

# CASE STUDY: GREATER WESTERN WATER

## Optimising Asset Solutions In A Capital Constrained Environment



### KEY POINTS:

- Identify critical pipelines and assess the impact of population growth
- Determine necessary interventions for both current and future scenarios
- Enhance solutions to provide better outcomes for customers and the community
- Ensure GWW meets its compliance responsibilities to ultimately build network resilience

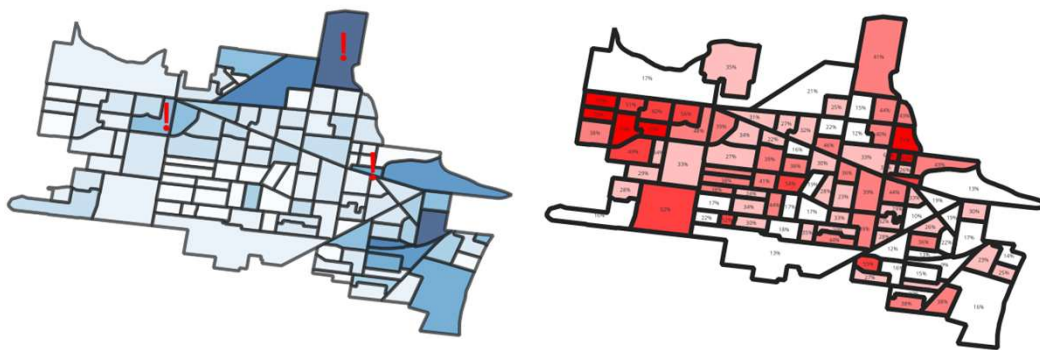
### INTRODUCTION:

GWW leveraged Optimizer, which utilises genetic algorithms, to analyse and address sewer system performance challenges across various scenarios in the Youell Street catchment.

Based on the data from the 2022 monitoring, GWW updated and recalibrated its hydraulic model, which confirmed deficiencies in the network and enabled solutions to be developed to resolve compliance issues with the Youell Street catchment.

### GROWTH ANALYSIS:

Based upon the 2021 population scenario, this analysis considered population growth projects for 2028, 2033, 2043, and 2072. The optimisation aimed to maximise growth while minimising hydraulic penalties. Critical areas where growth could not be accommodated without increasing hydraulic penalties were identified



Areas in **dark red** represent areas where Optimizer chose more often to “Leave as Existing”.

Areas in **dark blue** show areas with biggest growth difference (between 2023 scenario and 2072).

### MASTER PLAN OPTIMISATION ANALYSIS:

Using population scenarios for 2023 and 2072, the optimisation process evaluated potential interventions, including integrating new pipelines and upsizing existing ones. The objective was to minimise both total costs and hydraulic penalties.

### CONCLUSION:

Optimizer™ identified areas where additional growth would result in significant hydraulic penalties and discovered alternative solutions.

- 1. Reduced overall estimated cost by 21% (from \$9.5 million to \$7.5million)**
- 2. Reduced modelled spills to zero in the scenario of year 2072**
- 3. Staged delivery of infrastructure enabling deferral of more than half of the capital investment.**

Due to the successes of this pilot program with Optimizer™, GWW is going to use these optimization techniques to support project development in other catchments.

We are currently working on a repeat growth and master planning analysis for the Sunshine catchment, another notable network growth area.

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