

## Abstract

Author(s)	Bojan Tamburic
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## Title

NHASP Partnership: Research Projects and Future Directions

## Description

The Nuisance and Harmful Algae Science-Practice Partnership (NHASP) between UNSW Sydney and Melbourne Water builds collaboration between academia and industry in cyanobacterial research (<https://www.algae.unsw.edu.au/>). Over the past three years, NHASP has delivered research projects across our core themes of cyanobacterial surveillance, prediction, risk management and treatment, improved asset design and research-to-practice activities. This presentation will summarise two recent NHASP projects on (i) source-to-tap management of biogenic taste and odour (T&O), and (ii) improved design guidelines for constructed shallow waterbodies.

T&O events are usually biological in origin, and they relate to the production of volatile organic compounds by cyanobacteria and other microbes. While Australian water utilities regularly monitor the earthy-musty odorants geosmin and MIB, we know that many other odour descriptors are reported, and there are hundreds of compounds beyond geosmin and MIB that may be responsible for these odours. Our project explores the microbes and compounds that cause these as-yet unexplained T&O events, as well as their impact on water treatability and community perception of drinking water quality.

Constructed shallow waterbodies are often designed and built to limit cyanobacterial blooms, yet many waterbodies that comply with design guidelines continue to experience blooms. We reviewed 66 global guidelines to identify common waterbody design factors. Then, we assessed the suitability of these factors to limit cyanobacterial blooms by analysing >200 shallow waterbodies monitored over 9 years in the Melbourne region. Our analysis indicates that macrophyte area to surface area ratio, shoreline development index, and fetch are the three most influential design factors associated with decreased likelihood of cyanobacterial blooms.

As the NHASP partnership moves forward with new industry partners WaterNSW and Hunter Water, alongside Melbourne Water, this is the perfect time to reflect on our achievements to date and receive feedback on future directions from the cyanobacterial research community.