



28 August 2025

Algal Blooms in South Australia

Introduction

South Australia is currently experiencing one of the largest scale, naturally occurring algal bloom events ever recorded in Australian waters. The *Karenia mikimotoi* Algal Bloom was first identified in mid-March 2025 near Waitpinga and Parsons beaches on the Fleurieu Peninsula.

Since then, it has impacted other areas of the South Australian coast including the eastern coastline of Eyre Peninsula, parts of southern Yorke Peninsula, Coorong and Kangaroo Island. The Algal Bloom has also spread to Adelaide metropolitan beaches, Port River and West Lakes. The scale of the bloom presents a serious challenge to South Australia's marine industries and ecosystems, as well as many of the State's coastal communities.

Based on our observations, research and international expertise, it is difficult to predict the duration and spread of algal blooms. Factors that can lead to the decline or end of the bloom include a change in environmental conditions such as cooler temperatures, increased mixing and water flow, decreased sunlight, and decreased nutrient availability. This is a dynamic situation as the bloom travels depending on weather and water conditions and the impact on people in these areas can therefore be unpredictable.

The South Australian Government is working proactively with the Commonwealth Government and all coastal councils and will continue to do so as the event evolves. The South Australian Government provides the following submission to the Algal Blooms in South Australia Senate inquiry, addressing the inquiry's terms of reference.

a. contributing environmental, land management or water quality factors

There have been several factors that may have enabled the Algal Bloom to grow extensively throughout South Australian waters. The shallow, semi-enclosed gulfs of South Australia, such as Spencer Gulf and Gulf St Vincent, have a complex seasonal circulation pattern and water exchange with the open ocean.

An influx of nutrients flowing from the Murray River floods in 2022-23 and an unprecedented intense and extended seasonal upwelling event in the summer of 2023-24 (one of the longest on record) brought nutrient-rich water and increased productivity to coastal ecosystems.

The influx of nutrient-rich water was followed by a marine heatwave that has been affecting South Australian waters since September 2024, with sea temperatures warmer than average. This, along with calm conditions, light winds and small swells likely enabled the Algal Bloom to continue to grow throughout 2025. It is recognised that further research is needed to understand these drivers.

This Algal Bloom event in South Australia has caused mass fish and shellfish deaths by damaging their gills and depleting oxygen. These blooms reflect a global trend where algal blooms harm diverse marine life through toxins, oxygen depletion, and physical damage, thereby impacting marine ecosystems.

Since its onset, regular monitoring of algal counts (*Karenia* spp.) has occurred to continually update the public as well as support policy responses. Water testing results are published on the SA Algal Bloom Water Sampling Dashboard, which provides open access to water sampling results from coastal and estuarine sites across South Australia. Although the Algal Bloom shows variability in its presence over time across locations, it has shown higher concentrations in more confined, less tidally impacted water bodies, such as the Port River, receiving the highest concentration of *Karenia*, up to nearly 4,000,000 cells/litre.

b. ecological, economic, cultural and social impacts of algal blooms with particular reference to:

i. tourism, commercial and recreational fishing industries

Economic

ABS data sourced by the Department of State Development (DSD) suggests approximately 200 businesses located along the affected coastline may be significantly impacted by the Algal Bloom. A further 200 tourism operators, including recreational fishing charters, wildlife encounter tours, and beach-based tour operators, are also estimated to be impacted. Some businesses have reported revenue losses of up to 90% year-on-year, with reports of staff redundancies being considered to remain operational.

Recreational

South Australian beaches are open to the public for recreation, swimming and enjoyment. From time-to-time depending on currents and wind conditions, a beach may be impacted by *Karenia* and you may see discoloured water and foam.

The South Australian Algal Bloom has disrupted recreational fishing across coastal regions, with widespread fish die-offs leading to reduced catch rates and cancellations of charter trips.

In several areas, marine ecosystems have been significantly degraded, limiting opportunities for angling and other marine-based activities. In response, the South Australian Government has announced several response and recovery support measures, including the installation of a recreational fishing reef, and the expansion of freshwater fishing in reservoirs to offset the decline in marine stocks.

Fishing and Aquaculture Industries

Following assessment and consideration by public health authorities, all commercially available seafood from South Australian waters is safe to eat. Bivalves (oyster, mussels, scallops, cockles) or abalone available for sale is frequently tested to ensure it meets strict safety standards and is safe to eat.

Nonetheless, commercial fisheries have experienced declines in catch, impacting economic viability particularly for the Marine Scalefish Fishery and Charter Boat Fishery, as well as harvesting closures for the pipi fishery and oyster and mussel aquaculture operations. Significant impacts have been experienced in fisheries and aquaculture operations since the emergence of the Algal Bloom. Tourism-related businesses, including charter boat operations, are experiencing a downturn in operations.

Recreational fishing and tackle stores, a key contributor to the State's approximately \$1 billion recreational fishing sector, are widely experiencing economic hardship. Brevetoxins, a group of neurotoxins produced by certain *Karenia* species, have been detected in shellfish during this bloom event for the first time in Australian waters.

The detection of brevetoxins has been managed in line with Australia's standard procedures for managing biotoxin detections and its detection demonstrates that the South Australian Quality Assurance program in place is robust and effective. 10 locations in South Australia are currently closed for harvesting to protect human health. These prolonged closures impose significant financial pressure on aquaculture operators reliant on these regions, many of whom are burdened by fixed operational costs, market disruption, and suspended sales.

These impacts are being more broadly experienced across the seafood industry with public perceptions raised regarding seafood safety. Other key aquaculture sectors including mussel, marine scale fishery, pipis, finfish and aquaculture have all been impacted. The pipi fishery on the Fleurieu Peninsula has seen significant disruption due to the Algal Bloom. The Coorong is also closed for pipi harvesting. This will have flow on impacts to the local communities, as well as Aboriginal people employed by this industry.

ii. regional and coastal communities

The Algal Bloom has had far-reaching effects on coastal communities, with areas around Victor Harbor and the Murray Mouth among the first to experience its impact.

Beginning in March 2025, surfers reported feeling unwell after visiting beaches which coincided with brown foam and dead fish washing up on shore, impacting visitor numbers at a crucial holiday and tourism area for South Australia. While the algae does not produce toxins dangerous to people, it can cause short-term irritation in some people depending on local conditions. Symptoms may include skin and eye irritation and coughs or shortness of breath.

Dog owners have raised concerns after reports of pet illness were potentially linked to beach visits, while beachgoers encountered large numbers of dead fish and a strong odour along the shoreline, prompting health authorities to issue advisories against swimming in affected areas.

Recent community forums have been held in coastal regions impacted by the Algal Bloom with surveys indicating that 94% of respondents were either very concerned or extremely concerned about the Algal Bloom. Respondents also noted that marine life impacts; biodiversity and ecosystems recovery; water quality; and access rated as the issues of most interest to community forum participants.

iii. marine biodiversity and ecosystem health

Warmer ocean temperatures, made more likely by climate change, have created the perfect environment for the bloom.

The extent of the impact to marine life in the areas affected by the bloom is being iteratively assessed. However, the immediate and flow on effects to the broader ecological food chain are difficult to quantify as events continue to unfold. The State Government is undertaking a range of threatened species and ecological community risk assessments to inform further response and recovery actions.

Since the rapid onset of the Algal Bloom in March 2025, approximately 13,000 dead marine animals have been recorded as part of the SA Marine Mortalities project, affecting approximately 480 different species including dolphins, pipis, reef fish, sharks, and rays. It is considered that the mortalities recorded as part of this project represent only a small proportion of the total mortalities that continue to result from the Algal Bloom. This is particularly important given approximately 85% of fish species, 95% of molluscs and 90% of echinoderms are endemic to the Southern temperate coast of Australia while the temperate macroalgal flora has a richness 50-80% greater than other comparable regions around the world.

As a state, we are looking to and investing in solutions that can support ecological recovery. This can be delivered through marine restoration programs that:

- Naturally filter seawater and remove nitrogen and phosphate from the water, and
- Provide new habitat for marine species that also produce new fish to catch and eat.

The restoration and establishment of shellfish reefs is one program that will build resilience in our marine environment. Over time, re-establishment of these reefs will seed surrounding habitat, creating more fish and further boosting biodiversity.

Initiatives such as these will mitigate the impact of climate change on our marine biodiversity. It will also support regional communities and industries that are reliant on the marine ecosystem. They will reduce the risk of future algal blooms and ensure that our oceans are more resilient to future blooms.

The South Australian Government is currently engaging with key government and non-government experts to identify the most effective actions to undertake to accelerate the recovery of the marine environment.

We understand that a significant investment by Commonwealth and State governments in ecosystem restoration, accompanied by ongoing ecosystem monitoring, will be required. These activities will be consistent with the Federal Government through the existing 30 by 30 program and Sustainable Oceans Plan to support the recovery of our marine environment.

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

Aboriginal people share a sacred, reciprocal and interdependent relationship to land and sea Country. Their connection to Country is a critical consideration for understanding and responding to the Algal Bloom. For example, the Point Pearce region, located on the Yorke Peninsula, holds deep cultural significance for the Narungga people, who have maintained a continuous connection to its lands and waters for thousands of years. The area is central to traditional practices such as fishing and hunting and remains a vital source of identity and community cohesion. The signing of the Buthera Agreement between the Narungga National Aboriginal Corporation and the South Australian Government in 2018 formalised Narungga leadership in managing these ancestral lands. Acknowledging the cultural importance of aquaculture to the Narungga people, the Buthera Agreement made specific provisions for a fishing and aquaculture strategy which included Narungga people's participation in the industry, along with a boating facility on Wardang Island.

Oyster, mussel growing and pipi harvesting have been impacted by food safety closures due to Brevetoxin, including Aboriginal businesses in the Fleurieu Peninsula. Aboriginal tourism operators, including businesses running Indigenous cultural tours, have also felt a significant downturn in revenue.

The South Australian Government is working closely with Aboriginal communities to understand the impacts of the Algal Bloom. Advice has been sought from Aboriginal representative groups to help identify specific effects and inform recovery efforts. Existing programs within state government departments are being leveraged to support ongoing engagement with Aboriginal networks.

d. the coordination of state and federal government responses, including support, industry engagement and scientific advice

Key measures in the joint Commonwealth and South Australian Government Algal Bloom support package include:

Science and Research

- Coastal Monitoring Network - investing in expanded early detection and monitoring of harmful algal bloom species through real time sensors (buoys), satellite imagery and oceanographic modelling, with rapid detection of harmful algal blooms and early warning systems for industry. (\$8.5m)
- New national testing laboratory in SA for harmful algal bloom and brevetoxin/biotoxin testing. Currently, samples are sent to New Zealand for analysis, resulting in delays of more than a week. (\$2m)

- Rapid assessment of fish stocks and fisheries to quantify impact, including modelling ecological impacts on near shore marine ecosystems and all sanctuary zones utilising remote underwater video surveys and dive surveys. (\$3m)
- Citizen Science - rapid meta-analysis of citizen science records and documented ecological impacts to provide a baseline understanding from which to assess recovery.
- Develop a dedicated harmful algal bloom response plan for future bloom events.

Communications

- The Algal Bloom Cabinet Taskforce currently meets weekly, every Thursday, with a media conference to follow to keep the public informed on latest developments.
- Public forums for impacted coastal communities and a trusted single point of information and contact for timely, accurate, and clear communication to industry and the public including a single phone hotline, website, consistent physical signage and information.
- Public information campaigns focused on rebuilding confidence and driving visitation to our coastal regions and marine based tourism businesses and promoting the seafood industry and benefits of recreational fishing. (\$2m)

Community support and clean up

- Community Fund to support activities and small projects in affected communities. (\$3m)
- Beach clean-up funding for local government to assist cleaning up dead fish and marine life. (\$1m)
- Options for managing the clean-up of beaches are currently being investigated. This will be a joint activity with State Government, Local Government and community groups all playing a role.

Industry Support

- Financial counselling, mental health support and workforce advice to assist small businesses impacted by the Algal Bloom to develop recovery and continuity plans, understand the short and long-term implications, and help manage financial and mental wellbeing. This includes funding to support the national Stay Afloat program in South Australia
- e. the current support and recovery arrangements for impacted industries and communities, including:**
- i. financial support for fishing, tourism and other impacted businesses**

The business support package has been made available through the \$28 million Algal Bloom support package.

The South Australian Government has been closely monitoring the rollout of the \$10,000 Algal Bloom Small Business Support Grants, and Algal Bloom Fisheries and Aquaculture Assistance Grants of up to \$100,000.

The Algal Bloom Small Business Support Grant will support potentially more than 300 small businesses that have experienced a decline in business turnover in any consecutive three-month period from 1 April 2025 to 31 October 2025 or had their license fee waived by PIRSA. This measure is consistent with support offered to small businesses in other business support packages during disasters.

The Algal Bloom Fisheries and Aquaculture Assistance grant is aimed at eligible South Australian commercial fisheries or aquaculture licence holders with fixed costs and overheads including utilities, rent, finance and interest payments.

This includes an immediate payment of \$25,000 for fisheries or aquaculture licence holders forced to close by authorities for more than one month or can demonstrate a 30 percent or more decline in catch/harvest and decline in business turnover to any consecutive three-month period from 1 April 2025 to 31 October 2025 and have a minimum business turnover of \$75,000 in financial year 2023-24 or 2024-25.

As at 25 August 2025, there have already been 49 applications to the Algal Bloom Small Business Support Grant and a further 81 applications are in development. As at 25 August 2025, there have already been 19 applications to the Algal Bloom Fisheries and Aquaculture Assistance Grant and a further 23 applications in development.

The number of applications to both grant programs is expected to significantly increase over the coming months. In addition to a reduction in business turnover and/or a reduction in catch/harvest, these small business and commercial fisheries and aquaculture license holders are also reporting having to lay off or stand down staff.

The Commonwealth Government's Farm Household Allowance (FHA) program offers assistance to eligible commercial-scale farmers who are experiencing financial hardship. This support includes a fortnightly payment for up to four years in each specific 10-year period, activity supplements up to a lifetime limit of \$10,000 to improve a recipient's financial position, and a Farm Household Case Officer to work with recipients to help improve their financial circumstances.

In addition, the South Australian Government approved up to \$1 million in targeted fee relief for commercial fishers, aquaculture operators, and charter boat fishery licence holders - waiving food safety program fees, fisheries and aquaculture licence and lease fees for both the April to June and July to September quarters, 2025. The fees will continue to be reviewed on a quarter-by-quarter basis, with fee relief extended if necessary.

To further assist South Australia's coastal tourism regions from the impact of the Algal Bloom a new travel program has been launched by the State Government.

Part of the \$28 million Algal Bloom support package, the *Coast is Calling* travel voucher program, delivered by the South Australian Tourism Commission, will see 20,000 vouchers for accommodation and experiences valued up to \$500 released, with the ballot opening ahead of the next school holidays.

To address the significant economic uncertainty across several businesses, the South Australian Government has also provided the following universal supports to affected businesses:

- Financial counselling
- A dedicated mental health support package and advice
- Dedicated grants
- Case management assistance for funding and support programs.

ii. community resilience services

A single credible source of public information is being used to provide important context and assurance for the general public in relation to the Algal Bloom outbreak, including coordinating and administering key activities including forums, meetings and paid advertising. Public forums have been established in impacted coastal communities to provide relevant advice and information on the situation.

Tailored marketing campaigns are being developed to help rebuild confidence, improve coastal visitation, promote the seafood industry and the benefits of recreational fishing through a combination of existing advertising, digital marketing and social media, cooperative partnership marketing and public relations and brand partnerships.

A Community Recovery Fund is being established to support activities and small community projects, consistent with Community Recovery Funds administered following previous disasters in South Australia, including recently during the 2022-23 River Murray floods.

iii. research, monitoring and restoration efforts;

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

The Algal Bloom support package will support the expansion of early detection and monitoring systems for algal blooms using real-time sensors, satellite imagery, and oceanographic modelling to enable faster warnings. Rapid marine assessments will also occur which will fast track the immediate assessment of fish stocks and marine ecosystems, including marine sanctuary zones, using ecological modelling, underwater video, and dive surveys.

A comprehensive scientific monitoring, detection and assessment program plan has been established by the Department for Environment and Water (DEW) and the South Australian Research and Development Institute (SARDI). The 12-month program incorporates early detection, monitoring, sampling, wildlife toxin testing and veterinary advice, Brevetoxin/biotoxin testing, assessment of short-term impacts of the Algal Bloom on nearshore marine ecosystems, and a completed meta-analyses of citizen science records and known ecological impacts.

A new national testing facility is being established in Adelaide to enable faster testing of brevetoxins. Currently samples are sent to New Zealand for analysis resulting in delays of more than a week. The move to a testing facility in South Australia will significantly reduce the delay, meaning business can more quickly return to normal once brevetoxins reduce to safe levels.

Establishment of a federally funded National Centre for Harmful Algal Blooms, most logically based in Adelaide, would be consistent with successful approaches adopted in the United States of America. This centre would establish and coordinate an ongoing baseline national monitoring program (e.g. nutrients, algal presence, marine temperature, etc), develop and operate modelling products, commission HAB-related research, and provide public information (including warnings), amongst other activities. It may be possible to align such a centre with an existing related national institution, such as the Bureau of Meteorology.

As outlined above, there has been significant environmental and ecological impacts from the Algal Bloom outbreak, although it is difficult to accurately quantify the scale of marine life deaths and the long-term consequences of this event without dedicated testing and impact assessments. The Science and Research Program would fund these efforts and leverage extensive citizen science records to form a clear operating picture from which to assess recovery.

Importantly, building long-term recovery and resilience is critical. This event has highlighted the need for sustained investment in monitoring, adaptive management, and ecological restoration. Recovery actions which build the resilience of the marine environment will better prepare South Australia for future events, reduce the risk of recurrence, and support the health and productivity of our coastal and marine environments over time. A five-year plan is being developed to guide this activity.

g. any related matters

South Australia's experience with the 2025 Algal Bloom demonstrates the profound impacts that ecological events can have on marine life, industry, communities, and the environment. The South Australian Government has acted to strengthen its legislative framework by explicitly requiring marine environment emergencies to be incorporated into the State Emergency Management Plan (SEMP). However, broader national reform is required. The recognition of algal blooms and other protracted natural disasters under the Disaster Recovery Funding Arrangements (DRFA) would provide an essential mechanism for supporting communities, industries, and ecosystems in responding to these complex, climate-driven events.

The Commonwealth's DRFA does not recognise algal blooms or marine heatwaves as eligible natural disasters, despite their catastrophic impacts. The DRFA should be amended to explicitly include long-onset and complex emergencies, such as harmful algal blooms and biological events. These events, while different in nature from rapid-onset disasters, can cause equally devastating social, economic, and environmental impacts. Updating the national architecture to recognise and support such events would ensure that states are not left to navigate them alone, and that the Commonwealth can play its critical role in providing resources, funding, and coordination.

If the Commonwealth is not willing to recognise harmful algal blooms and similar events under the DRFA, then an alternative mechanism should be established. This could take the form of a nationally consistent plan similar to the AUSVETPLAN or AUSRECPLAN but for environmental disasters. Such a plan could be activated at the request of states, providing a clear framework for roles, responsibilities, and access to Commonwealth support, including funding, technical expertise, and interjurisdictional resource sharing. This would ensure that extraordinary ecological events, which do not fit traditional disaster categories, are met with a coordinated national response proportionate to their impacts. This could be delivered through existing Commonwealth agencies—such as the Department of Agriculture, Fisheries and Forestry, or the Department of Climate Change, Energy, the Environment and Water.

Future Priorities

As the South Australian Government has continued its work to understand this event and its impact on our marine and coastal environment as well as our community. We intend to put in place further supports and investment to respond to this event, particularly as we head into warmer months, noting the possible impacts that may occur. These areas of priority include:

Improving our way of life

- Investment in same day information to support beachgoers along our coastline
- Strengthening access to public health advice for individuals
- Increased beach cleanup programs
- Targeted mental health services for affected businesses.

Supporting our ecological sustainability

- Expanding our environmental and ecological monitoring regime
- Strengthening citizen science programs
- Leading national work on the presence and impact of algal blooms
- Improving marine restoration in our marine environment.

Strengthening our economy and supporting industry

- Developing stimulus
- initiatives that support regional businesses
- Working with our fishing and aquaculture industries to support their viability and innovation
- Strengthening our recreational fishing sector through restocking and access programs.

We would like to work with the Commonwealth Government, through this enquiry to create national support for this work, as a shared endeavour, in the interests of South Australians and in the broader interests nationally, in the event that Algal Bloom events such as this become more present in our waters. This may include existing levers available to the Commonwealth such as employment supports, national coordination of policy focus and leveraging national scientific capabilities.

Community Forums

In August 2025, a series of community forums were held across metropolitan and regional South Australia to inform residents and invite meaningful dialogue. Further events will be scheduled.

These sessions give community members a platform to voice their perspectives and ask questions. Afterwards, organisers distributed surveys to gather deeper insights into the issues that mattered most to participants, helping guide future engagement and planning efforts. Some of the key questions/feedback from these forums included:

- Communities wanting assurance that appropriate testing is being done, and that data is transparent and accessible. There is a desire for stronger science-based evidence to underpin public information.
- Participants requesting clearer information about the solutions being trialled to mitigate and prevent algal blooms. They wanted details about what interventions are realistic, how they work, and the timescales for improvement.
- Questions were raised about whether the government's allocated funding (e.g. \$28.5 million) is sufficient to tackle the problem.
- Concerns included whether intergovernmental coordination is sufficient and whether policy settings are adequate to respond to events of this scale.
- Respondents expressed interest in shellfish reefs, seagrass replanting and oyster reef regeneration, noting that early action would assist recovery. Concerns were also raised about impacts on marine animals and biodiversity loss.

Response Governance

Due to the significant and unprecedented nature of the Algal Bloom, the potential for further impacts across the summer period, and the expansive and cross portfolio nature of response efforts, the Algal Bloom Cabinet Taskforce has been established as a sub-committee of Cabinet. To appropriately coordinate departmental efforts and leadership of the Taskforce, the South Australian Government has appointed a central Response Coordinator. The Response Coordinator will coordinate resources, ensure public information is appropriate, lead a coordination unit, and provide updates to the Algal Bloom Cabinet Taskforce.

Work is currently underway to develop a Summer Response Plan, which responds to the risk of the Algal Bloom persisting through the summer months. This plan is being developed in response to the economic, social and environmental impact caused by the event. It is anticipated that the Summer Response Plan will be publicly launched in October 2025. Members of the public are encouraged to visit algalbloom.sa.gov.au for all of the latest information on the Algal Bloom impacting parts of South Australia's coastline.

For more information:

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