



# Lower Vasse River, Busselton - Blue-green algae and human health

## What are algae and 'blue-green algae' (BGA)?

Blue Green Algae (BGA) are plants with a very simple cell structure, mostly aquatic (living on, in or near water) and usually very small (microscopic) in size.

## What is an algal bloom?

Algae can grow very fast or 'bloom' into thick, visible patches near the surface of the water. Blooms do occur naturally, but excessive nutrients and certain environmental conditions can cause larger growth.

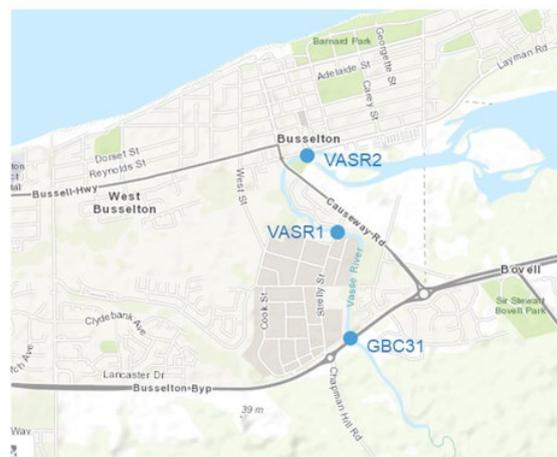
## Have BGA been monitored in the Lower Vasse River

Yes, routine water samples have been taken by the Department of Water and Environmental Regulation (DWER) over the last 20 years from several locations along the Lower Vasse River.

## What are the key BGA species found in the Lower Vasse River

At two locations (see map below), one near Strelley Street Bridge and the other at the footbridge near Peel Terrace / Stanley Street junction, the following key species of blue green algae (BGA) have been identified:

- *Anabaena circinalis* (now known as *Dolichospermum circinalis*)
- *Anabaena* spp.
- *Anabaenopsis* spp.
- *Aphanocapsa* spp.
- *Microcystis aeruginosa* and *Microcystis flos-aquae*
- *Oscillatoria* spp.



- Images: Lower Vasse River – phytoplankton sample points (Department of Water and Environmental Regulation, 2021)

## Why are the key BGA species important?

The six BGA species listed above have the potential to produce toxins that can pose a threat to public health.

## Can BGA algal toxins be transmitted by air?

BGA toxins are not easily transported by air. Transportation by air may only occur when spray drift is caused by wind and wave action or where sprays and mists are created by waterfalls, fountains or high-pressure irrigation systems.

In many cases spray drift can be easily resolved by:

- designing buffer zones between public areas and affected water bodies.
- planting trees and shrub screens.
- removing or redesigning waterfalls and fountains.
- connecting irrigation systems and fountains to weather wind monitoring (anemometer switching systems).
- designing sprinkler systems to spray larger sized droplets.

## How can I tell if there is an algal bloom?

Signs that may indicate that there is an algal bloom include:

- brightly coloured water
- blue-green scums on the water surface
- brown discoloured water
- oily films on the water surface

**If you notice any of these signs it is recommended that you do not enter the water, fish or collect shellfish or other crustacea.**

The City of Busselton will also erect warning signs along the banks of the Lower Vasse River when an algal bloom has been identified.



Image: Algae warning sign Vasse River



Image: Standard health recreational water warning sign

## What are the potential human health effects from BGA species?

As BGA species can produce toxins direct contact with an algal bloom may cause several health problems including:

- skin rashes
- eye irritation and redness
- ear aches
- itchiness
- swollen lips
- hay fever symptoms
- asthma
- possible skin tumours
- gastroenteritis

Some species of BGA can also effect the liver and the nervous system when eaten.

## Can BGA algal toxins cause other health effects?

Recent community concerns have been raised about the potential for a higher incidence of neurodegenerative disease, caused by  $\beta$ -methylamino-L-alanine (BMAA) in people who live or work near waterbodies, impacted by BGA blooms.

This concern initially came from research undertaken in the Pacific Island of Guam in the 1950's, which recorded an association between a number of patients diagnosed with amyotrophic lateral sclerosis/Parkinsonism dementia complex (ALS/PDC) and the consumption of cycad seeds and flying foxes contaminated by forms of BGA.

However, more recent research published by the World Health Organisation (WHO) in 2021 has not supported the link between  $\beta$ -methylamino-L-alanine (BMAA) and neurodegenerative disease.

The WHO further states that even if a link can be made, the consumption of fish and shellfish contaminated by BGA remains the most likely method of human exposure to BMAA. The risk posed by spray drift or aerosols is even less likely.

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