

# Lake Wyangan and Catchment Management Strategy Project

Lake Wyangan and Catchment Management Strategy Project, Water Technology 2016

1. Understand the issue
2. Monitor the conditions
3. Develop a management Strategy

## The Issue Blue Green Algae

Increasing frequency and severity since 2011

### 1. Understand the Issue

## 3 Main Causes of Blue Green Algae

**Nutrient Loading**  
Nitrogen and Phosphorus

When there is more availability = greater chance of algal bloom

Lake Wyangan sources are inflows via drains and waterways as well as existing loads in the Lake

**Residence Time**  
Circulation time and flushing

Longer turnover time = greater chance of algal bloom

Lake Wyangan is a terminal system (no outlet) with little circulation or flushing

**Temperature and Sunlight**  
Turbidity and mixing regulate these

Clearer water = more light penetration = more aquatic plants

Temperature variance with depth will prevent mixing which causes the release of nutrients from sediment

**To prevent algal blooms, the solution must address the causes holistically**



## 2. Water Quality Monitoring and Sediment Sampling

### Water Quality Monitoring

Multiple in-lake and in-drain water quality monitoring locations for various health indicators.

**Outcome:** Sources of nutrients (N&P) are varied depending on land use (farming, horticulture, etc.)

### Sediment Sampling

**5.5 Tonnes** of Phosphorus estimated to be within the existing North Lake sediment

**0.5 Tonnes** of Phosphorus estimated to be in the North Lake water column

## 3. Develop Management Strategy

More than  
**20**  
options  
investigated

A range of options investigated, including...  
**In lake and catchment options**

Each solution must  
address the **3** causes of algae...



- |                        |                                |
|------------------------|--------------------------------|
| Aeration/oxygenation ✓ | Plant harvesting ✗             |
| Flow manipulations ✓   | Coagulation ✗                  |
| Mechanical mixing ✓    | Flocculation ✗                 |
| Drawdown ✗             | Nutrient inactivation ✓        |
| Surface skimming ✗     | Substrate capping ✓            |
| Dredging ✗             | Floating artificial wetlands ✗ |
| Ultrasound ✗           | Bio manipulation ✗             |
| Algaecides ✗           | Macrophyte restoration ✓       |
| Barley straw ✗         | Carp removal ✗                 |
|                        | Algae harvesting ✗             |

**Sediment** + **Circulation** + **Sunlight**

The Strategy prepared  
provides a road map to create  
a solution for Lake Wyangan,  
the catchment and the  
community.