

# OptiFacts 307



**Optimatics**

Water System Optimization

Australia  
New Zealand  
United Kingdom  
United States

[www.optimatics.com](http://www.optimatics.com)

## East Loddon stock and domestic network

Channels to pipes conversion, Kerang, VIC, Australia

**DESIGN OF NEW WATER NETWORK** Goulburn Murray Water, as part of their ongoing policy of finding water savings commissioned Optimatics to design and optimise the stock and domestic supply for the East Loddon supply area.

### KEY POINTS

- Confidence that Optimatics would provide the best design
- Optimise for class 9 and class 12 pipe
- Fast efficient service from GIS info to finished design.

### Project description

The East Loddon area consists of stock and domestic demands and is currently served by open channel irrigation networks. Optimatics was engaged to design and optimise a pressurised pipeline network to serve these customers.

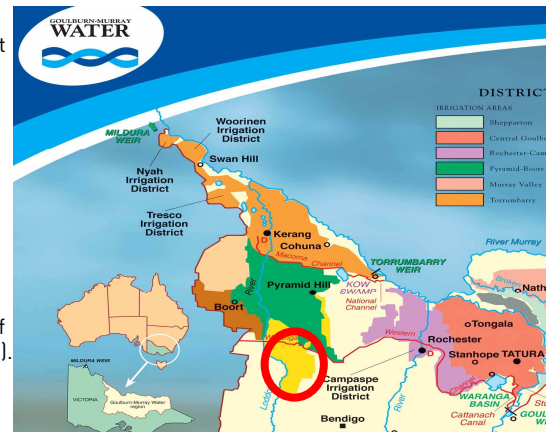
The East Loddon system that was modelled comprised a total area of more than 30,000 hectares over 164 segregated land parcels. The basic design standards for peak daily demands used by Goulburn Murray Water are:

- 11.2 L/day/ha for Stock
- 7000 L/day/house for Domestic

The total system demand was calculated to be 13.8 L/s, which

includes 3.8 L/s of Domestic demand at 47 houses distributed throughout the East Loddon system, and 4.0 L/s of stock watering demand. The Serpentine urban system demand is also included at a constant flow rate of 0.52 ML/day (6.0 L/s).

The interim Optimatics Genetic Algorithm (OGA) runs investigated two design scenarios for peak day demand loading, one where the OGA could choose from a range of Class 9 and 12 pipes and the other where the OGA could only choose from Class 9 pipes. The total solution costs (capital and

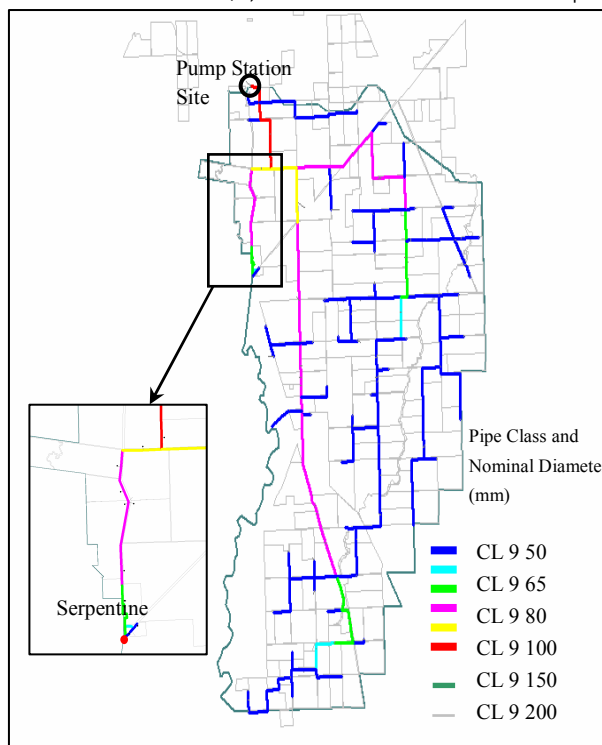


East Loddon is situated in Eastern Victoria

operating) for both of these scenarios were very similar.

Booster pump options were considered as part of the interim runs, but were not required in the solutions. GMW decided to concentrate on the Class 9 pipes only scenario for the final runs. The final solution used 176 km of pipeline ranging from 50 mm to 200 mm in diameter.

After several successful projects Goulburn Murray Water have the confidence that genetic algorithm optimisation is the only way to ensure that a network is truly optimised.



With reliable water, graziers have more confidence in keeping their livelihood

**Project Referee:**  
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