septic tanks to provide liquid/solid separation. Raw sewage flows from the house or business to a watertight underground tank (septic tank). The clarified effluent then moves into the collection system using either a pump (STEP) or gravity (STEG). As a collection system, effluent sewers are used to convey effluent from multiple sources to a central location where it can be treated. STEP and STEG configurations can be combined within a given system.

Effluent sewers are cited in the 2016 Irish EPA research report 161 as an option “*in areas of relatively dense settlement which may have been identified by the National Inspection Plan as having significant issues for many on-site systems, it could be economically feasible to connect single houses via a small bore sewer system and treat the wastewater at a decentralised plant..*”