



Submission to the Senate Enquiry into Algal Blooms in South Australia by the Goyder Institute for Water Research and the Coorong, Lower Lakes and Murray Mouth Research Centre

Preamble

This submission addresses the items listed under the enquiry's terms of reference as relevant to both the Goyder Institute for Water Research and the CLLMM Research Centre.

Much of the focus of the Federal and State Governments has been on the marine algal bloom crisis caused by the dinoflagellate *Karenia mikimotoi* which was first detected in March 2025 at Waitpinga, South Australia. However, it is important to note that this marine algal bloom has also impacted the Coorong North Lagoon; and a separate freshwater cyanobacterial bloom has also been present in the Goolwa Channel.

An additional filamentous algal bloom has been ongoing over multiple summers in the Coorong South Lagoon causing significant impacts on seagrass growth and seed production, and broader ecological functions in the Coorong. The Goyder Institute published five research outputs as part of the Healthy Coorong, Healthy Basin Trials and Investigations Component 2: Aquatic Plants and Algae. This project was jointly funded by the Australian and South Australian Governments. These research outputs [can be accessed here](#).

Regarding the current *K. mikimotoi* marine algal bloom, the Goyder Institute for Water Research is strongly advocating for:

- A collaborative and partnership approach to addressing the algal bloom event, and planning for future bloom events.
- Ongoing investment in science and knowledge to inform decision making.

Contributing environmental, land management or water quality factors

The South Australian Government has identified three causal factors of the *K. mikimotoi* marine algal bloom:

- Nutrient input into the marine environment through the 2022-2023 River Murray flood event
- Nutrient input from a cold-water upwelling in summer 2023-2024
- A marine heatwave where water has been 2.5°C warmer than normal.

The Goyder Institute undertook research investigations into the environmental impact of the 2022-2023 River Murray flood event, funded by the South Australian Government. Outputs of this research can be found [here](#), [here](#) and [here](#).

The 2022-2023 River Murray flood event contributed significant nutrients and sediments to the marine environment, with the flood plume observed to span over 40 km offshore of the Murray Mouth, and shorter-term marine algal responses to the flood event could be observed through satellite imagery (through chlorophyll-a detection) across to Kangaroo Island and beyond. The

degree to which additional nutrients from this specific flood have persisted in the marine environment for two years to be a causative versus a contributing factor of the current *K. mikimotoi* bloom warrants further scientific investigation and analysis.

Nutrients from the Murray-Darling Basin have been shown to be a driver of the hyper-eutrophic (nutrient-rich) conditions present in the Coorong South Lagoon which supports the domination of ongoing algal blooms including mat forming filamentous algae ([multiple technical reports and other research outputs available here](#)).

The realities of whole-of-basin land management to reduce nutrient inputs into the Murray-Darling system is challenging by scale and cost. Nutrient and sediment inputs into the Gulf St Vincent at a more local level have been shown to impact negatively on seagrass beds; and Adelaide's stormwater drains and urban river infrastructure is designed primarily for flood mitigation, moving water (and its nutrient, sediments and other contaminants) away from urban areas and into the marine environment as quickly as possible.

The Goyder Institute published a report from its Independent Panel of Experts ([Myers et al, 2022](#)) which identified that catchment-scale management to retain water in the landscape and reduce sediment and nutrient transfer into marine environments are important to address water quality issues. The Goyder Institute is currently engaging with Adelaide's Stormwater Management Authority, the SA Department for Environment and Water, and Water Sensitive SA to understand the knowledge needs to inform urban water and stormwater management, and this includes sediment and nutrient reduction through catchment-based approaches. A draft urban water and stormwater research priorities discussion paper is currently in preparation and this paper is available upon request.

Ecological, economic, cultural and social impacts of algal blooms with particular reference to tourism, commercial and recreational fishing industries, regional and coastal communities, and marine biodiversity and ecosystem health

South Australian communities are being deeply impacted by the current *K. mikimotoi* marine algal bloom. The Goyder Institute team at the CLLMM Research Centre based in Goolwa, SA, are hearing directly on a daily basis about the stresses and struggles of the community in dealing with the ecological, economic and the social impacts of the bloom.

The ecological impact of the bloom is devastating, with many thousands of marine organisms impacted. Communities across South Australia are experiencing trauma, and the mental health aspects of seeing impacts escalate over multiple months, dealing with reduced industry/business and tourism revenue, and not being able to engage recreationally with their environment in their usual way is significantly affecting communities. The well-being and eco-anxiety aspects of this bloom event are only recently being discussed. Community support and well-being is a critical focus, not just with dealing with the current events, but for building mental, economic and environmental resilience for future bloom and other environmental crises.

Investing in the science to inform future decision making is critical to achieve this.

The cultural and economic impacts on Indigenous communities, including any loss of access to traditional fishing

The Goyder Institute and the CLLMM Research Centre have heard from Ngarrindjeri elders that current bloom impacts on Yarlwar-Ruwe (Sea-Country) are unprecedented. Without seeking to represent Ngarrindjeri perspectives in this submission, we have heard of the trauma that Ngarrindjeri people are feeling regarding the environmental condition of their lands and waters. The CLLMM Research Centre is working collaboratively and in partnership with Ngarrindjeri and First Nations of the South East representatives to amplify First Nations knowledge and perspectives.

The coordination of state and federal government responses, including support, industry engagement and scientific advice

The Goyder Institute advocates for a collaborative and partnership approach to developing the knowledge needed to address this current and future algal bloom events. Science and research must underpin decision making so that we can respond with a sufficient evidence base.

The Goyder Institute contacted SA Government agencies (SA Health, DEW and EPA) on 9 April 2025 proposing a collaborative approach to addressing the then developing algal bloom event (including a freshwater blue-green algal bloom occurring in the Goolwa Channel in Lake Alexandrina) through communications, public health advice and research and tools that may be needed to understand the current and future events. Responses were received from the EPA on 11 April and DEW on 28 April.

On 27 June, the Goyder Institute was contacted by DEW with a request to coordinate research and knowledge priorities to address this current and future bloom events. Following engagement of over 50 scientists through the Goyder Institute partnership, a suite of research priorities was provided to DEW on 15 July 2025 and updated following additional input from scientists on 11 August 2025 and 15 August 2025. At the time of writing, it is unclear whether funding will be available to address these critical knowledge gaps but there is an obvious need for further investment in the science.

A broad number of SA Government agencies have been involved in the *K. mikimotoi* bloom response (for example: SA Health, DEW, PIRSA/SARDI, EPA, SA Water), with each agency having different focus areas and responsibilities. There is a need to consider an integrated approach to marine management in this context that should encompass a catchments to coast and beyond approach.

The establishment of the SA Government's Science Advisory Panel as a sub-group of the State's Taskforce is welcome. The reactive timeframes to the event has highlighted the need for ongoing climate adaptation planning for both governments and communities.

The current support and recovery arrangements for impacted industries and communities, including: financial support for fishing, tourism and other impacted businesses; community resilience services; and research, monitoring and restoration efforts

The \$28 million joint funding from the Federal and State governments is being allocated in part to provide immediate science support through PIRSA/SARDI in addition to community and industry support. While welcome, knowledge to address the current event and plan for future such events is required across multiple disciplines beyond the fisheries science and

oceanographic monitoring support that has been provided to date. These disciplines include ecology, toxicity, economics, law and social science among others.

The priorities proposed by the Goyder Institute have a range of timeframes, including some no regrets actions that need to start swiftly to capture data relevant for future planning, as well as those that are focused on immediate impacts, recovery and future planning/response. The expertise available through the Goyder Institute for Water Research partner organisations is significant and a coordinated, partnership approach is strongly advocated for to deliver the required science and knowledge.

The adequacy of long-term monitoring, forecasting and prevention strategies, including funding and institutional support for marine science and environmental data collection

Investment in monitoring, forecasting and research is critical to not only address the current crisis, but to learn from this event to help plan for the inevitable future events that will occur. These events may occur outside of South Australia, and therefore investing in the knowledge needed to manage this and future bloom events is an investment to protect the environment, communities, business and industry throughout Australia.

Algal bloom events are also not restricted to marine environments. There is a history of algal blooms occurring within the Murray-Darling Basin among other freshwater locations. The Coorong, Lower Lakes and Murray Mouth (CLLMM) is the only location within the MDB where the river meets the sea. The region has seen significant environmental and social challenges over the past 30 years and beyond, and scientific knowledge aligned with cultural knowledge is critical for informing the future management of the region.

The CLLMM Research Centre, established in July 2023, is delivering a bottom-up model to work with community, First Nations, management agencies and scientists to address the impacts of climate change on the CLLMM region. More frequent and more severe extreme events, including increasing and ongoing algal blooms, are anticipated for the region. The model delivered by the CLLMM Research Centre has been transformational in connecting a broad range of parties for the development, collation and communication of science and knowledge. A Preliminary Business Case was submitted to the Australian Government in November 2024 and is under consideration for funding by the current Minister for Environment and Water. Phase 2 funding is essential to continue the momentum and success of the Research Centre and the buy-in from community and First Nations, particularly as the region addresses this current algal bloom event, ongoing filamentous algal bloom in the Coorong South Lagoon, and frequent cyanobacteria algal blooms in the Lower Lakes. The region is under significant ecological stress and additional environmental crises may be on the horizon such as the potential arrival of avian flu to Australia and the CLLMM region, as well as future sea level rise, reduced River Murray flows and changes in water quality.

The CLLMM region is listed as a Wetland of International Importance under the Ramsar Convention and Australia has international obligations to maintain the site's ecological character.

The bottom-up model delivered through the CLLMM Research Centre could also be considered for addressing the current *K. mikimotoi* marine algal bloom. The model can also be important for other relevant locations across the Murray-Darling Basin and Australia where community and First Nations knowledge can be combined with western science to address environmental and social challenges.

There is opportunity for Federal and State governments to show strong leadership by investing to ensure that the mitigation of current and future crisis events are informed by the best available science and knowledge. Such investment can help to reduce the economic, environment and social impacts of future events across Australia.