



WINGECARRIBEE STP UPGRADES – Data Collection and Modelling for the Upgrades to the Mittagong, Bowral and Moss Vale STPs.

Monitoring program design
Data analysis and near field modelling
Interpretation and reporting

Client: Wingecarribee Shire Council (via Manly Hydraulics Laboratory)
Dates: August 2019 to May 2021



Project Description:

Sewage Treatment Plants (STPs) in the Wingecarribee Shire at close to capacity and require upgrades. As part of the design process, an assessment of existing and projected water quality was required. WQ Data was engaged to design and undertake data collection, statistical analyses, modelling and interpretation of results.

Work undertaken by WQ Data:

- Statistically analyse historical data.
- Design and execute a monitoring program to fill gaps in existing data.
- Statistically analyse these data.
- Set up a Monte Carlo model to estimate the concentrations of contaminants in the rivers and creeks into which the wastewater is discharged.
- Interpret results: comparing with water quality guidelines and undertaking a Neutral or Beneficial Effects (NorBE) assessment.
- Written and oral presentation of results.

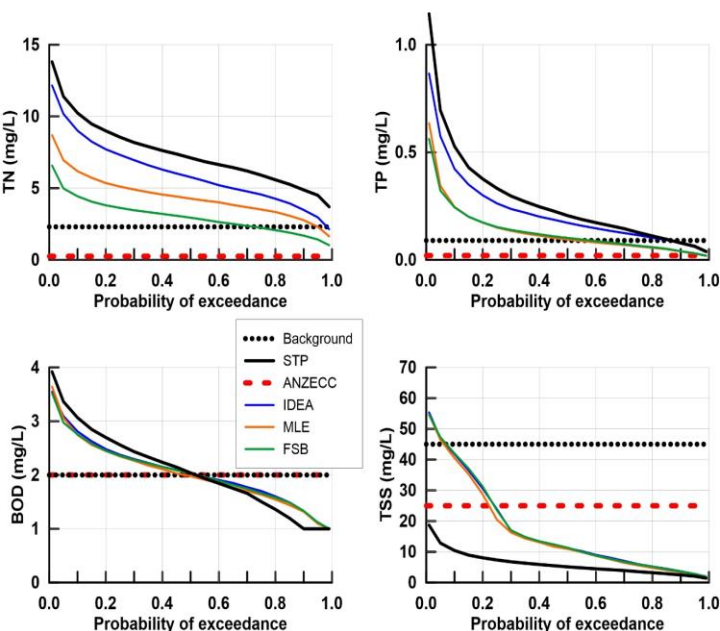
| Source of Variation | SS | df | MS | F | P-value | F crit | % contribution |
|---------------------|--------|----|-------|-------|---------|--------|----------------|
| Days | 76.96 | 2 | 38.48 | 21.22 | 0.000 | 4.2565 | 73.9% |
| Times (within Days) | 16.32 | 9 | 1.81 | 1.28 | 0.338 | 2.7964 | 3.2% |
| Residuals | 17.00 | 12 | 1.42 | | | | 22.9% |
| Total | 110.28 | 23 | | | | | |

Cells coloured pink indicate a significant difference in that term, green cells indicate no difference.

| Days | Day 3 | Day 1 | Day 2 | power |
|---------|-------|-------|-------|-------|
| Average | -6.05 | -5.41 | -1.97 | 1.000 |
| | | | | |

| Times | Time 1 | Time 2 | Time 4 | Time 3 | power |
|---------|--------|--------|--------|--------|-------|
| Average | -5.41 | -4.91 | -3.85 | -3.74 | 0.224 |
| | | | | | |

Cells that are coloured black indicate no significant difference among averages.



Project outcomes:

- An assessment of different scenarios in terms of the potential water quality impacts associated with each scenario.
- Technical report detailing the results.
- Presentation of results to the client and regulator.