

Omeo

Wastewater treatment system
McNamaras Road, Omeo

Background

Constructed in 1996, Omeo's sewerage scheme serves the town's permanent population (about 300) and visitors. Sewage collection systems include conventional gravity, common effluent disposal, variable grade common effluent disposal and septic tank effluent pumping (STEP), all of which eventually pump or gravitate to the main pump station. The system includes 1769 metres of 225mm diameter outfall sewer, main pumping station, 100mm diameter rising main, minor pumping station and rising main. Treatment includes both a treatment and winter storage lagoon with reuse by irrigation to pasture lot.

Sewage collection systems

Conventional Gravity:

Most of Omeo is served by 6342 metres of 150mm diameter and 462 metres of 100mm diameter uPVC gravity sewer. Gravity sewers are located in two catchments. Most of the town including all the commercial area is in the main catchment that gravitates directly into the main pumping station adjacent to Livingstone Creek. A second minor catchment serves McCoy Street / Hankshaws Hill Road area. It falls to a small pumping station discharging via a rising main into the main catchment.

Common Effluent Disposal (C.E.D.):

Similar to a conventional gravity system except that wastes are first treated in a septic tank prior to discharge. The lack of settleable solids enables smaller diameter sewers to be used and laid at flatter grades. Approximately 811 metres of C.E.D. mains have been installed in the Old Omeo Highway area near the main pump station.

Variable Grade C.E.D.:

Grade refers to gradient (slope). About 700 metres of Variable Grade C.E.D. main along Tongio Road connects the Hankshaw Hill rising main to the conventional gravity system. Sections at Hamilton Street and parts downstream have reverse grade and act as an inverted syphon.

Septic Tank Effluent Pumping:

STEP systems operate where distance and ground slope limit the effectiveness of gravity collection systems. STEP systems involve maintaining a septic tank that discharges to a pump station within the private property. The effluent is then pumped into the STEP pressure pipe system through a property service valve which in turn discharges into a gravity system downstream. About 2196 metres of STEP mains with pipe diameters between 32 and 63mm serve the Omeo Highway north of the town, Park Street and Day Avenue, west of Rodgers Street.

Wastewater treatment process

Raw sewage is pumped from the rising main into the treatment lagoon where solids settle to the floor of the lagoon and are digested by anaerobic bacteria. Eventually the organic component of the sludge is stabilised. Facultative bacteria also actively break down waste in the mid zone of the lagoon. Reclaimed water flows by gravity from the treatment lagoon to the winter storage lagoon. The winter storage lagoon stores treated wastewater during winter months and wet weather when irrigation is not possible. The lagoon also provides further aerobic treatment.

Irrigation system

Reclaimed water to irrigate nearby pasture is applied via a moveable sprinkler system. A rain sensor automatically shuts down the system after 5mm of rain. Accurate daily rainfall and evaporation records are kept and the volume of treated wastewater applied to the pasture lot is monitored in accordance with EPA licence requirements.

Laboratory testing

Testing is carried out regularly to provide information necessary to manage the treatment process. An approved independent National Association of Testing Authority (NATA) laboratory undertakes further testing to ensure the plant complies with the Environment Protection Authority (EPA) licence.

For further information:

Ph: (03) 5150 4444

24 Hour Emergency: 1300 134 202

Fax: (03) 5150 4477

E-mail: egw@egwater.vic.gov.au

Visit our website:

www.egwater.vic.gov.au



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OMEo OFFICE:
Day Avenue, Omeo, 3898
Ph: (03) 5159 1548

HEAD OFFICE:
133 Macleod Street, Bairnsdale, 3875
Ph: (03) 5150 4444
24 Hour Emergency: 1300 134 202

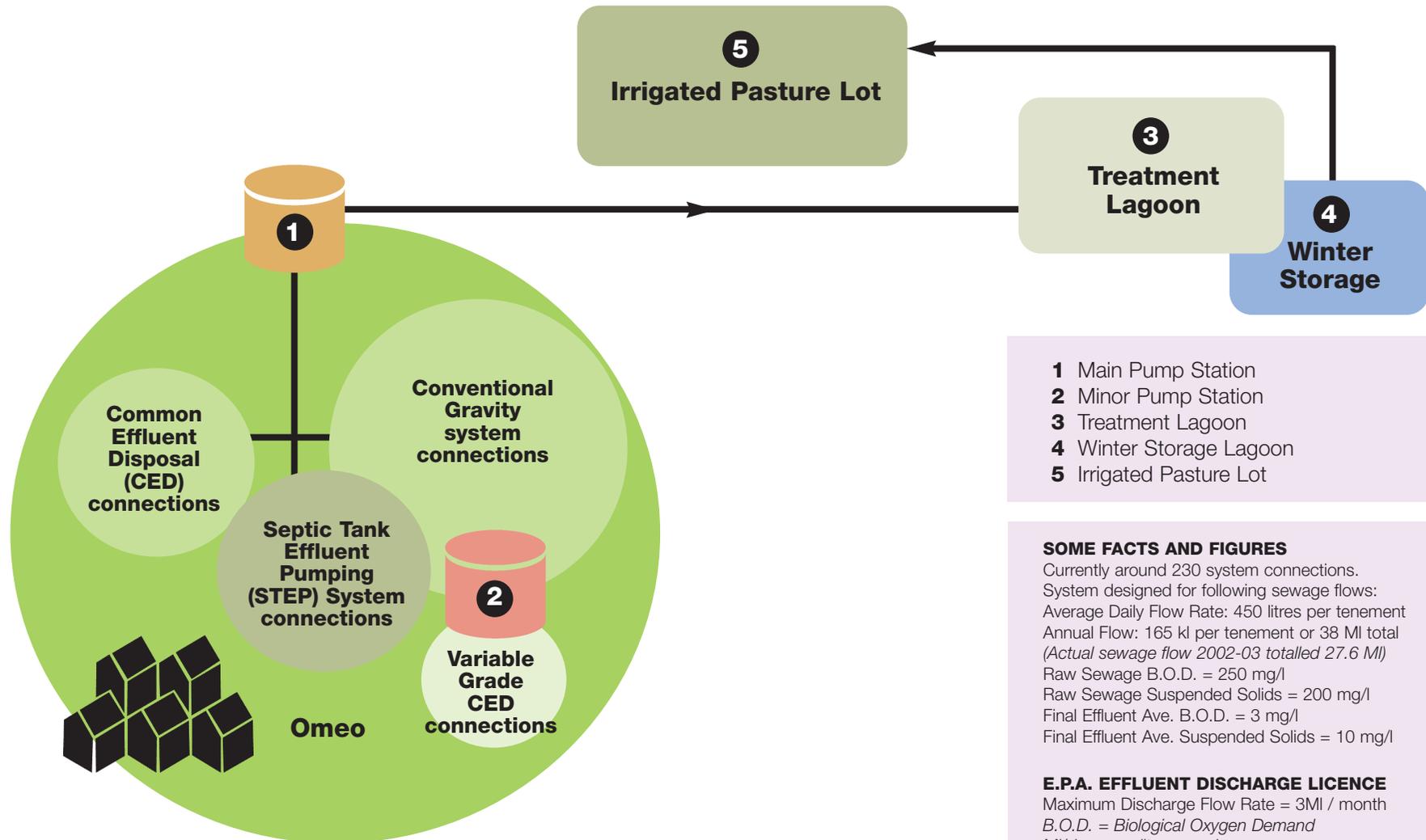


→ Omeo sewerage scheme

Schematic diagram

wastewater

EAST GIPPSLAND WATER



- 1 Main Pump Station
- 2 Minor Pump Station
- 3 Treatment Lagoon
- 4 Winter Storage Lagoon
- 5 Irrigated Pasture Lot

SOME FACTS AND FIGURES

Currently around 230 system connections.
 System designed for following sewage flows:
 Average Daily Flow Rate: 450 litres per tenement
 Annual Flow: 165 kl per tenement or 38 MI total
 (Actual sewage flow 2002-03 totalled 27.6 MI)
 Raw Sewage B.O.D. = 250 mg/l
 Raw Sewage Suspended Solids = 200 mg/l
 Final Effluent Ave. B.O.D. = 3 mg/l
 Final Effluent Ave. Suspended Solids = 10 mg/l

E.P.A. EFFLUENT DISCHARGE LICENCE
 Maximum Discharge Flow Rate = 3MI / month
 B.O.D. = Biological Oxygen Demand
 MI/d = megalitres per day
 mg/l = milligrams per litre