

Office of the Environmental Monitor

Fact Sheet: Algal Bloom Monitoring Program

What are algal blooms?

Algae are simple aquatic plants that, like all plants, convert light and nutrients into growth through photosynthesis. Tiny, single celled species of algae, known as phytoplankton, are common in aquatic environments. These algae drift in the water and reproduce by dividing in two. The rate of reproduction depends on environmental conditions, including the amount of light, nutrients, and the temperature and salinity of the water. Some algae can stay inactive in the seafloor sediment until they are disturbed and resuspended into the water.



Photo: *Noctiluca* algal bloom

An algal bloom is the result of a rapid increase in the amount of algae in the water, sometimes visible as cloudy water or slicks on the water's surface (as can occur in a fish tank when too much food turns the water green). They can occur naturally in healthy waters and have been recorded in all areas Port Phillip Bay (the Bay) since monitoring began more than 20 years ago. Blooms can also occur as a result of changes in environmental conditions.

Algal blooms can affect nearby animals such as fish, as dead algae are digested by bacteria, which use up the dissolved oxygen that animals need to survive. Some species of algae produce toxins that can be taken up into the food chain.

Algal Bloom Monitoring Program

The Channel Deepening Project (the Project) has a rule book, the Environmental Management Plan, which sets standards and controls to avoid and minimise environmental changes that could affect algal blooms, such as the release of nutrients, changes to light in the water and suspension of algae trapped in the sediments that form the bottom the Bay.

The rule book includes the Algal Bloom Monitoring Program, which is one of nine Baywide Monitoring Programs. The program's objective is to detect changes in the occurrence of algal blooms outside expected variability.

The program will collate and analyse data collected through the Baywide Water Quality and Nutrient Cycling Monitoring Programs. These include data on the amount and types of algae collected monthly at 11 sites across the Bay, as well as continuously monitored algal abundance at four locations (Figure 1).

Furthermore, any report of a visible algal bloom will result in the collection of a sample to inform the program.

Comparison of these data with historical data on algal abundance in the Bay will show if the occurrence of algal blooms during and after the Channel Deepening Project is within the range of expected variability.

How the Port of Melbourne Corporation will use the data

The Port of Melbourne Corporation (PoMC) will use results from the Algal Bloom Monitoring Program to detect changes in occurrence of algal blooms outside expected variability during the Project and until 2012. Where changes outside of expected variability are detected, a risk review will be undertaken. It will determine if the changes are significant to the ecosystem of the Bay and any action that may be required.

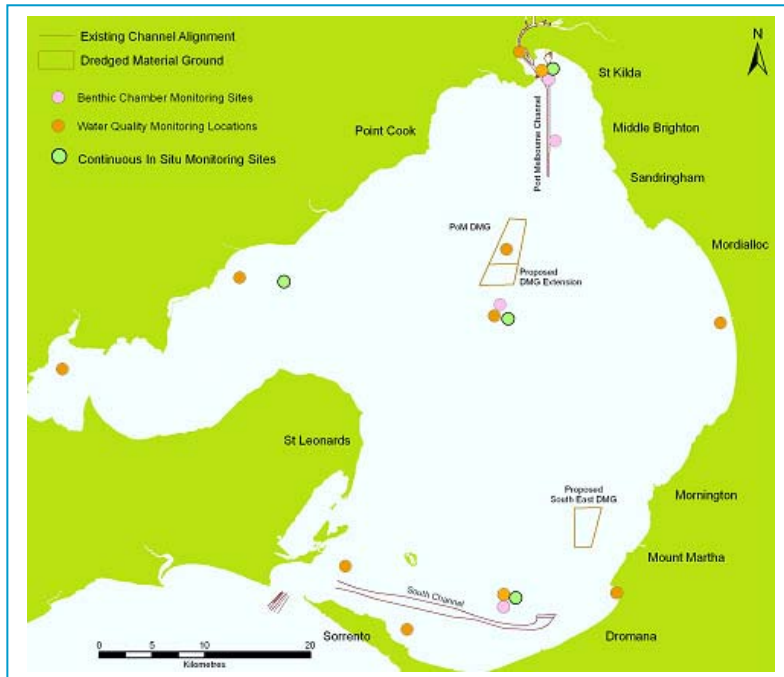


Figure 1: Algal Bloom Monitoring Program data will be collected monthly at Water Quality Monitoring locations and continuously at In Situ Monitoring Sites shown on the map.

The role of the Office of the Environmental Monitor

The Office of the Environmental Monitor (the Office) will scrutinise the Channel Deepening Project's effects on algal blooms to judge the environmental performance of the Project. The Algal Bloom monitoring data will be used to judge if the dredging effects on the occurrence of algal blooms are consistent with that expected.

The Office will also monitor all data relating to PoMC's compliance with the management actions specified in the Environmental Management Plan that have been designed to minimise effects on algal blooms.

These include Environmental Controls relating to when, where and how dredging can take place and have been designed to minimise the area and duration of the effect on conditions that cause algal blooms. These also include Environmental Limits set to ensure that adequate light is available in the water through the control of turbidity.

The combination of these monitoring results will provide the Office with an understanding of potential changes to the Bay's occurrence of algal blooms. The Office will use the results to judge the environmental performance of the Channel Deepening Project.

For further information on the nine Baywide Monitoring Programs visit www.oem.vic.gov.au/Monitoringprogramsandresults.