

Enhancing Water Quality, Clarity, and Ecosystem Health in Wollongong Botanic Garden Lake Using Nanobubble Technology

The Wollongong Botanic Garden showcases a stunning range of trees, exotic flowers, and vibrant wildlife, creating a rich ornamental landscape. In recent years, however, the health of the garden's lake has been declining. Low dissolved oxygen (DO) levels have disrupted the aquatic ecosystem, promoting harmful bacterial growth and excessive algae development. The lake contains silt, clay, organic matter, and algae, with conditions exacerbated by stormwater runoff from surrounding urban areas.

Nano Bubble Technologies (NBT) provided an innovative, chemical-free solution by infusing the lake with oxygen nanobubbles to significantly increase dissolved oxygen levels. This helps restore a healthier aquatic ecosystem, prevents anaerobic conditions, reduces odours, controls algae growth, and improves overall water clarity.

Through a partnership with Wollongong City Council, a 4-week trial was conducted using a 3-Cell oxygen nanobubble injector.

Results:

- Algae on the surface was mostly cleared
- Water clarity and aesthetics significantly improved
- Dissolved oxygen rose from 5.00 mg/L to 6.69 mg/L at the edges (+34%)
- Dissolved oxygen rose from 0.36 mg/L to 3.18 mg/L at the centre (+800%)
- Improvements recorded in pH and conductivity

Overall, water quality parameters improved significantly without the use of chemicals, making the treatment environmentally friendly and eliminating risks associated with chemical exposure.

Client: Wollongong City Council

Unit Type: 3-Cell NBT Injector

Lake Size: 750,000 Litres

Benefits: Significant reduction in odour, Surface algae mostly cleared, Major improvement in water quality, DO increased by 34% at the edges and 800% at the lake centre, Environmentally friendly treatment with no chemicals used



Photo 1: 3-Cell NBT injector installed for water treatment



Photo 2: Before treatment with the NBT machine, algae can be seen on the water surface



Photo3: After 4-week treatment with the NBT, most algae have already cleared

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