

# BIO-AUGMENTATION OF WASTEWATER TREATMENT PLANT TO REDUCE AMMONIA

*By Ryan Wong, Engineer, City Of Tea Tree Gully, Adelaide*

## Project details

The Greenwith Wastewater Treatment Plant (WWTP) was commissioned in 2011 and handed over to Council to operate. The WWTP influent is sourced from two sewage pumps stations owned by Council. This is commonly referred to as 'sewer mining', where the council takes raw sewage from the sewer reticulation system and treats it to re-use level.

The WWTP uses a Sequence Batch Reactor process with the following processes: raw influent screening; primary aeration; secondary aeration tank; balance tank; sand filtration; ultra-filtration membrane; UV disinfection; and chlorine disinfection. Design flow is 1.2 megalitres per day.

The WWTP was experiencing treatment issues, including septicity at the Sewage Pumping Stations (SPS), poor nitrification and a high level of organics post-aeration, reducing tertiary treatment processes.

**Trial of bio-augmentation product – For Earth Bio Plus®**  
For Earth Bio Plus is a liquid bacteria product that contains nitrifying and denitrifying bacteria.

Prior to dosing the WWTP with For Earth Bio Plus, four jar tests were performed, which gave very positive results – a reduction in ammonia by 99 per cent, and total nitrogen by 54 per cent.

## Bio-augmentation trial

After the review of the jar testing, a three-month trial commenced. For Earth Bio Plus was dosed at both SPS that fed the WWTP.

Samples were taken at SP3 (inlet), SP7 (aeration tank) and SP11 (decant to balance tank) daily to monitor the quality of the treated effluent. The parameters being monitored were ammonia, total nitrogen, total phosphorous, pH and more.

## Trial results

The treatment results over the three-month trial period were very similar to our jar testing, with a significant drop of ammonia at SP3, SP7 and SP11, which helped us reduce the usage of chlorine at the tertiary treatment. Both total nitrogen and total phosphorous have a noticeable decrease, as well. pH is more neutral at SP3 and it is less acidic throughout the class B treatment.

## Conclusion

We continue bio-augmentation of our influent with For Earth Bio Plus with ongoing positive treatment results, reducing the use of chemicals for pH correction as well as disinfection. Bio-augmentation has improved the nitrification process without the requirement of additional aeration or tanks.

## BIO-AUGMENTATION SPECIALISTS

>> PROVEN RESULTS IN SEWAGE TREATMENT PROCESS

- ✓ Ammonia reducing bacteria in liquid form
- ✓ Simple application – inlet dosing
- ✓ Less odour and improved settling
- ✓ Ensures correct bacteria are present
- ✓ Applied to activated sludge or pond systems
- ✓ Economic solution to improve nitrification



t | 02 65 814353

e | shanem@forearth.com.au

[www.forearth.com.au](http://www.forearth.com.au)

