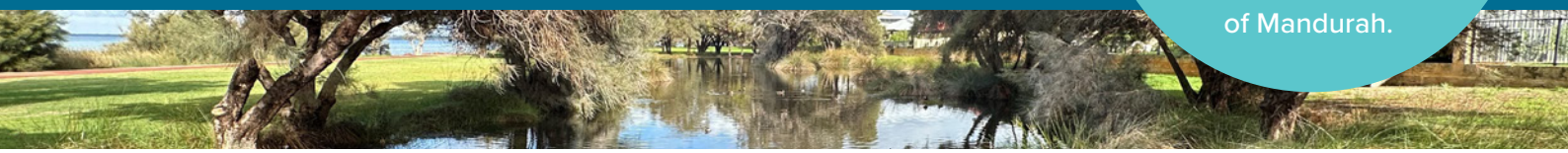
Department of **Water and Environmental Regulation**
Department of **Primary Industries and Regional Development**
GOVERNMENT OF WESTERN AUSTRALIA

Cox Bay North Lake water treatment trial (2024–25)

The Department of Water and Environmental Regulation will conduct a water treatment trial at Cox Bay North Lake in spring and summer 2024–25.

Where is the trial?

Cox Bay North Lake is in a residential estate in Falcon, about 8 kilometres south-west of Mandurah.



Why do a treatment trial?

Cox Bay North Lake is sustained by groundwater and receives runoff from residential areas and surrounding parks. It has high nitrogen and phosphorus concentrations and is prone to severe and persistent harmful algal blooms. These high nutrient concentrations can accelerate algal growth, leading to problems such as toxic algal blooms, nuisance odours, reduced visual appeal and, in some cases, fish kills.

By adding phosphorus-binding clay to waterbodies polluted with nutrients, we can improve water quality and reduce harmful algal blooms. This trial is part of a series of trials in south-west Western Australia of a new phosphorus-binding clay product called hydrotalcite clay (HT-clay). It will contribute to building our evidence base about its effectiveness in treating high phosphorus concentrations in our waterways. This trial will explore the effects of a combined application using a commercially available product called Phoslock, followed by specially manufactured HT-clay.

HT-clay was applied to Cox Bay North Lake in February and March 2024. The first application initially reduced phosphate concentrations by 95.7 per cent. Phosphate is a form of phosphorus readily available for algae to use for its growth. The second application one month later reduced phosphate concentrations to almost non-detectable levels. The treatments both reduced phosphate and algal productivity in the short term. However, nutrient concentrations in the lake have since increased with rainfall over winter. There remains high nutrient availability for algae, so we are planning follow-up treatments.

When is the trial?

We plan to conduct this trial in two to three separate applications between November 2024 and March 2025. The exact timing of the applications will depend on the water quality in the lake and the outcome of the initial applications.

Phoslock will first be applied, followed by up to two HT-clay applications.

The first application is tentatively scheduled for **Thursday 7 November 2024 between 7am and 7pm.** However, we are closely monitoring the water quality in the lake and if our results show there may be a more suitable time to achieve better treatment results, we may defer the date by several weeks. Nearby residents will be advised if this happens and will also be advised of further applications once they are scheduled.

Each application will take three days: one day to set up the equipment, one day to apply the clay, and one day to remove all equipment from the site.

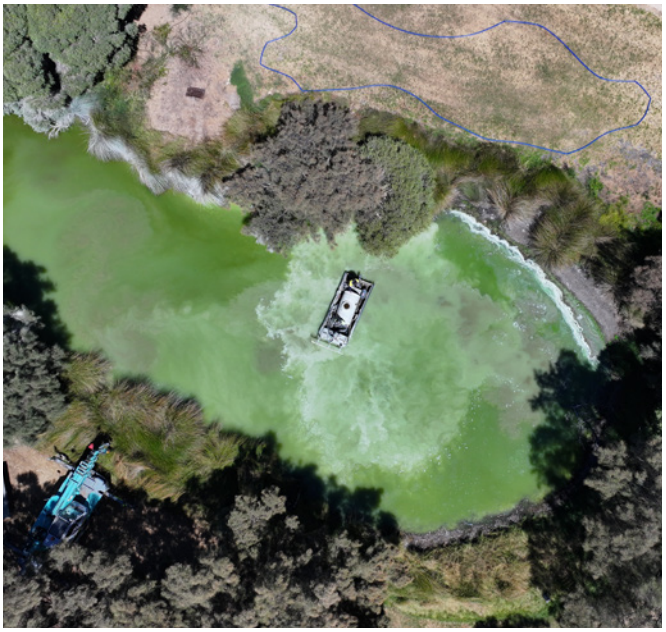
Algal bloom in Cox Bay North Lake, November 2023

What is being applied to the lake?

In this application, we are testing the effect of first applying Phoslock, a commercially available water quality treatment product, followed by a treatment with HT-clay.

Phoslock and HT-clay are natural bentonite clays that have been modified to bind more phosphorus. When applied to water, Phoslock and HT-clay bind phosphorus as they mix and settle, making it unavailable to algae. At the bottom of the lake, the clays form a thin protective layer on top of nutrient-rich sediments, reducing phosphorus release from the sediments to the overlying water. HT-clay can also cause algae to form clumps and sink to the bottom.

We do not expect that the clays will adversely impact wildlife, including waterbirds. However, when we use the products in our waterways, we still monitor and test the treated water to ensure it does not harm the environment.



HT-clay application in the lake, February 2024

What to expect during the trial

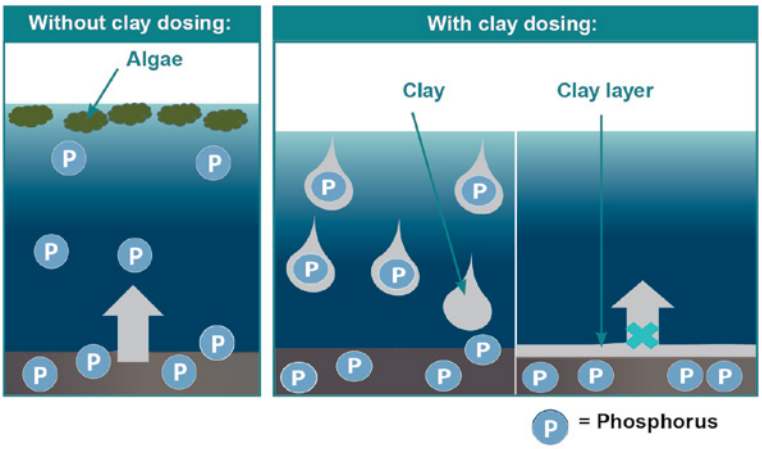
During Phoslock and HT-clay application days, we will apply them as a slurry from the shore using a specialised hose. For HT-clay treatments, we will set up a tanker truck containing the HT-clay slurry, and a pump station on Lot 40 Governor Drive.

Nearby residents can expect some noise from generators between the hours of 7am and 7pm on the day when the clay is applied (7 November in the first instance).

Department staff and contractors will be on site during the trial to apply the treatments and take water quality measurements. We will measure the water quality in the lake before and after the trial, and more intensively during clay application to evaluate the immediate and longer-term effects of the treatments. We will also conduct a study on macroinvertebrates in the lake during the trial.

While we apply Phoslock or HT-clay, there will be increased turbidity (cloudiness) in the water which we expect will settle out within a few hours.

The City of Mandurah will turn off the aerators in the lake in October 2024, so they do not affect the trial results. The aerators should not be needed during the trial because the clays are expected to improve conditions; however, this will be monitored closely. The aerators will be reactivated two weeks after the trial ends.



More information

Visit estuaries.dwer.wa.gov.au/htclay

Please send us an email at estuary@dwer.wa.gov.au with any questions

This trial is funded by the Bindjareb Djilba Protection Plan and Healthy Estuaries WA – State Government initiatives that aim to improve the health of our waterways.

We thank the City of Mandurah for assisting with the trial.