

## Oxyjet clean up Karratha

The Water Corp engaged Oxyjet Australia to treat four of their ponds (two primary and two secondary sewage treatment ponds) at Karratha #2 Waste Water Treatment Plant (WWTP) with overwhelming success.

Oxyjet provide specialised equipment and personnel to oxygenate bodies of water. The Oxyjet equipment consists of a bulk dosing vessel and land based apparatus. The boat can be manned or operated via remote control. All equipment deploys hydrogen peroxide, air or other chemicals at specific depths into the water bodies. Oxyjet are the only providers of this type of technology in Australia and are based in Mandurah, WA.

The ponds at the Karratha #2 WWTP had been in a poor state for over twelve months and Oxyjet offered the perfect solution. Over a 3 month period Oxyjet dosed the ponds  $H_2O_2$  once per week to control the smell created by high sulphide levels via their remote controlled vessel. This continued until aerators and related equipment were installed for mechanical aeration to assist in the recovery of the ponds.

The three key steps to the ponds' recovery were:

**1. Chemical addition of hydrogen peroxide.** The ponds were dosed with chemical oxygen for 5 days using hydrogen peroxide. The first 2 days were at a higher rate of 30mg/l and then the remaining 3 days at 15mg/l. The concentration was dropped on the last 3 days and dosed at a greater depth so to not affect the seed algae on the surface. The main purpose of the chemical oxygen addition was to remove the build-up of sulfide and anaerobic conditions which are poisonous to algae.

**2. Mechanical aeration.** Anaerobic conditions have an oily sheen reducing natural surface aeration and without algae present there is no reliable oxygen transfer available. Four mechanical surface aspirators were added to each primary pond to provide continuous mechanical oxygen transfer. Mechanical aeration produces a continuous surface aeration making algae survival possible.

**3. Re-seed.** Ponds containing algae cultures were grown nearby and used to re-seed the primary ponds. Once a surface layer containing oxygen had been established algae was transferred. Once algae had established, natural aeration from wind transfer occurs along with oxygen production from algae. If the biological oxygen demand (BOD) loading is right, algae can maintain facultative treatment on its own otherwise mechanical aeration must be maintained.



Before

After

The 'Before' image shows the state the ponds have been in for over 12 months which was fully blown anaerobic conditions unsuitable in reuse schemes

The 'After' image shows how with the use of Oxyjet, the ponds have fully recovered with the WWTP now removing more than 80% of the BOD as designed, allowing improved light penetration, good natural disinfection and minimal cyanobacteria. The surface layer represents the final effluent to be supplied for reuse.

Oxyjet were able to quickly adapt to specific requirements required for the Karratha task. Firstly, in order to overcome the dangers posed by toxic gases being released by stirred up sediments, Oxyjet adapted their boat to be remotely controlled from land. Secondly, Oxyjet enabled a flexible treatment plan to allow the water corporation to install long term mechanical aeration.

On this project Oxyjet displayed their ability to provide a quick and effective service to treat water bodies in need of oxygenation. They also proved how adaptable they can be to meet the demands of specific tasks.

Contact Darren Smith if you would like more information on Oxyjet. Tel: **08 6262 5358**



The Oxyjet vessel in action in Karratha