

The Senate

Environment and
Communications References
Committee

Algal blooms in South Australia

November 2025

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Monique Nielsen, Senior Research Officer

Kelly Yoon, Senior Research Officer

James Blair, Research Officer

Jesse Brady, Administrative Officer

Elizabeth Hickey, Administrative Officer

Lauren King, Administrative Officer

PO Box 2600
Parliament House
Canberra ACT 2600

Telephone: 02 6277 3526
Email: ec.sen@aph.gov.au
Website: www.aph.gov.au/senate.ec

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Terms of reference

The causes, frequency, scale and duration of recent algal blooms in South Australian marine and coastal environments, with particular reference to:

- (a) contributing environmental, land management or water quality factors;
- (b) ecological, economic, cultural and social impacts of algal blooms with particular reference to:
 - (i) tourism, commercial and recreational fishing industries,
 - (ii) regional and coastal communities, and
 - (iii) marine biodiversity and ecosystem health;
- (c) the cultural and economic impacts on Indigenous communities, including any loss of access to traditional fishing;
- (d) the coordination of state and federal government responses, including support, industry engagement and scientific advice;
- (e) the current support and recovery arrangements for impacted industries and communities, including:
 - (i) financial support for fishing, tourism and other impacted businesses,
 - (ii) community resilience services, and
 - (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; and
- (g) any related matters.

Abbreviations and acronyms

ACS	Australian Climate Service
Agilex	Agilex Biolabs
AMCS	Australian Marine Conservation Society
AMSA	Australian Marine Sciences Association
ANZMHAB Network	Australian and New Zealand Marine Harmful Algal Bloom Network
AquaWatch	AquaWatch Australia
ARC	Australian Research Council
ATRC	Australian Temperate Reef Collaboration
BoM	Bureau of Meteorology
CEWH	Commonwealth Environmental Water Holder
CEWO	Commonwealth Environmental Water Office
CLLMM Research Centre	Coorong, Lower Lakes and Murray Mouth Research Centre
Conservation Council SA	Conservation Council of South Australia
Coast RI	Coastal Research Infrastructure
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DAFF	Department of Agriculture, Fisheries and Forestry
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DEW	Department for Environment and Water
DPC	Department of Premier and Cabinet
DRFA	Disaster Recovery Funding Arrangements
DSD	Department of State Development
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
HEAL	Healthy Environments and Lives

FHA	Farm Household Allowance
FNSAAC	First Nations of South Australia Aboriginal Corporation
FRDC	Fisheries Research and Development Corporation
GP	General Practitioner
GSRF	Great Southern Reef Foundation
HAB	harmful algal bloom
HABHRC Act	<i>Harmful Algal Bloom and Hypoxia Research and Control Act</i>
HEAL	Healthy Environments and Lives
IMOS	Integrated Marine Observing System
IOC	International Oceanographic Commission
<i>K. mikimotoi</i>	<i>Karenia mikimotoi</i>
LGA SA	Local Government Association of South Australia
MDBA	Murray-Darling Basin Authority
MRFF	Medical Research Future Fund
MWH	marine heat wave
NATA	National Oceanic and Atmospheric Administration
NEMA	National Emergency Management Agency
NESP	National Environmental Science Program
NZ	New Zealand
NHMRC	National Health and Medical Research Council
OCS	Offshore Constitutional Settlement
PIRSA	Department of Primary Industries and Regions South Australia
RACGP	Royal Australian College of General Practitioners
RIC	Regional Investment Corporation
RIMReP	Reef Integrated Monitoring and Reporting Program

RLS	Reef Life Survey
SA	South Australia
SA EPA	South Australian Environment and Protection Authority
SANTS	South Australian Native Title Service
SARDI	South Australian Research and Development Institute
SASQAP	South Australian Shellfish Quality Assurance Program
SATC	South Australian Tourism Commission
SIA	Seafood Industry Australia
SST	sea surface temperature
the committee	Senate Environment and Communications References Committee
the inquiry	inquiry into algal blooms in South Australia
TiCSA	Tourism Industry Council South Australia
TSSC	Threatened Species Scientific Committee
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States

List of recommendations

Recommendation 1

8.12 The committee recommends the Australian Government show leadership by developing a fit for purpose framework for research, monitoring and responses to climate induced, slow-onset and significant ecological events such as harmful algal blooms.

Recommendation 2

8.19 The committee recommends the Australian Government consider reviewing and expanding arrangements for a new definition for declaring how climate induced, slow-onset and significant ecological events could be incorporated into a broader national framework.

Recommendation 3

8.20 The committee recommends the Australian Government defines the roles of the Commonwealth, states and territories and local governments throughout the management and response of climate induced, slow-onset and significant ecological events such as harmful algal blooms.

Recommendation 4

8.28 The committee recommends that the Australian Government consider sustained funding for long-term oceanographic and algal bloom-specific research and monitoring programs at the national level, including through the utilisation of the Office for Algal Bloom Research in South Australia.

Recommendation 5

8.34 The committee recommends that the Australian Government consider options for substantial funding to be directed to projects that deliver large-scale, long-term marine ecosystem restoration and resilience including meaningful reef restoration along the South Australian coastline.

Recommendation 6

8.36 The committee recommends that the Australian Government considers investing funds towards the Southern Ocean Discovery Centre for the establishment of a world-class marine education, research, and tourism hub in South Australia.

Recommendation 7

8.47 The committee recommends that the Australian Government and South Australian Government evaluate the current investment towards community resilience programs and mental health support services and explore continued or further investment as required for communities impacted by the toxic algal bloom.

Recommendation 8

8.48 The committee recommends that the South Australian Government provides timely, clear and scientifically informed public health advice.

Recommendation 9

8.49 The committee notes the current investment to supporting coastal communities and recommends that the Australian Government consider allocation of joint funding for community financial support, which could be delivered through local governments as untied grants.

Recommendation 10

8.57 The committee recommends that the Australian Government consider how it can support work with the South Australian Government on long-term resilience and recovery programs for marine-related industries and sectors affected by the harmful algal bloom including fishing and tourism, in concert with industry. This could include exploring:

- a targeted income support program, akin to Job Keeper, for impacted businesses;
- a voluntary lease or buyback scheme for fishing licences, to provide individuals and businesses the opportunity to remain in or exit the industry; and
- a tourism recovery fund to support public information campaigns and promotional efforts to rebuild SA's tourism reputation, drive visitation, and support nature-based and marine businesses as they recover.

Recommendation 11

8.58 The committee recommends the Australian Government finalises and brings forward the legislative instruments (or amendments, if required) necessary to ensure eligibility for wild catch fisheries and affected marine businesses under the Regional Investment Corporation Fund. These need to be tabled for consideration without further delay.

Recommendation 12

8.59 The committee recommends the Australian Government, through the Fisheries Research and Development Corporation, support the South Australian Government in conducting research and monitoring of fish stocks during and following fishing restrictions, and undertake a comprehensive impact analysis of fishing in the Gulf St Vincent. This analysis should assess the ecological, social, and economic implications to inform appropriate financial support for affected communities and guide the recovery of local ecosystems and fish stocks.

Recommendation 13

8.63 The committee recommends that the Australian Government consider establishing a dedicated Local Government Resilience Fund to provide ongoing and flexible financial assistance to support local councils in responding to climate induced and slow-onset and significant ecological events.

Recommendation 14

8.69 The committee recommends that the Australian Government consider First Nation leadership and cultural knowledge in all aspects of recovery and management, including:

- integrating first nation scientific knowledge into marine monitoring and restoration programs;
- providing dedicated funding for recovery and business support for impacted First Nation enterprises;
- ensuring that First Nation expertise in land and sea management is sought where these issues affect cultural knowledge and practice; and
- expanding and resourcing Indigenous ranger and sea country programs in affected coastal regions, with roles for First Nation representatives in the new Office for Algal Bloom Research.

Chapter 1

Introduction

Referral of the inquiry

1.1 On 23 July 2025, the Senate referred an inquiry into the algal blooms in South Australia (the inquiry) to the Senate Environment and Communications References Committee (the committee) for inquiry and report by 28 October 2025, with the following terms of reference:

The causes, frequency, scale and duration of recent algal blooms in South Australian marine and coastal environments, with particular reference to:

- (a) contributing environmental, land management or water quality factors;
- (b) ecological, economic, cultural and social impacts of algal blooms with particular reference to:
 - (i) tourism, commercial and recreational fishing industries,
 - (ii) regional and coastal communities, and
 - (iii) marine biodiversity and ecosystem health;
- (c) the cultural and economic impacts on Indigenous communities, including any loss of access to traditional fishing;
- (d) the coordination of state and federal government responses, including support, industry engagement and scientific advice;
- (e) the current support and recovery arrangements for impacted industries and communities, including:
 - (i) financial support for fishing, tourism and other impacted businesses,
 - (ii) community resilience services, and
 - (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; and
- (g) any related matters.¹

1.2 The committee was granted extensions of time to report to 4 November 2025² and 11 November 2025.³

¹ *Journals of the Senate*, No. 2, 23 July 2025, p. 72.

² *Journals of the Senate*, No. 17, 28 October 2025, p. 569.

³ *Journals of the Senate*, No. 21, 4 November 2025, p. 670.

Conduct of the inquiry

- 1.3 Details of the inquiry were advertised on the committee's [website](#), including a call for submissions by 22 August 2025. The committee wrote directly to various stakeholders to invite them to make submissions.
- 1.4 The committee received 155 submissions, which are listed at Appendix 1 and are available on the committee's [website](#).

Public hearings

- 1.5 The committee held five public hearings, including four public hearings in South Australia (SA), in:
 - Seacliff, Adelaide on 9 September 2025;
 - Port Lincoln, Eyre Peninsula on 10 September 2025;
 - Ardrossan, Yorke Peninsula on 11 September 2025; and
 - Victor Harbor, Fleurieu Peninsula on 12 September 2025.
- 1.6 A fifth public hearing was held in Canberra on 24 September 2025.
- 1.7 A list of witnesses who attended the public hearings is available at Appendix 2. Hearing programs, transcripts of hearings, and answers to questions on notice are available on the committee's [website](#).

Site visits

- 1.8 The committee also undertook two site visits while in SA.
- 1.9 The committee first conducted a site visit to the Seacliff beachfront on 9 September 2025 to view areas affected by the algal bloom (see Figures 1.1 and 1.2). The walk, guided by Professor Michael (Mike) Steer, Executive Director of the South Australian Research and Development Institute (SARDI), and Mr Chris Beattie, Coordinator of the Algal Bloom Response in the SA Department of Premier and Cabinet, provided committee members with an opportunity to observe first-hand the impacts of the algal bloom on the local environment and community.

Figure 1.1 Site visit at Seacliff Beach, South Australia, 9 September 2025



Source: Secretariat

- 1.10 The committee extends its appreciation to Ms Charmaine Hughes, Mr Brian Abbott, Mr Josh Ross and Mr Troy Burgess, members of the beach clean up crew, for taking the time to talk to committee members about the work being undertaken to clear marine animals and plant matter from the beaches each day.

Figure 1.2 Foam at Seacliff Beach, South Australia, 9 September 2025



Source: Secretariat

- 1.11 The committee also conducted a site visit in Port Lincoln on 10 September 2025 to gain an understanding of the impacts of the algal bloom on local marine industries, and spoke directly with representatives of the mussel industry (see figure 1.3).
- 1.12 The committee thanks Ms Emily Rowe, Director of Seafood Industry SA for assisting with arrangements for the visit and Mr Mark Andrews, General Manager of Mussel Operations at Yumbah Aquaculture. The committee also thanks representatives of the SA Government who attended, including Dr Andrew Dunbar, Executive Director of the Department of State Development, and Professor Gavin Begg, Executive Director of Fisheries and Aquaculture at the South Australian Department of Primary Industries and Regions (PIRSA).

Figure 1.3 Site visit at Port Lincoln North Quay, South Australia, 10 September 2025



Source: Secretariat

Acknowledgements

1.13 The committee thanks the organisations and individuals who made submissions, and attended public hearings, for their time and contributions to this inquiry.

Structure of the report

1.14 This report comprises seven chapters:

- Chapter 1 provides details of the inquiry and background information on the harmful algal bloom in SA, including a brief outline of a similar algal bloom that occurred in SA in 2014;
- Chapter 2 outlines the key contributing factors for the bloom, and discusses current and future management strategies, forecasting and prevention strategies, and the international experience of *Karenia mikimotoi* blooms;
- Chapter 3 outlines the role of the SA and Commonwealth Governments in the response to the harmful algal bloom, including support and recovery arrangements, and discusses the application of the emergency declaration framework;
- Chapter 4 sets out evidence relating to the ecological, economic and social impacts of the algal bloom on marine biodiversity and ecosystem health;

- Chapter 5 continues to discuss the ecological, economic and social impacts of the algal bloom on industries which rely on ocean health, and on regional and coastal communities;
- Chapter 6 sets out the human health impacts of the algal bloom;
- Chapter 7 sets out the cultural and economic impacts on First Nations communities; and
- Chapter 8 sets out the committee view and recommendations.

Background information on the 2025 harmful algal bloom (HAB)

Algal blooms in coastal waters

- 1.15 Algal blooms are a natural occurrence in coastal waters globally, and can be caused by multiple factors including extended hot periods, low winds and low tidal ranges.⁴ Predicting algal blooms can be difficult, and the severity of the bloom can vary depending on factors such as marine heatwaves (MWHs) and nutrient pollution.
- 1.16 In certain circumstances, including the spread of the 2025 algal bloom impacting SA coastal waters, algal blooms can negatively impact the local ecosystem in which they are occurring. In these cases, the bloom is referred to as a harmful algal bloom (HAB).⁵
- 1.17 The species of algae that makes up the bloom can also affect its severity, as there are some species of algae that are toxic to marine life, whereas some other species of algae will cause harm to fish by removing oxygen from the water.
- 1.18 The Australian and New Zealand Marine Harmful Algal Bloom Network (ANZMHAB Network) highlighted that, according to the Intergovernmental Oceanographic Commission of UNESCO Harmful Algal Event Database, there have been 124 HABs in Australia between 1770 and 2025.⁶
- 1.19 HABs affect the marine ecosystem in a number of ways. Depending on the species of algae that make up a HAB, they can affect marine life in a variety of negative ways, even in low concentrations. This includes causing gill damage directly to marine life, creating toxins, and reducing the amount of oxygen available in the water to levels below what is required to sustain marine life.⁷

⁴ Algal blooms in coastal waters differ from those in freshwater in a number of ways, including biology, diversity, toxins, drivers and impacts. Australian and New Zealand Marine Harmful Algal Bloom Network (ANZMHAB Network), *Submission 73*, p. 2. Further details on the contributing factors of the HAB are outlined in Chapter 2 of this report.

⁵ Environment Protection Agency, Government of South Australia (SA EPA), [Harmful algal blooms \(HABs\) and marine heat waves](#), 27 May 2025 (accessed 24 July 2025).

⁶ ANZMHAB Network, *Submission 73*, p. 2

⁷ ANZMHAB Network, *Submission 73*, p. 3.

- 1.20 HABs can have human health impacts, which can be caused by exposure to the water affecting breathing and the eyes or consumption of seafood that has accumulated toxins created by the HAB.⁸ Further information surrounding the impact of HABs on human health is discussed in Chapter 6 of this report.

South Australian harmful algal bloom

- 1.21 SA is currently experiencing ‘one of the largest scale, naturally occurring algal bloom events ever recorded in Australian waters’.⁹
- 1.22 The specific species that comprises the HAB currently occurring in SA was initially stated to be *Karenia mikimotoi* (*K. mikimotoi*), a phytoplankton that has been responsible for multiple and frequently-occurring HABs globally, resulting in large fish kills. The ANZMHAB Network provided information on the Kareniaceae family:

The family Kareniaceae is a group of microalgal species belonging to the Dinophyceae (dinoflagellates). HABs involving Kareniaceae are well known for their fish-killing (ichthyotoxic) effects and some species have substantial human health impact due to the production of toxins, including neurotoxins (nerve-toxins) called brevetoxins. Many species of *Karenia* look very similar under high-powered microscopes and can be **very difficult to distinguish** from one another. Even for experts, identification can be difficult using morphology alone.¹⁰

- 1.23 More recent information has shown that the HAB is likely made up of multiple *Karenia* species including *K. mikimotoi*.¹¹ SARDI stated that the current HAB is likely to be a number of species within the *Karenia* family, some of which produce brevetoxins (marine neurotoxins):

Our level of understanding of the algae is that it's a complex composition of species within the *Karenia* family. We've heard about *Karenia mikimotoi*—I mentioned it early on—but there are likely a number of other species, and they have various means of producing brevetoxin-like substances. So there's clearly a relationship between the algal bloom and the production of brevetoxins.¹²

- 1.24 Other evidence to the inquiry has claimed that there may also be an unknown species making up the HAB, and that it may be years before the exact species in

⁸ ANZMHAB Network, *Submission 73*, p. 3.

⁹ South Australian (SA) Government, *Submission 71*, p. 1.

¹⁰ ANZMHAB Network, *Submission 73*, p. 4. Emphasis in original.

¹¹ See, for example, Professor Michael (Mike) Steer, Executive Director, South Australian Research and Development Institute (SARDI), *Proof Committee Hansard*, 9 September 2025, p. 13; Ms Faith Coleman, *Submission 33*, p. 1; Biodiversity Council, *Submission 66*, p. 4; Professor Shauna Murray, *Submission 72*, [p. 2]. The presence of multiple algae species is discussed in the next chapter.

¹² Professor Steer, SARDI, *Proof Committee Hansard*, 9 September 2025, p. 13.

the current HAB are known.¹³ The ANZMHAB Network, for example, stated that there are several undescribed species of *Karenia* which occur in Australian waters, and whose toxicity is not known.¹⁴

1.25 The HAB has affected more than 30 per cent of the SA coastline, and with more than 13,000 recorded animal deaths as well as other impacts, which are discussed throughout this report.¹⁵

1.26 Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) noted that recorded observations reference the deaths of tens of thousands of marine animals from more than 480 species, with the full extent of the impact unlikely to be known for some time.¹⁶ The SA Government acknowledged that observed mortalities will be 'only a small proportion of the total mortalities that continue to result' from the 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.¹⁷

1.27 The duration of the HAB is difficult to predict. The SA Government stated that a range of factors can determine the dissipation of a bloom:

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.¹⁸

Affected areas

1.28 The HAB has affected an expansive geographic area, with elevated levels of chlorophyll-a, an indicator of the presence of algae, being identified in high concentrations in both the Spencer Gulf and Gulf St Vincent, the north coast of Kangaroo Island, and along the coast south-east of the Fleurieu Peninsula, with

¹³ Dr Christopher Bolch, private capacity, *Proof Committee Hansard*, 24 September 2025, p. 14.

¹⁴ ANZMHAB Network, *Submission 73*, p. 4

¹⁵ Mr Chris Beattie, Coordinator, Algal Bloom Response Coordination Unit, Department of the Premier and Cabinet, *Proof Committee Hansard*, 9 September 2025, p. 12.

¹⁶ Department of Climate Change, Energy, the Environment and Water (DCCEEW), *Submission 67*, p. 13.

¹⁷ SA Government, *Submission 71*, p. 4.

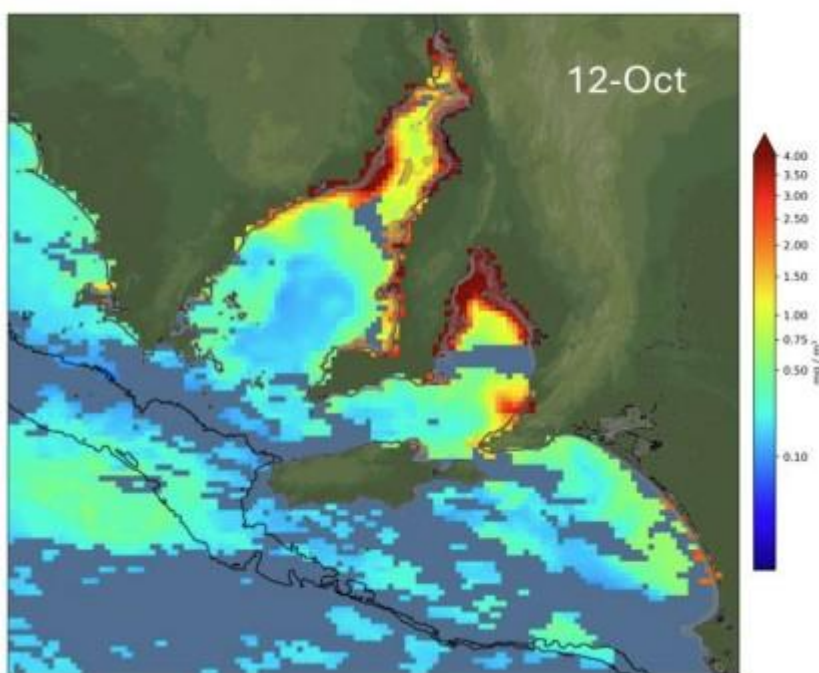
¹⁸ SA Government, *Submission 71*, p. 1

elevated levels being identified as far away as Beachport, which is approximately 380 km south-east of Adelaide.¹⁹

1.29 SA coastal waters affected by the HAB (at time of writing) include the below, and pictured at Figure 1.1 below:

- Adelaide's metropolitan beaches
- Port River and West Lakes
- Southern Fleurieu Peninsula
- Kangaroo Island
- The Coorong
- Yorke Peninsula
- Gulf St Vincent
- Eyre Peninsula
- Spencer Gulf.²⁰

Figure 1.1: Satellite imagery of chlorophyll-a, which provides an indication of algae concentrations as of 12 October 2025



15 September 2025 - Satellite imagery of chlorophyll-a, which provides an indicator of algae concentrations but not necessarily concentrations of harmful algae, is being used to monitor the algal bloom. Areas in red have higher levels of chlorophyll-a.

Source: Government of South Australia, *Algal Bloom Update: Affected Areas*, 15 September 2025, <https://www.algalbloom.sa.gov.au/where-the-algal-bloom-is>, accessed 22 September 2025.

¹⁹ South Australian Department of Primary Industries and Regions (PIRSA), [Harmful algal bloom \(HAB\) situation update](#), (accessed on 29 July 2025).

²⁰ SA Government, [Where is the algal bloom](#) (accessed 16 September 2025).

- 1.30 The current HAB outbreak of *K. mikimotoi* was identified in the waters around the Fleurieu Peninsula, near Waitpinga and Parsons Beach. The SA Government stated in an update on 27 August 2025 that:

Daily satellite measures of chlorophyll-a (chl_a) levels, an indicator of algae concentrations, show elevated chl_a concentrations persist around the coastline of Gulf Saint Vincent north of Edithburgh in the west and extending south in a narrow band along the coast along the eastern side of the gulf to the southern tip of the Fleurieu Peninsula. Patches of elevated chl_a are observed near Goolwa, Penneshaw on Kangaroo Island and Kingston in the southeast. Regions of high chl_a concentrations in Spencer Gulf include along the western coastline from Port Lincoln to Munyaroo and around Hardwicke Bay and Moonta in the east.²¹

Water testing results

- 1.31 *K. mikimotoi* grows outside of HAB conditions, with average levels of the alga being <5000 cells/L. This species was also responsible for the Coffin Bay HAB that occurred in February of 2014.²²
- 1.32 Water testing undertaken between 21 and 26 August 2025 showed levels of the *Karenia* species of alga:

Table 1.1 Water testing results from August 2025

Location	Level	Date
Brighton Jetty	1,800,000 cells/L.	25 August 2025
Port Lincoln (Bickers Island)	12,500 cells/L.	25 August 2025
Ardrossan Jetty	1,496,000 cells/L.	26 August 2025
Victor Harbor (Encounter Bay Boat Ramp)	2,000 cells/L. <i>K. mikimotoi</i>	28 August 2025

Source: SA Government, *South Australian Harmful Algal Bloom - Water Sampling Dashboard* (accessed 1 September 2025).

- 1.33 Water testing undertaken between 18 September and 13 October 2025 showed levels of the alga:

Table 1.2 Water testing results from October 2025

Location	Level	Date
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²¹ SA Government, [South Australian Algal Bloom Situation Update: 27-08-25](#) (accessed 1 September 2025).

²² Shane Roberts, Clinton Wilkinson, Ben Stobart, Mark Doubell, Paul van Ruth and John Gilliland, [Fish Kill investigation: Coffin Bay harmful algal bloom February 2014](#), March 2014, p. 7 (accessed 24 July 2025).

Brighton Jetty	510,000 cells/L. <i>Karenia Sp.</i> ²³	13 October 2025
Port Lincoln (Bickers Island)	0 cells/L. <i>Karenia Sp</i>	13 October 2025
Ardrossan Jetty	190,000 cells/L. <i>Karenia Sp</i>	6 October 2025
Victor Harbor (Encounter Bay Boat Ramp)	1,000 cells/L. <i>K. mikimotoi</i>	18 September 2025

Source: SA Government, *South Australian Harmful Algal Bloom - Water Sampling Dashboard* (accessed 17 October 2025).

Identified causes

1.34 The SA Government has identified three potential contributing factors to the HAB, which was first detected in March 2025:

- an MHW which started in September 2024 and saw sea temperatures about 2.5°C warmer than usual, combined with calm conditions, light winds and small swells;
- the 2022-23 River Murray flood, which washed extra nutrients into the sea; and
- a cold-water upwelling in summer 2023-24 that brought nutrient-rich water to the surface.²⁴

1.35 The Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the DCCEEW identified an additional contributing factor to the HAB based on information from the SA Government, being anomalous weak winds in the summer of 2025. The weaker winds reduced the dilution of the algae, keeping it in optimal conditions for growth.²⁵

1.36 Further information on the contributing factors to the HAB is discussed in Chapter 2 of this report.

2014 Coffin Bay harmful algal bloom

1.37 A significant, but comparatively small HAB occurred in 2014, in Coffin Bay, in SA. The 2014 Coffin Bay HAB was contained entirely within Coffin Bay, with minimal impact to surrounding areas, compared to the 2025 HAB occurring

²³ *K. mikimotoi* was not detected.

²⁴ SA Government, [Learn about the algal bloom](#) (accessed 12 August 2025).

²⁵ Commonwealth Scientific and Industrial Research Organisation (CSIRO), *Submission 31*, p. 5; and DCCEEW, *Submission 67*, p. 3.

across a large portion of the water off the coasts near Adelaide due to its origin point giving it greater access to the gulfs near Adelaide.²⁶

- 1.38 In February 2014, a commercial diver reported abalone mortalities at Frenchman's Bluff in the outer part of Coffin Bay (which is located on the Eyre Peninsula west of Adelaide), to the PIRSA in line with PIRSA's abalone viral ganglioneuritis disease response plan. Following this, PIRSA conducted dive surveys along the coast to the north and south of the reported mortality site. Divers observed that the mortalities were localised at Frenchman's Bluff and appeared to be due to an algal bloom. The SA Shellfish Quality Assurance Program (SASQAP)²⁷ analyses of water samples confirmed high density (12 million cells/L) of *K. mikimotoi*.²⁸
- 1.39 Following this, PIRSA's incident management team met, and an emergency management structure was developed for the investigation and coordination. Teams were assembled to survey the beaches and waters in Coffin Bay, with updates provided to the Minister, state government departments, and seafood industry stakeholders. PIRSA confirmed that the likely cause of the mortality event was *K. mikimotoi*.²⁹
- 1.40 PIRSA continued to monitor the situation, conducting surveys and collecting water samples to measure *K. mikimotoi* counts in the affected area. It was noted that only a small number of marine organisms had washed ashore. In March 2014, dive surveys identified no further mortalities at any of the previously identified sites despite high concentrations of algae.³⁰
- 1.41 By 4 March 2014, PIRSA assessed that the severity of the HAB had significantly reduced, no new mortalities had been identified, and that the concentration of *K. mikimotoi* had greatly reduced. This led to a passive surveillance phase in line with the PIRSA Aquatic Animal Health Plan.

²⁶ Dr Mark Doubell, Research Scientist, Oceanography Subprogram Leader, SARDI, *Proof Committee Hansard*, 9 September 2025, p. 18.

²⁷ The SA Shellfish Quality Assurance Program (SASQAP) is a joint initiative between PIRSA and the shellfish industries of SA and regularly monitors all accredited shellfish harvesting areas in SA for toxic algae and provides guidance for producers.

²⁸ Shane Roberts, Clinton Wilkinson, Ben Stobart, Mark Doubell, Paul van Ruth and John Gilliland, ['Fish Kill investigation: Coffin Bay harmful algal bloom February 2014'](#), March 2014, p. 9 (accessed 24 July 2025).

²⁹ Shane Roberts, Clinton Wilkinson, Ben Stobart, Mark Doubell, Paul van Ruth and John Gilliland, ['Fish Kill investigation: Coffin Bay harmful algal bloom February 2014'](#), March 2014, pp. 9–10 (accessed 24 July 2025).

³⁰ Shane Roberts, Clinton Wilkinson, Ben Stobart, Mark Doubell, Paul van Ruth and John Gilliland, ['Fish Kill investigation: Coffin Bay harmful algal bloom February 2014'](#) March 2014, p. 9 (accessed 24 July 2025).

Next chapter

1.42 The next chapter outlines the potential contributing factors to the HAB, and discusses long-term monitoring, forecasting and prevention strategies and possible approaches to lessen the impact of future blooms.

Chapter 2

Contributing factors and management strategies

Overview

- 2.1 This chapter outlines the potential contributing factors to the 2025 South Australian (SA) harmful algal bloom (HAB) and discusses management strategies for current and future HABs.
- 2.2 Potential contributing factors raised by inquiry participants include a marine heatwave, elevated nutrient levels in the affected waters, and climate change. However, the committee heard that it is still too early to conclusively determine the causes of the HAB.
- 2.3 While the committee also heard that there are currently no viable options to limit the spread of the current HAB, inquiry participants suggested a range of long-term strategies to manage future HABs, including:
 - HAB research and capacity building;
 - monitoring and early detection of HABs;
 - reduction of nutrient inflows; and
 - climate change mitigation.
- 2.4 This chapter will also outline international experiences with *Karenia* species of algae, including management and mitigation strategies used in areas that have frequently dealt with HABs.

Contributing factors to the 2025 South Australian harmful algal bloom

- 2.5 Inquiry participants suggested that a number of factors, including climate and environmental factors and land and water management factors, could have contributed to the development of the 2025 SA HAB. For example, the Murray-Darling Basin Authority (MDBA) suggested that:

... multiple factors occurring concurrently in the marine waters of South Australia have created favourable conditions for *K. mikimotoi* [*Karenia mikimotoi*] to establish and proliferate, rather than one causal factor.¹
- 2.6 The SA Government identified three potential drivers:
 - a marine heatwave (MHW) which started in September 2024 and saw sea temperatures about 2.5°C warmer than usual, combined with calm conditions, light winds and small swells;
 - the 2022–23 River Murray flood, which washed extra nutrients into the sea; and

¹ Murray-Darling Basin Authority (MDBA), *Submission 36*, p. 2.

- a cold-water upwelling in summer 2023–24 that brought nutrient-rich water to the surface.²
- 2.7 Other potential contributing factors raised in evidence to the inquiry include climate change and nutrient pollution from land and water management practices.³
- 2.8 However, the committee heard that the exact causes of the HAB are unknown due to a paucity of data.⁴ Dr Alec Rolston, Director of the Goyder Institute for Water Research, noted that 'there are some conflicting opinions around the causative or contributory aspects to the current algal bloom' and that 'further investigations ... are required'.⁵
- 2.9 The Australian and New Zealand Marine Harmful Algal Bloom Network (ANZMHAB Network) submitted that 'it is not possible to determine with certainty the factors that led to [the] growth and proliferation [of the HAB]' because the precise species of algae comprising the HAB have yet to be identified.⁶ Professor Shauna Murray, an ANZMHAB Network committee member, stated at a public hearing in late September 2025:

I don't believe we're in a position to make inferences about the role of marine heat waves or nutrients since we don't yet know what species we're dealing with.⁷

² South Australian (SA) Government, *Submission 71*, pp. 1–2; SA Government, [About the Algal Bloom](#), (accessed 12 August 2025).

³ See, for example, Professor Sarah Wheeler, *Submission 15*, pp. 1–2; Faith Coleman, *Submission 33*, [p. 1]; Doctors for the Environment Australia, *Submission 38*, pp. 1 and 4.

⁴ See, for example, Australian Marine Sciences Association (AMSA), *Submission 32*, [pp. 1–2]; Invasive Species Council, *Submission 62*, p. 5; Professor Shauna Murray, *Submission 72*, [p. 3]; Dr Craig Styan, President, South Australian Branch, AMSA, *Proof Committee Hansard*, 9 September 2025, pp. 2–3; Dr Georgina Wood, Vice-President, South Australian Branch, AMSA, *Proof Committee Hansard*, 9 September 2025, p. 3; Dr Mark John Doubell, Research Scientist, Oceanography Subprogram Leader, South Australian Research and Development Institute (SARDI), *Proof Committee Hansard*, 9 September 2025, p. 15; Professor Michael (Mike) Steer, Executive Director, SARDI, *Proof Committee Hansard*, 9 September 2025, p. 17.

⁵ Dr Alec Rolston, Director, Goyder Institute for Water Research, and Director, Coorong, Lower Lakes and Murray Mouth Research Centre (CLLMM Research Centre), *Proof Committee Hansard*, 12 September 2025, p. 12.

⁶ Australian and New Zealand Marine Harmful Algal Bloom Network (ANZMHAB Network), *Submission 73*, [p. 9]. See also, Professor Shauna Murray, *Submission 72*, [p. 3].

⁷ Professor Shauna Murray, Committee Member, ANZMHAB Network, *Proof Committee Hansard*, 24 September 2025, p. 13.

- 2.10 The committee heard that researchers are hoping to resolve the identity of the organisms comprising the HAB by mid-October.⁸
- 2.11 Commonwealth Scientific and Industrial Research Organisation (CSIRO) confirmed that our understanding of the HAB and its causative factors is complicated by the 'multi-species nature of the algal bloom, and the ecology of each contributing harmful species'.⁹
- 2.12 The following sections set out the evidence the committee received on each of the potential contributing factors mentioned above.

Marine heatwave combined with calm ocean conditions

- 2.13 MHWs are 'prolonged extreme oceanic warm water events'.¹⁰ According to the Bureau of Meteorology (BoM), a MHW is commonly defined as 'temperatures being warmer than 90 per cent of the previous SST [sea surface temperature] observations at the same time of year over a 30-year period, for at least five days in a row'.¹¹
- 2.14 There are a range of ocean and atmospheric drivers of MHWs, including 'enhanced solar radiation into the ocean', 'increased horizontal transport (advection) of heat in ocean currents' and 'warm air ... warming the ocean surface'.¹² Large-scale climate drivers, such as El Nino-La Nina, can also 'modulate the frequency, intensity and duration of MHWs'.¹³
- 2.15 MHWs 'can have devastating impacts on marine ecosystems' including the 'direct mortality of marine fish and aquaculture species' and 'substantial declines in kelp forests and seagrass meadows'.¹⁴
- 2.16 The Australian Climate Service (ACS)—a partnership of BoM, CSIRO, the Australian Bureau of Statistics and Geoscience Australia—has projected with

⁸ Professor Murray, ANZMHAB Network, *Proof Committee Hansard*, 24 September 2025, p. 16. See also, Emeritus Professor Hallegraef, University of Tasmania, *Proof Committee Hansard*, 24 September 2025, p. 16.

⁹ Commonwealth Scientific and Industrial Research Organisation (CSIRO), *Submission 31*, p. 5.

¹⁰ CSIRO Ocean and Coastal Research, [Marine Heatwaves](#), (accessed 25 July 2025).

¹¹ Bureau of Meteorology (BoM), [Explainer: what is a marine heatwave?](#), 7 June 2018, (accessed 25 July 2025).

¹² CSIRO Ocean and Coastal Research, [Marine Heatwaves](#) (accessed 25 July 2025); Department of Climate Change, Energy, the Environment and Water (DCCEEW), *Submission 67*, p. 4.

¹³ CSIRO Ocean and Coastal Research, [Marine Heatwaves](#) (accessed 25 July 2025). See also, DCCEEW, *Submission 67*, p. 4.

¹⁴ CSIRO Ocean and Coastal Research, [Marine Heatwaves](#) (accessed 25 July 2025).

high confidence that the frequency and duration of marine heatwaves will increase with global warming (see Figure 2.1).¹⁵

Figure 2.1 Projected change in median ocean warming and acidification metrics

	Current	Future change relative to current			Confidence in direction of change
	GWL +1.2°C	GWL +1.5°C	GWL +2.0°C	GWL +3.0°C	
Sea surface temperature	23.4°C	+0.3°C	0.7°C	+1.3°C	high confidence
Marine heatwave duration (annual average)	18 days	+22 days	+77 days	+161 days	high confidence
Ocean acidity (aragonite saturation state)	3.38	-0.18	-0.40	-0.80	high confidence in increased acidity

'GWL' stands for 'global warming level'.

Source: Australian Climate Service, *Ocean warming and acidification, 2025*, p. 1 (tabled 24 September 2025).

2.17 Since September/October 2024, an MHW has affected SA waters.¹⁶ In March 2025, where the bloom was first detected, 'sea surface temperatures ... were up to 3°C above the mean for that time of the year'.¹⁷ Throughout much of the first half of 2025, SSTs in the Gulf St Vincent were typically 1–3°C warmer than normal (see Figure 2.2 below).¹⁸

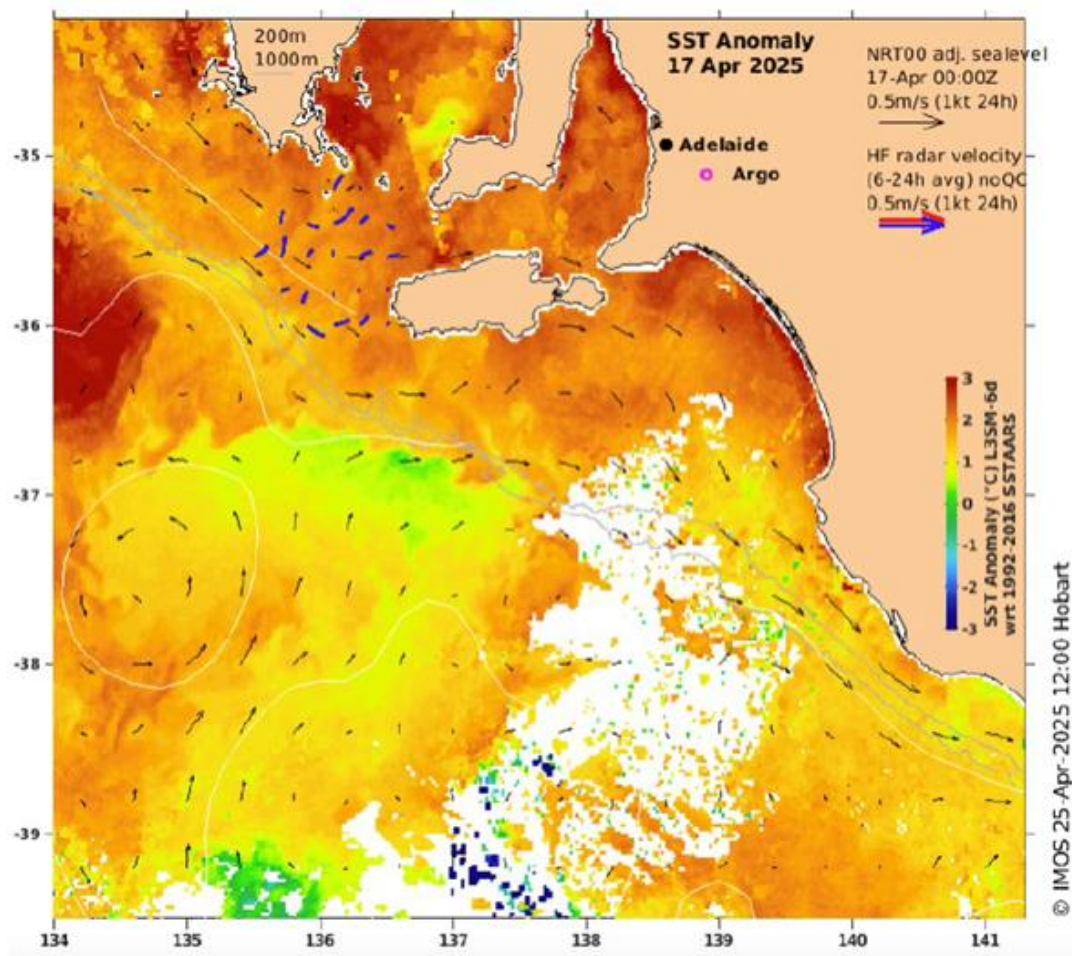
¹⁵ Australian Climate Service, *Ocean warming and acidification, 2025*, p. 1 (tabled 24 September 2025).

¹⁶ CSIRO, *Submission 31*, p. 5; Environment Institute, The University of Adelaide, *Submission 40*, [p. 2]; DCCEEW, *Submission 67*, p. 4; SA Government, *Submission 71*, p. 2.

¹⁷ CSIRO, *Submission 31*, p. 5.

¹⁸ Murray-Darling Basin Authority (MDBA), *Submission 36*, Attachment A, p. 2.

Figure 2.2 Example of SST anomaly in April 2025 in the Gulf St Vincent and the waters around Kangaroo Island



Source: MDBA, Submission 36, Attachment A, p. 3

2.18 Many inquiry participants posited that the MHW may have been a contributing factor to the growth of the HAB.¹⁹ Dr Georgina Wood of the Australian Marine Sciences Association (AMSA) (SA Branch) noted that:

... we cannot definitively attribute the cause of this particular algal bloom, but there is a large body of evidence from algal blooms overseas evidencing the association between warming waters, marine heatwaves and harmful algal blooms.²⁰

2.19 Ms Faith Coleman, an estuarine ecologist, explained that MHWs 'cause ecological distress, releasing the organic nutrients and encouraging bacterial

¹⁹ See, for example, Ms Faith Coleman, *Submission 33*, [p. 1]; Environment Institute, The University of Adelaide, *Submission 40*, [p. 2]; Biodiversity Council, *Submission 66*, pp. 4–5; Dr Dominic McAfee, Marine Ecologist and Future Making Fellow, University of Adelaide, *Proof Committee Hansard*, 9 September 2025, p. 3; Dr Wood, AMSA, *Proof Committee Hansard*, 9 September 2025, p. 5; Professor Steer, SARDI, *Proof Committee Hansard*, 9 September 2025, p. 17. For a contrary viewpoint, see Associate Professor Jochen Kaempf, *Submission 4*, Attachment 2, p. 2.

²⁰ Dr Wood, AMSA, *Proof Committee Hansard*, 9 September 2025, p. 5.

growth', thereby producing the preferred food sources for mixotrophic dinoflagellates (organisms responsible for the formation of HABs) during their growth phase.²¹

- 2.20 Several submitters pointed out that a previous HAB in SA was linked to a MHW in 2013.²² According to the South Australian Environment Protection Authority (SA EPA):

During a heatwave in 2013, SSTs were recorded at up to 5°C above the historical average, promoting blooms of the harmful diatom *Chaetoceros coarctatus*. This event led to widespread marine mortalities, including fish and shellfish, leading to both ecological and economic impacts.²³

- 2.21 The committee heard that the impacts of the MHW were exacerbated by associated weather conditions, 'characterised by unusually calm seas, light winds, and small swells'.²⁴ Evidence was received that 'rain-bearing winter storms ... would normally cool temperatures and stir ocean waters to limit growth of the bloom and break it up'; however, the absence of these storms allowed the bloom to accumulate and intensify.²⁵

- 2.22 Despite many inquiry participants arguing that the MHW was likely a contributing factor to the HAB, other submitters argued that further information about the algae species comprising the HAB is needed before any clear link can be drawn.²⁶ Emeritus Professor Gustaaf Hallegraeff noted that:

Whereas early bloom stages exhibited *Karenia mikimotoi* as the dominant species ... the later bloom stages were dominated by a *Karenia selliformis / cristata* complex species, both known to have caused similar mass mortalities mostly in cold-water upwelling habitats (Japan, Russia, Chile, South Africa) ***Resolving the precise identity of the 4-5 Karenia species in the SA HAB is critical before we can make any statements how it relates to the heat wave event.***²⁷

²¹ Ms Faith Coleman, *Submission 33*, [p. 1].

²² Ms Faith Coleman, *Submission 33*, [p. 1]; MDBA, *Submission 36*, Attachment A, p. 2.

²³ Environment Protection Authority, Government of South Australia (SA EPA), [Harmful algal blooms \(HABs\) and marine heat waves](#), 27 May 2025, (accessed 15 August 2025).

²⁴ Environment Institute, The University of Adelaide, *Submission 40*, [p. 2]. See also, Victorian National Parks Association, *Submission 27*, [p. 1]; CSIRO, *Submission 31*, pp. 4–5; Dr Anne E Jensen, *Submission 103*, pp. 3–4; Ms Georgina Legoe, *Submission 110*, [p. 2].

²⁵ Dr Anne E Jensen, *Submission 103*, pp. 3–4.

²⁶ Fisheries Research and Development Corporation (FRDC), *Submission 49*, p. 4; Emeritus Professor Gustaaf Hallegraeff, *Submission 52*, p. 2; Professor Murray, ANZMHAB Network, *Proof Committee Hansard*, 24 September 2025, pp. 13–14.

²⁷ Emeritus Professor Gustaaf Hallegraeff, *Submission 52*, p. 2. Emphasis in original.

Elevated nutrient levels

2.23 The committee received evidence that excessive nutrients in the affected SA waters may have contributed to the growth of the HAB.

2.24 The MDBA's research shows that elevated nutrient levels (often nitrogen and phosphorous) are one of the causes of marine and coastal environmental algal blooms in Australia.²⁸ Similarly, the Fisheries Research and Development Corporation (FRDC) has conducted research 'highlight[ing] the role of nutrient inputs, land management practices and water quality in shaping bloom risk for other species at the business and catchment scale'.²⁹

2.25 Inquiry participants pointed to several possible sources of nutrient inflows. The Surfrider Foundation Australia noted that recent extreme weather events may have deposited large amounts of nutrients in the water:

The 2022–2023 floods in the Murray–Darling Basin delivered large inflows of sediment and nutrients into coastal systems, overwhelming natural filtration and triggering algal blooms (MDBA, 2023). ... unprecedented summer 2023–24 cold-water upwelling also elevated nutrient levels in coastal waters (Redmap, n.d.).³⁰

2.26 While acknowledging that the floods and cold-water upwelling may have played a role, the Biodiversity Council suggested that there may nevertheless have been 'adequate background levels of nutrients for a bloom to form without those irregular sources'.³¹ Contributing to these background levels are river discharges which can contain fertiliser run off from agriculture and nutrient-rich bushfire ash; stormwater and treated wastewater; and loss of oyster reefs which could filter excess nutrients.³²

2022–23 River Murray Flood

2.27 Significant flooding occurred along the River Murray between November 2022 and February 2023. It was the 'largest flood event since 1956 and third-highest flood ever recorded' in SA.³³

2.28 The CSIRO noted that the River Murray flood:

... discharge[ed] large quantities of dissolved and particulate nutrients into the coastal ocean. The particulate nutrients, due to being heavier than water, sink, and can accumulate in near-shore waters. Subsequent breakdown of

²⁸ MDBA, *Submission 36*, p. 2.

²⁹ FRDC, *Submission 49*, p. 4.

³⁰ Surfrider Foundation Australia, *Submission 26*, [p. 6].

³¹ Biodiversity Council, *Submission 66*, p. 5.

³² Biodiversity Council, *Submission 66*, p. 5.

³³ SA EPA, [South Australia State of the Environment Summary Report 2023](#), p. 59.

organic particulates in the coastal sediments can release bio-available nutrients into the water column.³⁴

2.29 The committee heard that at the time of the flood, the ocean was 'already in a weakened state from a severe reduction of fresh flows' from the River Murray.³⁵ The Lifeblood Alliance stated that there had been 'decades of reduced flushing of floodplains in the Murray-Darling Basin', including 'the elimination of small floods which used to occur every two to three years'. This 'may have resulted in excessive nutrient export during the major floods in 2022–23 that then exacerbated the current marine algal bloom'; however, the Alliance called for further scientific investigations to evaluate the role of river outflows in creating and/or sustaining the current HAB.³⁶

2.30 Along similar lines, numerous inquiry participants questioned whether the 2022–23 River Murray flood was a contributing factor to the current HAB. The MDBA stated that it had commissioned an analysis by Dr Darren Baldwin to understand whether the flood was a contributing factor, but the analysis was 'unable to determine whether there was a causal link'.³⁷ The analysis found that:

The flood plume undoubtedly delivered sediments and nutrients to the area where the bloom first developed (Eastern Fleurieu Peninsula) ... However, there doesn't appear to be a logical pathway to describe how the flood event at the beginning of 2023 is linked to an event that occurred in 2025.³⁸

2.31 This is because *K. mikimotoi* is a mixotrophic organism, meaning that it 'doesn't rely on dissolved nutrients but can access nutrients (and energy) from ingestion of particulate matter'. Additionally, the analysis questioned why a similar *K. mikimotoi* bloom did not form in the summer of either 2023 or 2024. It concluded that the 2022–23 flooding was either inconsequential to the HAB forming in 2025, or, if it did contribute, other factors were required for the HAB to form.³⁹

2.32 Similarly, Associate Professor Luke Mosley from the University of Adelaide submitted that it was 'highly uncertain what role the River Murray flood played in the 2025 algal bloom development', noting the 'long time period between the flood-related nutrient delivery in 2022–2023 and the bloom development'.⁴⁰

2.33 Emeritus Professor Gustaaf Hallegraeff also observed that:

³⁴ CSIRO, *Submission 31*, p. 5.

³⁵ Professor Sarah Wheeler, *Submission 15*, p. 1.

³⁶ Lifeblood Alliance, *Submission 23*, p. 3.

³⁷ MDBA, *Submission 36*, p. 1.

³⁸ MDBA, *Submission 36*, Attachment A, p. 1.

³⁹ MDBA, *Submission 36*, Attachment A, p. 2.

⁴⁰ Associate Professor Luke Mosley, *Submission 8*, [pp. 2–3].

Most *Karenia* species can thrive under very low nutrient conditions (preferring ammonia over nitrate), and many are mixotrophic (feeding on other algae, and possibly even deriving nutrient from dead fish) ... any claims of a relationship with anthropogenic nutrients or River Murray floods therefore is premature.⁴¹

Cold-water upwelling

- 2.34 Cold-water upwellings are an 'oceanographic phenomena where deep, cold, and nutrient-rich waters rise to the surface, typically driven by wind patterns and coastal geography'.⁴² Upwellings can 'fuel the growth of phytoplankton' which provide food for a wide range of marine life.⁴³
- 2.35 The Department of Climate Change, Energy, the Environment and Water (DCCEEW) gave evidence that upwellings can:
- ... contribute to harmful algal blooms when combined with other environmental factors. The sudden availability of nutrients can trigger rapid algal growth, and under certain conditions—such as warm surface temperatures or periods of calm, still water conditions—this can lead to blooms of toxic or nuisance algae.⁴⁴
- 2.36 The southern continental shelf in Australia, which includes the SAgulfs experiencing the algal bloom, hosts the Great Southern Australian Coastal Upwelling System. This seasonal upwelling occurs from November to April and is driven by southwesterly coastal winds. Key upwelling centres are located:
- (a) in the eastern Great Australian Bight around the Eyre Peninsula;
 - (b) along the Bonney Coast; and
 - (c) along Tasmania's west coast.⁴⁵
- 2.37 The CSIRO noted that the 'shelf upwelling of cold nutrient rich water off the Bonney Coast (near Robe) ... was unusually strong in early 2024' and could have been a contributing factor to the 2025 HAB.⁴⁶
- 2.38 Emeritus Professor Gustaaf Hallegraeff surmised that the HAB was 'most likely initiated by an offshore nutrient upwelling event (as we have seen previously in SA in March 1995 and Feb 2014)'.⁴⁷

⁴¹ Emeritus Professor Gustaaf Hallegraeff, *Submission 52*, p. 2.

⁴² DCCEEW, *Submission 67*, p. 5. See also, BOM, [The 'Ekman transport' effect—cold water upwelling on Australian coastlines](#), 15 February 2017, (accessed 23 September 2025).

⁴³ DCCEEW, *Submission 67*, p. 5.

⁴⁴ DCCEEW, *Submission 67*, p. 5.

⁴⁵ Jochen Kaempf, 'The Bonney Coast upwelling: How physical processes shape the feeding behaviour of blue whales', [Continental Shelf Research](#), vol. 279, 2024, pp. 1–2.

⁴⁶ CSIRO, *Submission 31*, p. 5.

⁴⁷ Emeritus Professor Gustaaf Hallegraeff, *Submission 52*, p. 3.

- 2.39 However, others cast doubt on whether an upwelling event had an influence on the HAB.⁴⁸ Dr Anne E Jensen, an environmental consultant, remarked that 'there was a significant time lag' between the 2023–24 annual upwelling off the southern coast from Robe to Portland and the onset of the HAB, 'raising the question of whether this specific food source would have still been available in early 2025'.⁴⁹
- 2.40 Dr Darren Baldwin's analysis that was commissioned by the MDBA stated that 'because upwelling events occur in most years, it is difficult to see how they are specifically linked to the current bloom'.⁵⁰
- 2.41 Further, Associate Professor Jochen Kaempf claimed that 'it is unlikely that river discharges or upwelling events caused [the South Australian HAB] because blooms of *K. mikimotoi* 'can grow under very low nitrogen and phosphorus conditions' and 'neither rely on nitrate-rich waters from coastal upwelling, nor on phosphorus-rich discharges from rivers'.⁵¹

Land and water management factors

- 2.42 Inquiry participants mentioned a range of land and water management practices that may have increased the nutrient levels in SA waters and created favourable conditions for HAB growth. For instance, the Environment Institute at the University of Adelaide observed that:

Historically, Adelaide's coastal waters have been impacted by high-nutrient discharges from a combination of sources, including wastewater treatment plants (WWTPs), industrial outfalls, and diffuse-source stormwater runoff from both urbanised areas and agricultural land. The state's gulfs are naturally susceptible to the accumulation of pollutants due to their shallow nature and relatively poor water exchange with the open ocean, which limits their flushing capacity.⁵²

- 2.43 Urban stormwater and wastewater were identified by some submitters as 'major contributors to pollution' which 'introduce substantial amounts of nitrogen and phosphorus into South Australia's coastal waters'.⁵³ The Clean Ocean Foundation, an environmental charity that monitors wastewater outfalls across

⁴⁸ Associate Professor Jochen Kaempf, *Submission 4*, Attachment 2, p. 4; Murray-Darling Basin Authority, *Submission 36*, Attachment A, p. 2; Dr Anne E Jensen, *Submission 103*, p. 4.

⁴⁹ Dr Anne E Jensen, *Submission 103*, p. 4.

⁵⁰ MDBA, *Submission 36*, Attachment A, p. 2.

⁵¹ Associate Professor Jochen Kaempf, *Submission 4*, Attachment 2, p. 4.

⁵² Environment Institute, The University of Adelaide, *Submission 40*, [p. 2].

⁵³ Surfrider Foundation Australia, *Submission 26*, [p. 5]. See also, Environment Institute, University of Adelaide, *Restoring Waterways, Protecting Gulfs: A catchment-to-coast approach to algal bloom prevention - Concept Note*, additional information received 16 September 2025, [p. 2].

Australia, submitted that 'outfalls release nutrients and micropollutants that can trigger or intensify ecological damage, including algal blooms'.⁵⁴

2.44 Some submitters also remarked that agriculture and aquaculture operations can create nitrogen and phosphorus pollution in waterways, leading to eutrophication (nutrient enrichment)—'a key cause of algal blooms'.⁵⁵ The Environment Institute of Australia, New Zealand (SA Division) claimed that 'tuna and kingfish aquaculture ... [is] the largest source of nutrients in the Spencer Gulf by an order of magnitude'.⁵⁶

2.45 Associate Professor Luke Mosley explained that:

... land use changes and practices associated with agricultural expansion (e.g. increased use of fertilisers) [in the Murray-Darling Basin], can exacerbate nutrient imbalances by increasing sediment and nutrient loads during irregular floods ... more irregular delivery of nutrients from the River Murray ... may potentially promote algal blooms due to larger but less frequent nutrient pulses ...⁵⁷

2.46 Dredging and the dumping of quarry sand along the SA coast were raised by Save West Beach Sand, a community group, as potentially 'play[ing] a role in increasing nutrient levels that fuel algal growth':

- **Dredging** has disturbed nutrient-rich sediments and damaged seabeds and seagrasses, releasing hydrogen sulfide into the marine environment.
- **Contaminated quarry sand**, containing clay, has been dumped onto beaches (approx. 450,000m³ since 2021), and subsequently dispersed by tides and storms, to be lost into drift and the sea.⁵⁸

2.47 Mr Victor Vorel, a former chemical technical officer, suggested that the use of ammonium phosphate/ammonium sulphate fire retardants during bushfires can leach high concentrations of nitrogen and phosphorus into waterways, and is likely to have 'contributed significantly' to the HAB.⁵⁹

⁵⁴ Clean Ocean Foundation, *Submission 16*, [p. 2].

⁵⁵ Doctors for the Environment Australia, *Submission 38*, p. 4. See also, Pristine Group, *Submission 41*, [p. 2]; The Environment Institute of Australia, New Zealand, South Australian Division, *Submission 42*, [p. 4]; Environment Institute, University of Adelaide, *Restoring Waterways, Protecting Gulfs: A catchment-to-coast approach to algal bloom prevention - Concept Note*, additional information received 16 September 2025, [p. 2]; Mr Victor Vorel, *Submission 88*, pp. 1–3.

⁵⁶ The Environment Institute of Australia, New Zealand, South Australian Division, *Submission 42*, [p. 4].

⁵⁷ Associate Professor Luke Mosley, *Submission 8*, [p 2].

⁵⁸ Save West Beach Sand, *Submission 13*, p. 2.

⁵⁹ Mr Victor Vorel, private capacity, *Proof Committee Hansard*, 10 September 2025, pp. 26–27. See also, Mr Victor Vorel, *Submission 88*, pp. 3–4.

- 2.48 A few inquiry participants expressed a view that desalination plants may have contributed to the HAB.⁶⁰ However, the SA Environment Protection Authority (SA EPA) noted that while a 2010 report by the South Australian Research and Development Institute (SARDI) theorised that activities associated with the Adelaide Desalination Plant may promote HABs, 'a comprehensive and on-going monitoring program since that report has confirmed there is no evidence to support a causal link between the desalination plant and HABs'.⁶¹
- 2.49 Doctors for the Environment Australia stated that there had been 'widespread and sometimes bizarre misinformation about algal blooms', and pointed out that:
- ... links to desalination plants show lack of understanding that the algal bloom thrives in low salinity water. Mapping shows no relationship between desalination plants and the bloom.⁶²

Climate change

- 2.50 A range of inquiry participants argued that climate change is the underlying driver of the current HAB.⁶³ The Conservation Council of South Australia (Conservation Council SA) said that the current HAB is a 'direct manifestation of the climate crisis',⁶⁴ as each of the major contributing factors to the HAB 'can be directly or indirectly linked to the influence of the human-driven climate crisis'.⁶⁵
- 2.51 The Conservation Council SA underlined that climate change amplifies extreme hydrological events such as the 2022–23 River Murray flood; leads to stronger ocean currents and altered wind patterns which intensify cold-water upwellings; and increases the frequency and severity of marine heatwaves.⁶⁶

⁶⁰ Name Withheld, *Submission 115*, [p. 1]; Name Withheld, *Submission 116*, [p. 1]; Dr Ib Svane, private capacity, *Proof Committee Hansard*, 10 September 2025, p. 29.

⁶¹ South Australian Environment Protection Authority (SA EPA), [Harmful algal blooms \(HABS\) and marine heat waves](#), 26 August 2025, (accessed 25 September 2025).

⁶² Doctors for the Environment Australia, *Submission 38*, p. 10.

⁶³ See, for example, Surfers for Climate, *Submission 10*, [p. 2]; Professor Sarah Wheeler, *Submission 15*, p. 1; Lifeblood Alliance, *Submission 23*, p. 1; Conservation Council SA, *Submission 24*, [pp. 1–2]; Surf rider Foundation Australia, *Submission 26*, [p. 2]; Ms Faith Coleman, *Submission 33*, [p. 1]; Doctors for the Environment Australia, *Submission 38*, pp. 3–4; Australian Marine Conservation Society (AMCS), *Submission 56*, [p. 1].

⁶⁴ Conservation Council SA, *Submission 24*, [p. 1].

⁶⁵ Conservation Council SA, *Submission 24*, [p. 2].

⁶⁶ Conservation Council SA, *Submission 24*, [p. 2]. See also, Ms Kirsty Bevan, Chief Executive Officer, Conservation Council of South Australia, *Proof Committee Hansard*, 9 September 2025, p. 41.

- 2.52 A joint submission by Professor Caitlin Byrt (Australian National University) and Dr Ben Long (University of Newcastle) elucidated that climate change can boost HAB growth in various ways:

Climate change is causing greater variability in weather which complicates analysis of the ocean currents and river flows that impact nutrient availability and feed algal blooms. Changes in currents and flows can boost the ingredients required to supply algae with their building blocks for life. Drought events and intense rainfall are both associated with climate change, and they both exacerbate bloom conditions because intense rainfall is associated with increases in nutrient runoff and drought events can cause concentration of nutrients in waterways.⁶⁷

- 2.53 Additionally, the Lifeblood Alliance argued that the current HAB is a 'direct consequence of the escalating climate crisis', as the HAB was precipitated by 'a prolonged marine heatwave and altered rainfall patterns' associated with climate change.⁶⁸

- 2.54 Along similar lines, the Surfrider Foundation Australia asserted that HAB events are 'warning signals of systemic stress in our marine and coastal environments', and noted that:

... climate change itself remains the underlying driver of increasingly frequent, severe, and prolonged environmental events and degradation, including floods, marine heatwaves, and widespread habitat loss.⁶⁹

- 2.55 On the other hand, the committee received evidence that the relationship between climate change and HABs is complex, with the FRDC saying that the link 'has not been fully investigated in Australia and will vary depending on the [algal] species responsible'.⁷⁰ The FRDC noted that 'most *Karenia* species are temperate, meaning heat waves and nutrient fluxes may not promote their growth'.⁷¹

- 2.56 Likewise, the ANZMHAB Network submitted that:

While climate change may be increasing the frequency of HABs worldwide, it has not led to uniform increases in HABs in Australia or any other country (Hallegraeff et al. 2010). Many HAB species preferentially grow in cold water or low nutrient conditions.

... Some species of harmful algae may become more abundant ... while others may diminish as conditions no longer suit them.⁷²

⁶⁷ Professor Caitlin Byrt and Dr Ben Long, *Submission 5*, [p. 2].

⁶⁸ Lifeblood Alliance, *Submission 23*, p. 1.

⁶⁹ Surfrider Foundation Australia, *Submission 26*, [p. 2].

⁷⁰ FRDC, *Submission 49*, p. 4.

⁷¹ FRDC, *Submission 49*, p. 4.

⁷² ANZMHAB Network, *Submission 73*, [p. 10].

2.57 Associate Professor Jochen Kaempf indicated that *K. mikimotoi* growth is 'relative[ly] insensitive to temperature variations of 17.5–22.5°C' and therefore questioned whether climate change effects were relevant to the development of the current HAB.⁷³

Management strategies for the current bloom

2.58 There was widespread consensus among inquiry participants that by the time the current HAB was detected, there was no way to effectively reduce its size or prevent it from spreading further.⁷⁴

2.59 The SA Government stated that, as the algal bloom is naturally occurring, there is 'no way to "kill" or treat the bloom directly' and that blooms tend to break down naturally when conditions change. These changes include:

- a decrease in water temperatures;
- an increase in wind and wave action which breaks up the algae; and
- a reduction in the nutrient levels in the water.⁷⁵

2.60 Dr Mark Doubell, a research scientist and Oceanography Subprogram Leader at SARDI, gave evidence that the HAB was already at a vast scale and in the open coastal ocean by the time it was detected, and that he was 'not aware of any effective mitigation measures that would work at that scale and in those environments'.⁷⁶

2.61 Further, Dr Donald Anderson, Senior Scientist at the Woods Hole Oceanographic Institution and Director of the United States (US) National Office for Harmful Algal Blooms, testified that with a bloom of this size, the focus is on managing the issue rather than controlling it.⁷⁷ He observed that the current HAB is 'far too extensive—too big—to consider controlling using some of the methods that we have been using in the US and in Asia',⁷⁸ adding:

The largest area that's been treated anywhere in the world is roughly a hundred square kilometres. Your bloom is many times bigger than that

⁷³ Associate Professor Jochen Kaempf, *Submission 4*, Attachment 1, [p. 25].

⁷⁴ See, for example, Dr Styan, AMSA, *Proof Committee Hansard*, 9 September 2025, p. 6; Dr Doubell, SARDI, *Proof Committee Hansard*, 9 September 2025, p. 15; Dr Donald Anderson, Senior Scientist, Woods Hole Oceanographic Institution, *Proof Committee Hansard*, 24 September 2025, pp. 1–3.

⁷⁵ SA Government, [About the Algal Bloom](#), (accessed 26 September 2025).

⁷⁶ Dr Doubell, SARDI, *Proof Committee Hansard*, 9 September 2025, p. 15.

⁷⁷ Dr Donald Anderson, Senior Scientist, Woods Hole Oceanographic Institution, *Proof Committee Hansard*, 24 September 2025, pp. 2–3.

⁷⁸ Dr Anderson, Woods Hole Oceanographic Institution, *Proof Committee Hansard*, 24 September 2025, pp. 1–2.

already, so, if you tried to do something, you would be doing something that no-one else in the world has ever done.⁷⁹

- 2.62 Government strategies to manage the economic, public health and environmental aspects of the current HAB are discussed elsewhere in this report.

Management strategies for future blooms

- 2.63 The committee heard a range of strategies that could be implemented to better manage future HABs and mitigate their impacts. This section sets out the key management strategies discussed throughout the inquiry.

Monitoring and early detection of harmful algal blooms

- 2.64 A large number of inquiry participants called for investment in long-term monitoring and early detection systems for HABs, expressing concern at the adequacy of existing systems.⁸⁰ Dr Christopher Keneally, a microbial ecologist based at the University of Adelaide, espoused the benefits of long-term monitoring and forecasting of HABs in his submission:

HABs are episodic, but our capability to address them must be continuous. Sustained observations and data infrastructure are prerequisites for credible forecasts and prevention.⁸¹

- 2.65 The FRDC's submission similarly underlined the value of early detection systems:

Studies indicate forecasting HABs can protect human health, the environment, and economies, with early warnings allowing for timely interventions to mitigate negative impacts, such as shellfish/fish harvesting restrictions.⁸²

- 2.66 Numerous inquiry participants supported the development of a national early-warning system for HABs.⁸³ Professor Craig Simmons, the Chief Scientist for SA, told the committee:

⁷⁹ Dr Anderson, Woods Hole Oceanographic Institution, *Proof Committee Hansard*, 24 September 2025, p. 3.

⁸⁰ See, for example, Kangaroo Island Council, *Submission 1*, p. 8; City of Victor Harbor, *Submission 2*, [p. 4]; Professor Caitlin Byrt and Dr Ben Long, *Submission 5*, [p. 2]; Associate Professor Luke Mosley, *Submission 8*, [p. 3]; Kangaroo Island Tourism Alliance, *Submission 12*, [p. 2]; Dr Christopher Keneally, *Submission 29*, [p. 2]; AMSA *Submission 32*, [pp. 1 and 5]; Tourism Industry Council South Australia, *Submission 54*, p. 2; ANZMHAB, *Submission 73*, [p. 11]; Mr Keith Parkes, Mayor, Alexandrina Council, and Chairperson, South Australian Coastal Councils Alliance, *Proof Committee Hansard*, 9 September 2025, p. 34.

⁸¹ Dr Christopher Keneally, *Submission 29*, [p. 4].

⁸² FRDC, *Submission 49*, p. 9.

⁸³ See, for example, Kangaroo Island Council, *Submission 1*, p. 8; Professor Craig Simmons, Chief Scientist, Department of State Development, *Proof Committee Hansard*, 9 September 2025, p. 31.

I think it's abundantly clear that we need to work towards not just a state based but a national early-warning system for harmful algal blooms. We need to be looking at funding and supporting real-time toxin detection. ... the early-warning and predictive capacity is key here. That all needs to link with predictive modelling and ecological monitoring.⁸⁴

2.67 The committee received evidence on various types of monitoring, ranging from large-scale oceanographic monitoring to algal bloom-specific monitoring techniques. CSIRO indicated that HAB forecasting in other countries involves a combination of monitoring tools such as 'field sampling, modelling, and satellite observations'.⁸⁵ The Great Southern Reef Foundation noted that each different type of monitoring is important and should be used in conjunction with others:

Physical environmental monitoring and forecasting (e.g. temperature, waves, currents, nutrients etc.) are critical to providing real time or advanced warnings of marine heatwaves, or conditions that could trigger HABs. Similarly early detection of the onset of HABs and monitoring the taxonomy, extent and intensity of HABs specifically, is critical to diagnosing the nature of the event unfolding and the types of impacts to be expected.⁸⁶

2.68 The committee heard that properly analysing and communicating the results of monitoring is also important. The Conservation Council SA stated that there should be a dedicated scientific body who can interpret the data, analyse risks and issue early warnings.⁸⁷ Divers for Climate called for monitoring data to be available on a 'centralised, publicly accessible online platform that consolidates algal bloom forecasts, monitoring updates, and risk alerts' and in a format that is understandable for non-scientific audiences.⁸⁸

Algal bloom-specific monitoring

2.69 The committee received evidence that oceanographic data alone is not sufficient to monitor HABs, and that more specific testing and equipment are also required.⁸⁹

2.70 The FRDC noted that 'currently, there is a disconnect between broad-scale oceanographic monitoring programs' and 'small-scale, species-specific algal

⁸⁴ Professor Simmons, Department of State Development, *Proof Committee Hansard*, 9 September 2025, p. 31.

⁸⁵ CSIRO, *Submission 31*, pp. 9–10.

⁸⁶ Great Southern Reef Foundation (GSRF), *Submission 46*, [p. 6].

⁸⁷ Conservation Council of South Australia (Conservation Council SA), *Submission 24*, [p. 4]; Ms Bevan, Conservation Council SA, *Proof Committee Hansard*, 9 September 2025, p. 42.

⁸⁸ Divers for Climate, *Submission 48*, pp. 6 and 14.

⁸⁹ See, for example, FRDC, *Submission 49*, pp. 8–9; Emeritus Professor Gustaaf Hallegraef, *Submission 52*, p. 5; Dr Alison Turnbull, *Submission 60*, [pp. 4–5]; Professor Shauna Murray, *Submission 72*, [p. 4]; ANZMHAB Network, *Submission 73*, [pp. 6 and 11].

bloom monitoring'.⁹⁰ It said that, at present, 'IMOS [Integrated Marine Observing System] microbiome metabarcoding is not sensitive enough to discriminate between the different HAB species' which is needed for detailed HAB tracking.⁹¹

- 2.71 Likewise, the ANZMHAB claimed that the IMOS network of buoys and water sampling is not designed for HABs, and that more fine-grained testing capable of identifying individual HAB species is required:

Both the microscopy and molecular genetic methods employed in these programs (e.g. IMOS/BPA Marine Microbiome project; SSU V4 based amplicon sequencing) are not suitable for marine HAB detection because they cannot discriminate different HAB species, and sampling frequencies in most cases are too sparse (e.g. monthly) necessary to detect/track often rapid (<weekly) changes on concentration and distribution of HABs. Oceanographic detection methods that detect pigments such as chlorophyll a or other algal pigments, including methods that detect haptophyte-specific pigments like fucoxanthins, are not able to detect *Karenia* at the species level.⁹²

- 2.72 Various inquiry participants pointed out the limitations of satellite monitoring to track HABs and suggested that monitoring should be expanded to include microscopic, molecular and biotoxin detection methods.⁹³ The ANZMHAB Network called for in-situ water sampling in addition to satellite monitoring:

Water sampling should occur at least fortnightly. Key environmental factors to measure include macronutrients (phosphates, nitrates, silicates), micronutrients (trace metals), water properties (temperature, salinity, dissolved oxygen, pH, carbon levels). Satellite remote sensing can help in some cases, but it has many limitations: it will likely miss low-biomass blooms, it cannot distinguish between harmful and harmless species, it only detects surface blooms (~5 metres deep), and is less reliable in shallow water due to bottom reflectance.⁹⁴

- 2.73 A number of inquiry participants mentioned that the extent of current HAB testing is very limited, and mainly occurs through the South Australian Shellfish

⁹⁰ FRDC, *Submission 49*, p. 9.

⁹¹ FRDC, *Submission 49*, p. 9.

⁹² ANZMHAB Network, *Submission 73*, [p. 7].

⁹³ See, for example, Associate Professor Jochen Kaempf, *Submission 4*, [p. 1]; Dr Alison Turnbull, *Submission 60*, [p. 5]; Biodiversity Council, *Submission 66*, p. 17; Australian and New Zealand Marine Harmful Algal Bloom Network, *Submission 73*, [p. 11]; Mr Chris Warren-Smith, *Submission 97*, [p. 1]; Dr Anderson, Woods Hole Oceanographic Institution, *Proof Committee Hansard*, 24 September 2025, p. 4.

⁹⁴ ANZMHAB Network, *Submission 73*, [p. 8]. See also, Associate Professor Jochen Kaempf, *Submission 4*, [p. 1].

Quality Assurance Program (SASQAP).⁹⁵ Professor Steer from SARDI stated that prior to 18 March 2025, there was no 'routine surveillance of microalgae species outside of our SASQAP ... sites that are linked with our industry'.⁹⁶

- 2.74 Dr Alison Turnbull indicated that a characteristic of marine aquaculture programs which hold the best long-term monitoring data for phytoplankton is that 'data is siloed, often confidential, and is restricted in geographical coverage'.⁹⁷ The FRDC recommended research be undertaken 'to inform broadening/coordinating coastal and marine monitoring including biotoxins beyond fishing and aquaculture programs'.⁹⁸

Reducing nutrient inflows

- 2.75 Inquiry participants put forward suggestions for reducing nutrient inflows to waterways, with the aim of reducing the likelihood of future HABs.
- 2.76 Dr Dominic McAfee, a marine ecologist, called for 'a land-to-sea continuum of restoration and nutrient management ... to not only stop [nutrients] at the source but also manage [them] as [they] move down through the system'.⁹⁹ The Environment Institute at the University of Adelaide proposed an 'integrated catchment-based approach to restoring landscapes and reducing nutrient and sediment run-off', involving strategies such as riparian revegetation and wetland restoration.¹⁰⁰
- 2.77 The Biodiversity Council highlighted the need to 'address major sources of ... human-influenced nutrient and dissolved carbon'.¹⁰¹ Academics from the Australian National University and University of Newcastle pointed out that:

Reducing nutrient pollution will require actions from many sectors and across agricultural, industrial and urban areas: Actions such as improved

⁹⁵ See, for example, FRDC, *Submission 49*, pp. 2 and 11; Dr Alison Turnbull, *Submission 60*, [pp. 4–5]; ANZMHAB Network, *Submission 73*, [p. 6]; Professor Steer, SARDI, *Proof Committee Hansard*, 9 September 2025, p. 14; Ms Faith Coleman, private capacity, *Proof Committee Hansard*, 11 September 2025, p. 23.

⁹⁶ Professor Steer, SARDI, *Proof Committee Hansard*, 9 September 2025, p. 14.

⁹⁷ Dr Alison Turnbull, *Submission 60*, [p. 4].

⁹⁸ FRDC, *Submission 49*, p. 10.

⁹⁹ Dr McAfee, University of Adelaide, *Proof Committee Hansard*, 9 September 2025, p. 3.

¹⁰⁰ *Restoring Waterways, Protecting Gulfs: A catchment-to-coast approach to algal bloom prevention - Concept Note*, provided by Environment Institute, University of Adelaide (received 16 September 2025), [pp. 2 and 4].

¹⁰¹ Biodiversity Council, *Submission 66*, p. 2. See also, Victorian National Parks Association, *Submission 27*, [pp. 2–3].

organic and nutrient-rich waste management and chemical use practices, land use planning changes and community engagement.¹⁰²

2.78 Some argued that agricultural land management could be improved to reduce nutrient runoff, such as by minimising fertiliser inputs.¹⁰³

2.79 Submitters also raised urban water and stormwater management as an area where improvements could be made.¹⁰⁴ The Surfrider Foundation Australia asserted that:

This algal bloom event is an opportunity to identify areas for improved stormwater infrastructure and strengthen public education efforts to reduce pollutants entering the system from urbanisation.

Limiting nutrient flow into sensitive coastal waters may be possible by tightening rules for wastewater treatment facilities, including improved waste management and monitoring procedures (CSIRO, 2020).¹⁰⁵

2.80 Additionally, there were proposals for lifting water quality standards,¹⁰⁶ such as through 'legally binding numeric criteria for water quality' in South Australian legislation,¹⁰⁷ or requiring appropriate nutrient management strategies to be incorporated into Murray-Darling Basin water quality management plans.¹⁰⁸

Climate change mitigation

2.81 A range of inquiry participants spoke about the importance of taking urgent action on climate change to address the possible root cause of the HAB.¹⁰⁹ Many submitters and witnesses called for rapid emissions reduction¹¹⁰ and

¹⁰² Professor Caitlin Byrt and Dr Ben Long, *Submission 5*, [p. 2].

¹⁰³ See, for example, Professor Caitlin Byrt and Dr Ben Long, *Submission 5*, [pp. 2–3]; Professor Sarah Wheeler, *Submission 15*, p. 2; Doctors for the Environment Australia, *Submission 38*, pp. 2 and 5.

¹⁰⁴ See, for example, Brave the Waves, *Submission 3*, [p. 1]; Clean Ocean Foundation, *Submission 16*, [p. 2]; Surfrider Foundation Australia, *Submission 26*, [pp. 6 and 8]; Goyder Institute for Water Research, *Submission 45*, p. 2; Ms Johanna Williams, *Submission 77*, [p. 3].

¹⁰⁵ Surfrider Foundation Australia, *Submission 26*, [p. 6].

¹⁰⁶ The Environment Institute of Australia, New Zealand, South Australian Division, *Submission 42*, [p. 4].

¹⁰⁷ Environment Institute, The University of Adelaide, *Submission 40*, [p. 7].

¹⁰⁸ Associate Professor Luke Mosley, *Submission 8*, [p. 3].

¹⁰⁹ See, for example, Human.Kind Studios and Salty Sips, *Submission 6*, [p. 1]; Lifeblood Alliance, *Submission 23*, p. 1; Surfrider Foundation Australia, *Submission 26*, [p. 2]; Environment Institute, The University of Adelaide, *Submission 40*, [p. 3]; Biodiversity Council, *Submission 66*, p. 3; Australian Academy of Science, *Submission 69*, [p. 1].

¹¹⁰ See, for example, City of Onkaparinga, *Submission 18*, p. 4; LGA South Australia, *Submission 25*, p. 1; Surfrider Foundation Australia, *Submission 26*, [p. 2]; Australian Academy of Science, *Submission 69*, [p. 1]; Dr Wood, AMSA, *Proof Committee Hansard*, 9 September 2025, p. 1.

transitioning away from fossil fuels to renewable energy.¹¹¹ For instance, the Victorian National Parks Association supported the Biodiversity Council's recommendation to 'accelerate Australia's decarbonisation efforts', saying that 'minimising ocean warming is the most important step in preventing harmful algal blooms not just in SA but also along other Australian coastlines'.¹¹²

2.82 The Australian Marine Conservation Society stressed that the current HAB is a stark warning of the consequences of climate change:

Australia must face the reality. Climate change is already reshaping our oceans with devastating consequences. We need urgent, scaled-up action to cut climate pollution.¹¹³

International experiences with *Karenia* species of algae

2.83 Mixed blooms of *Karenia* species have been detected worldwide, with HABs dominated *Karenia mikimotoi* (*K. mikimotoi*) being some of the most documented.¹¹⁴

2.84 *K. mikimotoi*, the species which dominated early stages of the current SA HAB, has also been identified in areas such as:

- the Asia-Pacific (New Zealand,¹¹⁵ Singapore,¹¹⁶ China, Japan, Korea,¹¹⁷ and India);¹¹⁸
- Europe (France, Ireland, United Kingdom, Scotland, Wales, Spain and Portugal);¹¹⁹ and

¹¹¹ See, for example, Chilly Pits, *Submission 7*, [p. 2]; Greenpeace Australia Pacific, *Submission 21*, p. 2; Conservation Council SA, *Submission 24*, [p. 3]; Surfrider Foundation Australia, *Submission 26*, [p. 5]; AMSA, *Submission 32*, [p. 6]; Ms Faith Coleman, *Submission 33*, [p. 2]; Yorke Peninsula Council, *Submission 35*, p. 4; Doctors for the Environment Australia, *Submission 38*, p. 4; Ms Monina Gilbey, *Submission 99*, [p. 4].

¹¹² Victorian National Parks Association, *Submission 27*, [p. 3].

¹¹³ Mrs Alexia Wellbelove, Acting Co-Campaigns Director, Australian Marine Conservation Society (AMCS), *Proof Committee Hansard*, 24 September 2025, p. 61.

¹¹⁴ Professor Shauna Murray, *Submission 72*, [pp. 8–10].

¹¹⁵ Anne Rolton et al, 'Effects of Harmful Algal Blooms on Fish and Shellfish Species: A Case Study of New Zealand in a Changing Environment', *Toxins*, vol. 14, no. 5, 2022.

¹¹⁶ Jerome Wai Kit Kok and Sandric Chee Yew Leong, 'Nutrient conditions and the occurrence of a *Karenia mikimotoi* (Kareniaceae) bloom within East Johor Straits, Singapore', *Regional Studies in Marine Science*, vol. 27, 2019,.

¹¹⁷ Setsuko Sakamoto et al, 'Harmful algal blooms and associated fisheries damage in East Asia: Current status and trends in China, Japan, Korea and Russia', *Harmful Algae*, vol. 102, 2021.

¹¹⁸ Xiaodong Li et al, 'A review of *karenia mikimotoi*: Bloom events, physiology, toxicity and toxic mechanism', *Harmful Algae*, vol. 90, 2019, p. 3.

¹¹⁹ Eileen Bresnan et al, 'Diversity and regional distribution of harmful algal events along the Atlantic margin of Europe', *Harmful Algae*, vol. 102, 2021.

- the Americas (United States¹²⁰ and Chile).¹²¹
- 2.85 Additionally, *Karenia selliformis/cristata*, the species which dominated later stages of the SA HAB, is 'known to have caused similar mass mortalities mostly in cold-water upwelling habitats (Japan, Russia, Chile, [and] South Africa)'.¹²²
- 2.86 Various submitters and witnesses encouraged Australia to learn from, and work with, other countries that have experienced similar HAB events.¹²³
- 2.87 The ANZMHAB Network pointed out that there are international HAB research and management networks that Australia should draw on, including the International Society for the Study of Harmful Algae and the HAB Programme led by the United Nations Educational, Scientific and Cultural Organization's (UNESCO) International Oceanographic Commission (IOC).¹²⁴

East Asia

- 2.88 The committee heard that countries in East Asia—particularly China, Japan and Korea—have long-standing research and management programs for dealing with HABs.¹²⁵ Professor Shauna Murray noted that:

The most impactful of *K. mikimotoi* blooms have occurred in China over the past two decades. In 2012, more than 300 square kilometres of abalone farms were affected, causing about A\$525 million in lost production (Cen et al 2024).¹²⁶

- 2.89 CSIRO's submission outlined the monitoring and forecasting systems that are in place in Japan and China:

Japan operates regionally focused water quality and HAB prediction services, which combine field sampling, modelling, and satellite observations to provide alerts to fishery cooperatives. China has developed an extensive national HAB early-warning system led by the State Oceanic

¹²⁰ Donald M Anderson et al, 'Marine harmful algal blooms (HABs) in the United States: History, current status and future trends', *Harmful Algae*, vol. 102, 2021.

¹²¹ Angela M Baldrich et al, 'An Unprecedented Bloom of Oceanic Dinoflagellates (*Karenia* spp.) Inside a Fjord within a Highly Dynamic Multifrontal Ecosystem in Chilean Patagonia', *Toxins*, vol. 16, no. 2, 2024.

¹²² Emeritus Professor Gustaaf Hallegraef, *Submission 52*, p. 2.

¹²³ See, for example, Dr Kathie Muir, *Submission 108*, p. 3; Professor Michele Burford, Australian Representative, Intergovernmental Panel on Harmful Algal Blooms, United Nations Educational, Scientific and Cultural Organization/Food and Agriculture Organization of the United Nations, *Proof Committee Hansard*, 24 September 2025, p. 17.

¹²⁴ Australian and New Zealand Marine Harmful Algal Bloom Network, *Submission 73*, Appendix 1, [p. 16].

¹²⁵ CSIRO, *Submission 31*, p. 10; Dr Anderson, Woods Hole Oceanographic Institution, *Proof Committee Hansard*, 24 September 2025, p. 4.

¹²⁶ Professor Shauna Murray, *Submission 72*, [pp. 8–9].

Administration, which integrates satellite monitoring, modelling, and field surveillance to provide forecasts and risk assessments for coastal waters.¹²⁷

2.90 Some inquiry participants mentioned that bloom control and mitigation techniques have been used for many years in China and Korea, including the use of modified clay (known as 'clay flocculation') to minimise HAB impacts on aquaculture.¹²⁸ This method involves:

... the spraying of a solution of clay. We call them 'modified clays' now because we sometimes add constituents that make them more effective. ... It's a very natural mineral, but, if used the right way, it can actually control these types of blooms.¹²⁹

2.91 The ANZMHAB Network cautioned that 'selecting the right type of clay' is important as *Karenia* species have been observed to release intracellular toxins when they have come into contact with certain clay flocculants in South Korea, resulting in 'amplif[ied] fish-killing effects'.¹³⁰

2.92 Although clay flocculation is not suitable for controlling large-scale HABs such as the one currently occurring in SA, it was suggested by Dr Donald Anderson that it would nonetheless be valuable to 'conduct some very small-scale studies over a few thousand square metres, perhaps, to test methodologies and develop capabilities'.¹³¹

New Zealand

2.93 The committee received evidence that New Zealand (NZ) 'experiences blooms of many of the same HAB species as Australia',¹³² and has invested in HAB monitoring and testing following a 'pinnacle HAB event in the early 1990s'.¹³³ According to Dr Kirsty Smith from NZ's Cawthron Institute, that HAB event 'closed down ... commercial and wild shellfish harbours for over six months' and was a turning point for NZ to introduce a monitoring program that is still in place today.¹³⁴

¹²⁷ CSIRO, *Submission 31*, p. 10.

¹²⁸ ANZMHAB Network, *Submission 73*, [p. 8]; Dr Anderson, Woods Hole Oceanographic Institution, *Proof Committee Hansard*, 24 September 2025, pp. 3–4.

¹²⁹ Dr Anderson, Woods Hole Oceanographic Institution, *Proof Committee Hansard*, 24 September 2025, p. 3.

¹³⁰ ANZMHAB Network, *Submission 73*, [p. 8].

¹³¹ Dr Anderson, Woods Hole Oceanographic Institution, *Proof Committee Hansard*, 24 September 2025, p. 2.

¹³² ANZMHAB Network, *Submission 73*, [p. 4].

¹³³ Dr Kirsty Smith, Science Manager, Molecular and Algal Ecology, Cawthron Institute, *Proof Committee Hansard*, 24 September 2025, p. 12.

¹³⁴ Dr Smith, Cawthron Institute, *Proof Committee Hansard*, 24 September 2025, p. 12.

2.94 Since then, 'weekly monitoring of phytoplankton and biotoxins in shellfish from commercial and also non-commercial (i.e., recreational shellfish harvesting) sites has occurred', using light microscopy—and in some cases, molecular genetic methods—to analyse water samples.¹³⁵ The ANZMHAB Network explained that:

In New Zealand, monitoring of HABs in commercial bivalve shellfish aquaculture areas is funded by the shellfish industry. At select locations in New Zealand, where recreational collection of wild shellfish for personal consumption is popular, the Ministry for Primary Industries [MPI] is responsible for the collection and analysis of routine water and shellfish samples to inform risk management ... MPI issue warnings to the public about the risks of consuming non-commercial shellfish when toxicity in shellfish (from commercial and non-commercial sites) exceeds pre-determined limits. Monitoring for HABs that cause shellfish toxicity is well established in New Zealand but if there is a bloom of a HAB species associated with a dermal or respiratory illness or other health issue, ad hoc sampling is done by regional councils or public health officials. If there is a risk MPI will work with the National Public Health Service to issue a public health warning.¹³⁶

United States

2.95 Throughout the inquiry, submitters and witnesses frequently pointed to the US nationally coordinated HAB program and work underway in the state of Florida as good examples of strong HAB management.¹³⁷ The SA Government repeatedly remarked that it was learning from the US experience with HABs and communicating with relevant state and federal government officials about their approach to HAB management and mitigation.¹³⁸

2.96 Dr Donald Anderson, Director of the US National Office for Harmful Algal Blooms, gave evidence that the US national program on HABs 'involves research, monitoring and management at the national level that then filters down to many of the regions'.¹³⁹ Federal legislation—the *Harmful Algal Bloom and Hypoxia Research and Control Act* (US) (US HABHRC Act)—was originally

¹³⁵ ANZMHAB Network, *Submission 73*, [p. 5].

¹³⁶ ANZMHAB Network, *Submission 73*, [p. 6].

¹³⁷ See, for example, CSIRO, *Submission 31*, pp. 9–10; ANZMHAB Network, *Submission 73*, [pp. 9 and 23]; Professor Burford, United Nations Educational, Scientific and Cultural Organization/Food and Agriculture Organization of the United Nations, *Proof Committee Hansard*, 24 September 2025, p. 17.

¹³⁸ See, for example, Dr David Cunliffe, Principal Water Quality Adviser, SA Health, *Proof Committee Hansard*, 9 September 2025, pp. 23–25, 29–30.

¹³⁹ Dr Anderson, Woods Hole Oceanographic Institution, *Proof Committee Hansard*, 24 September 2025, p. 2.

enacted in 1998 and is reauthorised approximately every four years, in recognition of the threats posed by HABs.¹⁴⁰ The US HABHRC Act:

... authorizes and coordinates research, monitoring, forecasting, and mitigation efforts among various federal agencies—primarily led by NOAA (National Oceanic and Atmospheric Administration)—in collaboration with states, tribes, academic institutions, and local stakeholders. The Act provides a framework for understanding the causes and impacts of HABs and hypoxia, improving early warning systems, and developing effective control and response strategies.¹⁴¹

2.97 Three national entities have oversight for the national HAB program:

- **The Interagency Working Group on Harmful Algal Blooms and Hypoxia:** a body that coordinates the federal government's work on researching, forecasting, controlling and mitigating HAB and hypoxia events across the US. The Working Group comprises representatives from various 'federal agencies involved in oceanic, freshwater, environmental, public health, and agricultural research or management';
- **The National Harmful Algal Bloom Committee:** a coordinating body for the US HAB community, including 'academic researchers, resource managers, state and federal agencies, and other stakeholders'; and
- **The US National Office for Harmful Algal Blooms:** a body that works to coordinate and unify HAB efforts among federal, state and local institutions and the wider scientific and management communities, and to act as a focal point for HAB-related data.¹⁴²

2.98 The NOAA, the lead coordinating federal agency for HABs, provides forecasts for regions prone to bloom events, using:

... [a combination of] satellite ocean colour data, in situ measurements, and hydrodynamic models to provide near real-time assessments and short-term forecasts of bloom extent, intensity, and movement, supporting early warnings for fisheries and coastal communities.¹⁴³

2.99 At the state level, Florida has developed extensive experience in dealing with *Karenia brevis* blooms, which have occurred almost annually since the late 1940s.¹⁴⁴ Dr Cynthia Heil, Director of the Red Tide Institute in Florida, told the committee that the approach to managing HABs in Florida involves three key aspects:

¹⁴⁰ Dr Donald Anderson, *Submission 150*, p. 2.

¹⁴¹ Dr Donald Anderson, *Submission 150*, p. 2.

¹⁴² Dr Donald Anderson, *Submission 150*, pp. 2–5.

¹⁴³ CSIRO, *Submission 31*, pp. 9–10.

¹⁴⁴ Dr Cynthia Heil, Director, Red Tide Institute, Mote Marine Laboratory and Aquarium, *Proof Committee Hansard*, 24 September 2025, p. 6.

We have, firstly, an emphasis on research to better understand the blooms and the physiology of the organism so we can better predict the blooms when they occur each year. Secondly, by monitoring blooms, and not just taking a water sample and counting the cells but providing the fiscal support and recruiting the expertise so you have them in place to monitor blooms from year to year, we're seeking to provide up-to-date monitoring information to the public and to industry stakeholders so they can make better informed decisions based on accurate information. Thirdly, and this is more recently in the last six or seven years, we've had a focus on developing a toolbox of potential methods, compounds and technologies to mitigate *Karenia* blooms and their impacts so we can better manage them.¹⁴⁵

Next chapter

2.100 The next chapter outlines the response from the SA and Commonwealth governments, including support and recovery arrangements.

¹⁴⁵ Dr Heil, Mote Marine Laboratory and Aquarium, *Proof Committee Hansard*, 24 September 2025, p. 6.

Chapter 3

Role of state and Commonwealth governments

Overview

- 3.1 This chapter outlines the role of state, Commonwealth and local governments in responding to the 2025 South Australian (SA) harmful algal bloom (HAB), and discusses:
- the management responsibilities of different levels of government in respect to Australia's coastal zone and the Coorong;
 - support and recovery measures enacted by each level of government;
 - views on the application of the Commonwealth emergency declaration framework; and
 - overall views on the adequacy of the government response to the HAB.
- 3.2 As outlined in the previous chapter, as there is no viable intervention that could reduce or limit the extent of the current HAB, the state and Commonwealth governments have primarily focused on monitoring the HAB, mitigating its impacts, and providing support for affected communities and industries.
- 3.3 Inquiry participants' views on specific aspects of the government response to the HAB, such as the levels of funding for ecological restoration and industry support, are discussed in later chapters.
- 3.4 A timeline of the HAB, and the governments' responses, is included in Appendix 1.

Jurisdictional responsibilities

Coastal and ocean management

- 3.5 In Australia, responsibility for coastal management is shared between all tiers of government, as explained in the 2021 State of the Environment report:

Coastal governance is complex, multifaceted and impacts a wide range of stakeholders. Management is shared between all levels of government (federal, state and local), with some limited coordination between levels. Management of coastal waters (up to 3 nautical miles to sea) is generally done by state governments. Federal government oversees and provides advice on a subset of major issues, such as biodiversity and invasive species, but devolves most implementation of management and regulation to state and local governments.¹

¹ Graeme Clark, Mibu Fischer and Cass Hunter, [Australia State of the Environment 2021: Coasts](#), 2021, p. 143.

- 3.6 The *Seas and Submerged Lands Act 1973* (Cth) declares the Commonwealth's sovereignty over parts of the sea and submerged lands around Australia's coast.
- 3.7 In 1979, the Commonwealth, state and territory governments reached the Offshore Constitutional Settlement (OCS) which aimed to clarify the division of offshore resources and administrative responsibility between the different levels of government. The package of laws giving effect to the OCS included the *Coastal Waters (State Powers) Act 1980* (Cth)—this granted the states 'legislative jurisdiction...in respect of all activities within coastal waters and in respect of specified activities beyond coastal waters'.²
- 3.8 Consequently, waters from the coastline to 3 nautical miles (nm) (around 5.5 km) are generally the responsibility of the state and territory governments (referred to as 'state coastal waters'). This means the SA Government has primary responsibility for the management of the coastal waters affected by the current HAB, including the commercial fishing and aquaculture industries operating in those areas.³
- 3.9 The Commonwealth Government is responsible for Australia's ocean from 3 nm to the outer boundary of Australia's exclusive economic zone (200 nm, about 370 km) (referred to as 'Commonwealth waters').⁴ This includes the management of a network of Australian Marine Parks located within Commonwealth waters. The Department of Climate Change, Energy, the Environment and Water's (DCCEEW) submission noted that the HAB had spread into a 'very small area ... in the northeast corner of Southern Kangaroo Island Australian Marine Park'.⁵
- 3.10 Local governments also play a role in coastal management, for example through managing coastal infrastructure, coastal land use planning, waste removal and treatment services, and supporting coastal communities.⁶

Management of the Coorong

- 3.11 The Coorong is a coastal lagoon over 100 km long, at the end of the River Murray. It is divided at its narrowest point (Parnka Point) into the Coorong

² Donald R Rothwell, 'The legal framework for ocean and coastal management in Australia', [*Ocean & Coastal Management*](#), vol. 33, no. 1–3, 1996, p. 51.

³ Ms Sarah-Jane McCormack, First Assistant Secretary, Agvet Chemicals, Fisheries, Forestry and Strategy Division, Department of Agriculture, Fisheries and Forestry (DAFF), *Proof Committee Hansard*, 24 September 2025, p. 29.

⁴ Department of Climate Change, Energy, the Environment and Water (DCCEEW), *Submission 67*, p. 6.

⁵ DCCEEW, *Submission 67*, p. 11.

⁶ CoastAdapt, [The role of coastal decision makers in managing climate adaptation](#), 2 May 2017 (accessed 9 October 2025); House Standing Committee on Climate Change, Water, Environment and the Arts, [Managing our coastal zone in a changing climate: the time to act is now](#), October 2009, pp. 246–247.

North Lagoon and the Coorong South Lagoon.⁷ The Coorong forms part of the Coorong, Lake Alexandrina and Albert Wetland Ramsar site—a Wetland of International Importance (Ramsar Wetland) under the Convention on Wetlands.⁸ It supports multiple threatened species, threatened migratory species and threatened ecological communities that are protected under Commonwealth environmental legislation.⁹

- 3.12 The SA Government and Commonwealth Government work in partnership to protect the Coorong. While the SA Government is responsible for managing the Ramsar Wetland, the Commonwealth Environmental Water Holder (CEWH) manages Commonwealth environmental water holdings to deliver freshwater flows to the Coorong.¹⁰ In May 2025, the SA Government notified the CEWH of the presence of the HAB in the Coorong North Lagoon.¹¹
- 3.13 The SA Government and Commonwealth Government jointly fund the Healthy Coorong, Healthy Basin program which aims to improve the ecology, knowledge and management of the Coorong.¹² The Commonwealth also funds a shorebird and wetland habitat restoration project across the Coorong, Lower Lakes, Murray Mouth and South-East region that is delivered by the SA Government.¹³

South Australian Government response

- 3.14 The SA Government initially reported the detection of the HAB in March 2025.¹⁴ The committee received evidence that in the first few months that followed, the SA Government expected the HAB to naturally disperse with the advent of winter storms. Professor Michael (Mike) Steer, Executive Director of South Australian Research and Development Institute (SARDI), stated that:

⁷ South Australian (SA) Department for Environment and Water, [Where is the Coorong?](#) (accessed 2 October 2025).

⁸ DCCEEW, *Submission 67*, p. 10.

⁹ DCCEEW, *Submission 67*, p. 10; Coorong, Lower Lakes and Murray Mouth (CLLMM) Research Centre, [Iconic species of the Coorong, Lower Lakes and Murray Mouth](#), (accessed 2 October 2025).

¹⁰ DCCEEW, *Submission 67*, pp. 10–11.

¹¹ DCCEEW, *Submission 67*, p. 11. See also, SA Department for Environment and Water, [Test results confirm Coorong algal bloom](#), 6 June 2025, (accessed 2 October 2025).

¹² DCCEEW, *Submission 67*, p. 10; SA Department for Environment and Water, [Healthy Coorong. Healthy Basin: About the program](#), (accessed 2 October 2025).

¹³ DCCEEW, *Submission 67*, p. 10.

¹⁴ See Appendix 1 for a timeline of the HAB.

There was a degree of expectation that, as soon as the weather system changed into a winter pattern, it would contribute to dispersing or diminishing the algal bloom, and that wasn't the case.¹⁵

- 3.15 The SA Government's first formal request for Commonwealth funding and support was made in July 2025.
- 3.16 The SA Government has taken actions in areas such as science and research, public education and industry support, and set up new governance arrangements to respond to the HAB. Multiple state agencies are involved in the response, including:
- Department for Environment and Water (DEW);
 - Environment Protection Authority (SA EPA);
 - South Australian Research and Development Institute (SARDI);
 - Department of Primary Industries and Regions South Australia (PIRSA);
 - SA Health;
 - Department of State Development (DSD);
 - South Australian Tourism Commission (SATC); and
 - Department of Premier and Cabinet (DPC).¹⁶
- 3.17 As the HAB has progressed, the SA Government's governance structures have gradually evolved, with increasing levels of coordination between the agencies working on the HAB response.¹⁷ For example:
- In late July 2025, the SA Government announced that a cross-agency Harmful Algal Bloom Taskforce would meet every Thursday.¹⁸ A reference group comprising stakeholders from a range of sectors was established to report to this taskforce.¹⁹

¹⁵ Professor Michael (Mike) Steer, Executive Director, South Australian Research and Development Institute (SARDI), *Proof Committee Hansard*, 9 September 2025, p. 22.

¹⁶ For a breakdown of the agencies responsible for HAB management and response, see Australian and New Zealand Marine Harmful Algal Bloom Network, *Submission 73*, Appendix 2, Table 1, [pp. 18–20].

¹⁷ Mr Chris Beattie, Coordinator, Algal Bloom Response Coordination Unit, South Australian Department of Premier and Cabinet (DPC), *Proof Committee Hansard*, 9 September 2025, p. 13.

¹⁸ The Hon Peter Malinauskas MP, Premier of South Australia, '[State Government reveals next stage of algal bloom support package](#)', *Media Release*, 22 July 2025.

¹⁹ The reference group included representatives from the seafood and tourism industries, environmental groups, First Nations groups, and recreational fishers. See, South Australian Department for Environment and Water (DEW), '[Fisheries vessel inspects harmful algal bloom](#)', 22 July 2025 (accessed 19 August 2025).

- In late August 2025, the Algal Bloom Cabinet Taskforce was established as a sub-committee of cabinet, and an Algal Bloom Response Coordination Unit was established within DPC to coordinate whole-of-government efforts.²⁰

3.18 This section provides an overview of the different aspects of the SA Government's response to the HAB.

Science and research

Initial monitoring

3.19 Professor Mike Steer from SARDI told the committee that water samples have been regularly taken since the HAB was first detected on 18 March 2025; however, prior to that, 'there wasn't any dedicated sampling for a particular *Karenia* species' apart from the routine testing done as part of the South Australian Shellfish Quality Assurance Program (SASQAP).

3.20 Professor Steer mentioned that the SARDI oceanographic team has been actively monitoring satellite imagery that can detect chlorophyll levels in the water (an indicator of algae concentrations) and providing weekly situation updates to industry since 11 April 2025.²¹

Science forum and advisory panel

3.21 The SA Government convened a science forum on 3 June 2025 which 'brought together leading aquatic scientists from South Australia, national research institutions and universities, government agencies and other community stakeholders'.²² According to Professor Steer, this forum helped to inform the Government on 'what the key research needs and gaps are and ... helped shape the first tranche of ... scientific investment' that was announced in July.²³

3.22 The committee also heard that a science advisory panel chaired by the Chief Scientist of SA had been set up and by late September was meeting fortnightly to discuss the scientific evidence, and that information provided by the panel was helping to shape the SA Government's future research agenda.²⁴ Panel members include representatives from DCCEEW, along with 'SA government

²⁰ South Australian Government, *Submission 71*, p. 11; Mr Beattie, DPC, *Proof Committee Hansard*, 9 September 2025, pp. 12–13.

²¹ Professor Michael (Mike) Steer, Executive Director, South Australian Research and Development Institute (SARDI), *Proof Committee Hansard*, 9 September 2025, pp. 13–14.

²² Department of Primary Industries and Regions South Australia (PIRSA), [Collaboration to tackle harmful algal bloom](#), 6 June 2025 (accessed 9 October 2025).

²³ Professor Steer, SARDI, *Proof Committee Hansard*, 9 September 2025, p. 21.

²⁴ Professor Steer, SARDI, *Proof Committee Hansard*, 24 September 2025, p. 19.

agencies, industry, science and academia, consultancy groups, and international specialists'.²⁵

July support package

3.23 The HAB support package that was announced on 22 July 2025 as being jointly funded by the SA and Commonwealth governments (July support package) included '\$13.5 million for scientific monitoring, detection, and assessment programs'.²⁶ The key measures in the support package relating to science and research were as follows:

- **Coastal Monitoring Network**—expanded early detection and monitoring of HAB species through real time sensors (buoys), satellite imagery and oceanographic modelling, with rapid detection of HABs and early warning systems for industry. (\$8.5 million)
- **New national testing laboratory in SA** for HAB and brevetoxin/biotoxin testing, to increase the speed at which samples can be analysed. (\$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.²⁷

Expanded monitoring

3.24 The SA Government's submission, provided in late August 2025, stated that:

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.²⁸

²⁵ DCCEEW, *Submission 67*, p. 10.

²⁶ SA Government, answers to questions on notice, 25 September 2025, p. 3.

²⁷ The Hon Peter Malinauskas MP, Premier of South Australia, '[State Government reveals next stage of algal bloom support package](#)', *Media Release*, 22 July 2025; South Australian Government, *Submission 71*, pp. 5–6.

²⁸ South Australian Government, *Submission 71*, p. 8.

3.25 As of 9 September 2025, there were 'at least 81 regional sites across southern Australia ... [being] routinely sampled, some of them on a weekly basis'.²⁹ By late September, Mr Clinton Wilkinson, the SASQAP Program Leader, gave evidence that phytoplankton testing was occurring on a weekly basis throughout SA.³⁰ Water testing results are made publicly available through an online open data dashboard.³¹

New national testing laboratory in South Australia

3.26 The SA Government explained the rationale for establishing a new national testing laboratory in SA for brevetoxins:

Currently, samples are sent to New Zealand for analysis, resulting in delays of up to a week. ... This [new] facility will support more efficient and convenient brevetoxin testing to support our seafood sector to respond to the current algal bloom.³²

3.27 The Chief Executive Officer of Agilex Biolabs (Agilex), the company contracted by PIRSA to provide the testing services, confirmed that having the laboratory based in SA means that 'turnaround for results ... will be two to three days, as opposed to weeks, which will give data to the scientists in much more real time'.³³

3.28 In late September, the SA Government advised that the testing of equipment and trial tests for certain species would commence at the Agilex laboratory in the coming weeks, with a view to seeking accreditation from the National Association of Testing Authority (NATA).³⁴ Agilex stated that it expected NATA to complete its accreditations by the end of October, from which point onwards Agilex would take over responsibility for brevetoxin testing from the New Zealand facility.³⁵

Engagement with international experts

3.29 Professor Steer remarked that throughout the HAB response the SA Government had been working with scientists and government officials from overseas to learn from their experiences with HABs, including to understand

²⁹ Professor Steer, SARDI, *Proof Committee Hansard*, 9 September 2025, p. 14.

³⁰ Mr Clinton Wilkinson, Program Leader, PIRSA, *Proof Committee Hansard*, 24 September 2025, p. 22.

³¹ SA Government, [Algal Bloom water testing open data dashboard](#) (accessed 9 October 2025); South Australian Government, *Submission 71*, p. 2; SA Government, answers to questions on notice, 30 September 2025, p. 1.

³² SA Government, answers to questions on notice, 25 September 2025, p. 5.

³³ Mr Stephen McIntyre, Chief Executive Officer, Agilex Biolabs, *Proof Committee Hansard*, 24 September 2025, p. 8.

³⁴ SA Government, answers to questions on notice, 25 September 2025, pp. 4–5.

³⁵ Mr McIntyre, Agilex Biolabs, *Proof Committee Hansard*, 24 September 2025, pp. 6, 8 and 11.

'whether there is an ability to predict the longevity or the nature of this algal bloom'.³⁶ For instance, in August 2025, PIRSA invited Dr Donald Anderson, Director of the US National Office for Harmful Algal Blooms, to visit SA and provide guidance on managing the HAB.³⁷

Environmental protection and restoration

Bubble curtain to protect giant cuttlefish

3.30 In late August 2025, the SA and Commonwealth governments announced a joint \$700,000 investment to install an air bubble curtain (200 m x 100 m in size) on the Cuttlefish Coast in the Upper Spencer Gulf in an effort to protect approximately 50 000–80 000 cuttlefish eggs and hatchlings from the HAB, if it is detected nearby.³⁸ According to the SA Government:

Air bubble curtain technology creates an underwater barrier that can mitigate the effects of algal blooms by disrupting the movement of algae, preventing it passing through the bubble curtain.

Bubbles are created using land-based generators and compressors to pump air through underwater feeder lines and tubing to create a buffer zone two metres to seven metres deep along the rocky reef.

Air bubble curtains have never before been used in South Australia, and the installation will be important trial of this technology.³⁹

3.31 At a public hearing in late September 2025, the SA Government confirmed that the bubble curtain had been installed.⁴⁰ The SA Government explained that this technology will work as a preventive barrier, and is not effective in areas already affected by the bloom. Marine parks and harbour restrictions will apply around the curtain.⁴¹

³⁶ Professor Steer, SARDI, *Proof Committee Hansard*, 9 September 2025, p. 15.

³⁷ Dr Donald Anderson, Senior Scientist, Woods Hole Oceanographic Institution, *Proof Committee Hansard*, 24 September 2025, p. 1. See also, Dr Cunliffe, SA Health, *Proof Committee Hansard*, 9 September 2025, p. 24.

³⁸ SA Government, [Innovative investment aims to protect giant cuttlefish](#), 28 August 2025 (accessed 9 October 2025). Viki Ntafillis, 'Bubble curtain' to protect giant Australian cuttlefish from South Australia's toxic algal bloom', *ABC News*, 28 August 2025 (accessed 14 October 2025). The Australian Giant Cuttlefish is discussed in Chapter 4.

³⁹ SA Government, [Innovative investment aims to protect giant cuttlefish](#), 28 August 2025 (accessed 10 October 2025).

⁴⁰ Mr Beattie, DPC, *Proof Committee Hansard*, 24 September 2025, p. 18.

⁴¹ SA Government, [Innovative investment aims to protect giant cuttlefish](#), 28 August 2025 (accessed 10 October 2025).

Protections for Australian sea lions

3.32 In early October 2025, there was an announcement that the SA and Commonwealth governments would jointly fund a \$1.4 million program to increase the resilience of the endangered Australian sea lion during the HAB, including inoculating sea lion pups with ivermectin to improve their survival against hookworms; controlling feral cats which can spread diseases; and installing pup shelters at high-risk sites.⁴²

Public education and awareness

3.33 The July support package included the following key measures relating to public communications:

- **Harmful Algal Bloom Taskforce** to meet every Thursday, followed by a media conference to inform the public of 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 coastal regions and marine based tourism businesses and promoting the seafood industry and benefits of recreational fishing. (\$2m)⁴³

Community forums

3.34 Since early August, the SA Government has held community forums throughout regional and metropolitan areas to 'provide updates on the response and recovery efforts, including the latest science, public health advice, and support measures for affected communities and industries'.⁴⁴ At these forums, community members were able to express their viewpoints and pose questions to government officials. They were also invited to provide feedback to the SA Government through surveys 'to gather deeper insights into the issues that mattered most to participants, helping to guide future engagement and planning efforts'.⁴⁵

⁴² SA Government, [Plan to boost Australian sea lion resilience](#), 3 October 2025 (accessed 9 October 2025).

⁴³ The Hon Peter Malinauskas MP, Premier of South Australia, '[State Government reveals next stage of algal bloom support package](#)', *Media Release*, 22 July 2025; South Australian Government, *Submission 71*, p. 6.

⁴⁴ Community forum locations included: Brighton, Semaphore, Victor Harbor, Minlaton, Port Lincoln, Hallett Cove, Henley Beach, and Kangaroo Island. See, SA Government, [South Australian algal bloom community forums](#) (accessed 9 October 2025).

⁴⁵ South Australian Government, *Submission 71*, p. 11. See also, The Hon Peter Malinauskas MP, Premier of South Australia, 'Algal bloom community forums start tonight', [Media Release](#), 5 August 2025.

Centralised website and hotline

- 3.35 Additionally, as part of the support package, the SA Government set up a website to act as the 'single credible source of public information' on the HAB, including details on affected areas, health advice, and upcoming community forums.⁴⁶ The SA Government stated that the website was being frequently updated and improved.⁴⁷
- 3.36 In early October 2025, the SA Government launched a free algal bloom phone hotline to provide a 'single contact point' for members of the public to seek general information on the HAB, industry support measures and health advice, and to report sick or dead wildlife.⁴⁸

Public health advice

- 3.37 Health advice issued by the SA Government included warnings that exposure to the algae particles may cause short-term respiratory, skin and eye irritations.⁴⁹ People were advised to 'avoid swimming at beaches where there is discoloured water and foam, and to avoid walking on beaches if experiencing symptoms'.⁵⁰ There were also warnings against eating dead or dying fish that had washed up on the beach, though live-caught fish are recommended as being safe for consumption.⁵¹
- 3.38 Dr David Cunliffe, Principal Water Quality Adviser at SA Health, testified that SA Health has been mindful of being 'responsible' with its public health messaging,⁵² and has consulted with US government officials with relevant experience in HAB management about the health advice it provided:

There are a lot of reports, information and studies out of Florida on the potential public health impacts arising from a *Karenia* bloom, and that's underpinned our advice. In addition, we had Don Anderson visit the state two or three weeks ago, and our state departments have spoken to officials

⁴⁶ SA Government, [Algal Bloom Update](#) (accessed 9 October 2025); SA Government, *Submission 71*, p. 8.

⁴⁷ Ms Sandy Carruthers, Executive Director, Biodiversity and Nature Economy, DEW, *Proof Committee Hansard*, 9 September 2025, p. 17; Professor Steer, SARDI, *Proof Committee Hansard*, 9 September 2025, p. 19.

⁴⁸ SA Government, [Algal bloom hotline keeps community informed](#), 2 October 2025 (accessed 9 October 2025).

⁴⁹ Environment Protection Agency, Government of South Australia (SA EPA), [Microalgae bloom on the Fleurieu Peninsula identified](#), 25 March 2025, (accessed 18 August 2025); SA EPA, [SA Karenia mikimotoi algal bloom update](#), 10 April 2025, (accessed 18 August 2025).

⁵⁰ SA EPA, [SA Karenia mikimotoi algal bloom update](#), 10 April 2025, (accessed 18 August 2025).

⁵¹ SA EPA, [SA Karenia mikimotoi algal bloom update](#), 10 April 2025, (accessed 18 August 2025).

⁵² Dr Cunliffe, SA Health, *Proof Committee Hansard*, 9 September 2025, p. 23.

from Florida as well. For example, our advice on seafood is just about exactly the same as the advice that's issued in Florida.⁵³

3.39 Dr Cunliffe noted that the SA Government's health advice evolved throughout the HAB to address new queries as they were raised:

... very early in the piece, we were asked about seafood safety and made it clear that we considered that live fish, providing they were caught and then properly cleaned, were safe to eat. We've expanded that advice as the bloom has developed. Our current advice deals with lobster, prawns, squid and all the commercially available seafood to, again, indicate that, providing it's properly cleaned, it's safe to eat the flesh.⁵⁴

3.40 At the public hearing in early September, the committee heard that SA Health was working with Surf Life Saving to explore ways of disseminating more nuanced advice to the public on the current conditions of SA beaches via an app system. This might cover information on the discolouration of water, presence of foams, marine-life deaths, and reported symptoms.⁵⁵ A representative from DPC told the committee that the Government was looking to streamline some of its existing processes to make the provision of information to the community and businesses 'as seamless as possible'.⁵⁶

3.41 At the public hearing in late September, the SA Government noted that 800 information signs had been installed across 24 SA coastal council areas and acknowledged that further work would be needed to amend and update the signs with new information in the coming months.⁵⁷

Community support and clean up

3.42 The July 2025 support package included the following key measures relating to 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)⁵⁸

⁵³ Dr Cunliffe, SA Health, *Proof Committee Hansard*, 9 September 2025, p. 24.

⁵⁴ Dr Cunliffe, SA Health, *Proof Committee Hansard*, 9 September 2025, p. 23.

⁵⁵ Ms Carruthers, DEW, *Proof Committee Hansard*, 9 September 2025, p. 19; Dr Cunliffe, SA Health, *Proof Committee Hansard*, 9 September 2025, p. 24.

⁵⁶ Mr Beattie, DPC, *Proof Committee Hansard*, 9 September 2025, p. 19.

⁵⁷ Mr Beattie, DPC, *Proof Committee Hansard*, 24 September 2025, pp. 18 and 21.

⁵⁸ The Hon Peter Malinauskas MP, Premier of South Australia, '[State Government reveals next stage of algal bloom support package](#)', *Media Release*, 22 July 2025; South Australian Government, *Submission 71*, p. 6.

3.43 The SA Government's submission stated that beach clean-up would be jointly carried out by state and local governments and community groups.⁵⁹

Industry support

Business grants

3.44 The July support package included Small Business Support Grants of up to \$10 000 for eligible small businesses who had experienced a 30 per cent reduction in turnover as result of the HAB.⁶⁰ Eligible businesses included marine or coastal tourism operators; charter boat and fishing charter operators; commercial fisheries and aquaculture licence holders; seafood processors; fishing supply chain manufacturers/retailers; coastal accommodation; and beachfront kiosks/cafés.⁶¹

3.45 Later the same month, the SA Government announced that Fisheries and Aquaculture Assistance Grants of up to \$100,000 would also be available for 'fisheries and aquaculture license holders who have either been forced to close due to the presence of brevetoxins, or who have experienced a sustained reduction in catch'.⁶² The grants would include:

Immediate payment of \$25,000 for fisheries or aquaculture licence holders forced to close by authorities for more than one month or a 50 per cent reduction in catch/harvest for a three-month period since April.

An additional payment of up to \$75,000 where a 50 per cent reduction in turnover can also be demonstrated. Payments will be tiered based on turnover.⁶³

3.46 In mid-August, the SA Government announced several changes to the grant criteria following industry consultation:

- **Small Business Support Grant:**
 - the closing date for applications was extended from mid-September to the end of November 2025;

⁵⁹ SA Government, *Submission 71*, p. 6.

⁶⁰ The Hon Peter Malinauskas MP, Premier of South Australia, '[State Government reveals next stage of algal bloom support package](#)', *Media Release*, 22 July 2025; SA Government, '[Financial relief flows to algae impacted businesses](#)', 11 August 2025 (accessed 9 October 2025).

⁶¹ SA Government, '[Financial relief flows to algae impacted businesses](#)', 11 August 2025 (accessed 9 October 2025).

⁶² SA Government, '[Financial relief flows to algae impacted businesses](#)', 11 August 2025 (accessed 9 October 2025).

⁶³ The Hon Peter Malinauskas MP, Premier of South Australia, 'Up to \$100,000 for hardest hit by algal bloom', *Media Release*, 28 July 2025.

- the requirement to show a 30 per cent reduction in business turnover was extended to any consecutive three-month period from 1 April to 31 October 2025; and
 - eligibility was extended to commercial fishery or aquaculture license holders that had had their license fee waived by PIRSA.
- **Fisheries and Aquaculture Assistance Grant:**
 - the closing date for applications was extended from mid-September to the end of November 2025;
 - the requirement to show a certain decline in catch or harvest and decline in business turnover was extended to any consecutive three-month period from 1 April to 31 October 2025;
 - eligibility for an immediate payment of \$25,000 was extended to commercial fishery or aquaculture license holders who could demonstrate a minimum business turnover of \$75,000 in the 2023–24/2024–25 financial year and had had their license fees waived by PIRSA;
 - the minimum amount of business turnover required was reduced from \$100,000 to \$75,000;
 - entitlement to licence fee waiver was extended; and
 - the requirements for receiving different tiers of payment of up to \$75,000 were amended.⁶⁴

3.47 As of 25 August 2025, there had been 49 applications for Small Business Support Grants (with a further 81 applications in development) and 19 applications for Fisheries and Aquaculture Assistance Grants (with a further 23 applications in development). The SA Government expected a significant rise in the number of grant applications over the coming months.⁶⁵

Fee relief

3.48 The SA Government approved up to \$1 million in 'targeted fee relief for commercial fishers, aquaculture operators, and charter boat fishery licence holders'. This included waiving food safety program fees, fishing and aquaculture licensing fees and lease fees for the June and September quarters, in recognition of the ongoing disruption to business operations.⁶⁶ The SA

⁶⁴ SA Government, [More businesses eligible for algal bloom financial support](#), 18 August 2025 (accessed 9 October 2025).

⁶⁵ SA Government, *Submission 71*, p. 7.

⁶⁶ Eligible fees for relief consideration included: PIRSA Fisheries and Aquaculture annual licence fees; Biosecurity SA Food Safety Scheme and audit fees; and Aquaculture lease and licence fees. See, South Australian Department of Primary Industries and Regions, [Fee relief for commercial fishers impacted by algal bloom](#), 8 July 2025 (accessed 20 August 2025); The Hon Peter Malinauskas MP, Premier of South Australia, 'Up to \$100,000 for hardest hit by algal bloom', [Media Release](#), 28 July 2025; South Australian Government, *Submission 71*, p. 7.

Government submitted that it would continue to review fees on a quarterly basis and extend fee relief if necessary.⁶⁷

Financial counselling, mental health support and workforce advice

3.49 In recognition of the economic uncertainty created by the HAB, the SA Government announced, as part of the July support package, that it would provide financial counselling, mental health support and workforce advice to small businesses affected by the HAB. These supports were intended to help affected businesses formulate recovery and continuity strategies, assess short- and long-term impacts, and support financial and mental wellbeing.⁶⁸

3.50 In August, the SA Government announced that a further \$160,000 would be invested in the *Stay AFloat* program to support the mental health of people within the seafood industry.⁶⁹

'Coast is Calling' campaign

3.51 The SATC launched the *Coast is Calling* campaign, comprising a travel voucher program and marketing campaign, to encourage visitation to coastal communities.⁷⁰

3.52 The first phase of the travel voucher program involved inviting eligible tourism businesses across SA's coast to submit expressions of interest and then onboarding successful participants.⁷¹ According to the SATC, 'over 200 coastal based tourism operators' are part of the voucher program.⁷² SA residents aged 18 and over could enter the ballot for a voucher valued up to \$500, and voucher winners could book for travel between late September to the end of November 2025.⁷³ A total of 20,000 vouchers for accommodation and experiences were

⁶⁷ SA Government, *Submission 71*, p. 7.

⁶⁸ The Hon Peter Malinauskas MP, Premier of South Australia, '[State Government reveals next stage of algal bloom support package](#)', *Media Release*, 22 July 2025; South Australian Government, *Submission 71*, pp. 6 and 8.

⁶⁹ SA Government, [More businesses eligible for algal bloom financial support](#), 18 August 2025 (accessed 9 October 2025).

⁷⁰ Ms Emma Terry, Chief Executive Officer, South Australian Tourism Commission, *Proof Committee Hansard*, 9 September 2025, p. 47.

⁷¹ South Australian Tourism Commission, [Coast is Calling Vouchers](#) (accessed 9 October 2025); Ms Terry, South Australian Tourism Commission, *Proof Committee Hansard*, 9 September 2025, p. 47.

⁷² Ms Terry, South Australian Tourism Commission, *Proof Committee Hansard*, 9 September 2025, p. 47.

⁷³ South Australian Tourism Commission, [Coast is Calling Vouchers](#) (accessed 9 October 2025); Ms Terry, South Australian Tourism Commission, *Proof Committee Hansard*, 9 September 2025, p. 47.

released. As of 27 September 2025, nearly 3,000 bookings had been made to coastal tourism businesses through the voucher program.⁷⁴

'Buy SA Seafood' campaign

3.53 In early September 2025, the SA Government launched the \$750,000 *Buy SA Seafood*. advertising campaign to promote the consumption of SA seafood. The campaign featured prominent South Australians, including well-known chefs and media personalities, showcasing SA seafood.⁷⁵ Professor Mike Steer from SARDI noted that the campaign was part of a 'concerted effort ... around dealing with the misinformation about the extent of the algal bloom'.⁷⁶

Promotion of recreational fishing

3.54 In early August 2025, the SA Government announced a range of measures to support fishing activity during the HAB and to support the recovery of fish stocks following the event. These measures included the installation of a recreational fishing reef in an impacted Gulf region; support for RecFish SA to deliver fishing events and competitions in regional areas; and funding for RecFish SA to support community fishing clinics and programs and engage with recreational fishing clubs across the state.⁷⁷

Planning for future potential scenarios

3.55 The SA Government told the committee at a September public hearing that there was uncertainty around the longevity of the HAB, and that there were broadly three potential scenarios. The HAB might:

- 'disappear quickly as the ecosystem balances itself';
- 'pulsate' in size as it alternates between dissipating and resurging; or
- continue throughout summer and spring with the warmer temperatures.⁷⁸

3.56 The SA Government said it was developing a Summer Response Plan to account for the risk of the HAB persisting into the summer months and anticipated that the Plan would be publicly launched in October.⁷⁹ In late September, the SA

⁷⁴ SA Government, [Coastal tourism businesses welcome thousands of voucher bookings](#), 27 September 2025 (accessed 9 October 2025).

⁷⁵ SA Government, [Buy the Best. Buy SA Seafood.](#), 8 September 2025 (accessed 9 October 2025).

⁷⁶ Professor Steer, SARDI, *Proof Committee Hansard*, 9 September 2025, p. 17.

⁷⁷ The Hon Peter Malinauskas MP, Premier of South Australia, 'Backing SA's recreational fishers and supporting fish stocks', [Media Release](#), 3 August 2025.

⁷⁸ Professor Steer, SARDI, *Proof Committee Hansard*, 9 September 2025, pp. 15–16. See also, Mr Beattie, South Australian Department of Premier and Cabinet, *Proof Committee Hansard*, 9 September 2025, p. 16.

⁷⁹ SA Government, *Submission 71*, p. 11

Government provided an update that the development of the Plan was 'in full flight' and explained that:

This plan has been developed in close consultation with key stakeholders, with feedback from the community and, understandably, across multiple agencies in the South Australian government. The intention is to provide a very strong foundation for the algal bloom response should it persist into summer.⁸⁰

Algal Bloom Summer Plan

3.57 In October 2025, the SA and Commonwealth governments jointly announced the \$102.5m Algal Bloom Summer Plan (Summer Plan). The Summer Plan focuses investment across a range of measures, with three key objectives:

- Ensuring South Australians can enjoy their summer
- Backing coasting businesses and communities
- Advancing research and protecting our environment.⁸¹

3.58 Key components of the Summer Plan include:

- **\$20.6m investment in the natural environment:** including for large-scale shellfish reef restoration, seagrass and blue carbon restoration, community shellfish reef restoration, and threatened and vulnerable marine species breeding.
- **\$17.3m investment in research and monitoring:** including water monitoring and forecasting in collaboration with the Commonwealth Scientific and Industrial Research Organisation (CSIRO), offshore water analysis, the use of AI live detection technology (AI Cytobots), an Office for the Algal Bloom Research, and algal bloom mitigation research.
- **\$6.1m investment in coastal communities:** including grants for coastal recreation facilities, and support for coastal events.
- **\$21.5m investment in the fishing and marine sector:** including business support grants, grants for commercial fisheries and aquaculture licence holder for projects to build business resilience, an extension of fee relief for licences, and measures to help grow the recreational fishing sector.
- **\$20.5m investment in tourism and hospitality:** including cashbacks for dining, an extension of the Coast is Calling campaign, and an expansion of the Coast is Calling campaign for travel vouchers.
- **\$16 investment in beach safety and access:** including daily 'Between the Flags' patrols, four-times-per-day updates on the Beachsafe app, and daily beach cleanups. This investment also includes funding for school pools to be opened for community use during summer, free access to coastal parks, grants for aquatic sporting clubs, and mental health support. An

⁸⁰ Mr Beattie, DPC, *Proof Committee Hansard*, 24 September 2025, p. 18.

⁸¹ Government of South Australia, Australian Government, *Algal Bloom Summer Plan*, 14 October 2025, p. 3.

information campaign, and continued funding for the Buy SA Seafood campaign and hotline are also included.⁸²

Interactions with the Commonwealth Government

- 3.59 Mr Chris Beattie from DPC's Algal Bloom Response Coordination Unit stated that SA government agencies have had 'very cooperative and close working relationships with the relevant [federal government] portfolios'.⁸³
- 3.60 The SA EPA stated that relevant state and federal agencies and affected councils met on 9 April 2025 to discuss the HAB 'to ensure the community has access to the environmental, primary production and health information they need to safely enjoy the coast'.⁸⁴
- 3.61 The SA Government provided evidence about some of the first communications that occurred with the Commonwealth Government regarding the HAB:
- **PIRSA:** Discussions with federal agencies began from 2 May 2025.
 - **Deputy Premier Susan Close** discussed issues relating to SA, including the HAB, with incoming federal Environment Minister Murray Watt on the date he was sworn in, on 13 May 2025.
 - **DEW:** Informal discussions with DCCEEW regarding the HAB occurred in the beginning of June.⁸⁵
- 3.62 PIRSA has been in ongoing discussions with the federal Department of Agriculture, Fisheries and Forestry (DAFF), the National Emergency Management Agency (NEMA) and the Integrated Marine Observing System (IMOS).⁸⁶
- 3.63 Since early June 2025, DEW has had fortnightly meetings with the Commonwealth Environmental Water Office (CEWO) on the status of *Karenia* algae in the Coorong. DEW has also had frequent contact with DCCEEW since June.⁸⁷
- 3.64 On 17 July 2025, SA Minister for Primary Industries and Regional Development, the Hon Clare Scriven MLC, wrote to the federal Minister for Agriculture, Fisheries and Forestry, the Hon Julie Collins MP, pointing out that wild catch fishers were not eligible for support through the Commonwealth Government's Farm Household Allowance program and Rural Investment Corporation low

⁸² Government of South Australia, Australian Government, *Algal Bloom Summer Plan*, 14 October 2025.

⁸³ Mr Beattie, DPC, *Proof Committee Hansard*, 9 September 2025, p. 13.

⁸⁴ SA EPA, [SA *Karenia mikimotoi* algal bloom update](#), 10 April 2025, (accessed 18 August 2025).

⁸⁵ SA Government, answers to questions on notice, 25 September 2025, p. 1.

⁸⁶ SA Government, answers to questions on notice, 25 September 2025, p. 1.

⁸⁷ SA Government, answers to questions on notice, 25 September 2025, p. 1.

interest loans. Minister Scriven requested changes to the eligibility criteria for these schemes to provide financial support for SA's wild catch fishers.⁸⁸

3.65 On 5 August 2025, SA Premier Peter Malinauskas MP wrote to the federal Minister for Environment and Water, Senator the Hon Murray Watt, welcoming the joint funding from the Commonwealth to deliver the July support package. The Premier noted that the SA Government would 'continue to work collaboratively' with Minister Watt to provide further support and identify existing programs that could be expanded, such as the Farm Household Allowance program and Rural Investment Corporation loans.⁸⁹

3.66 The following section outlines the SA Government's communications with the Commonwealth regarding the application of Disaster Recovery Funding Arrangements 2018 (DRFA) to the HAB.

Disaster Recovery Funding Arrangements 2018

3.67 The DRFA are a framework through which the Commonwealth Government provides funding to states and territories to manage the financial costs of responding to disasters. Under this cost-sharing system, the Commonwealth may reimburse up to 75 per cent of financial assistance provided by a state or territory. The principles of the DRFA include that 'states/territories and local governments should draw on their own resources to provide disaster assistance before seeking support through the DRFA' and DRFA assistance should 'complement and promote disaster resilience outcomes for affected individuals and communities'.⁹⁰

3.68 There are four categories of DRFA assistance measures:

- **Category A:** Assistance to individuals facing personal hardship or distress as a direct result of a disaster.
- **Category B:** Assistance to a state/territory and/or local government for restoring essential public assets, as well as assistance to small businesses, primary producers, not-for-profit organisations and individuals.
- **Category C:** Assistance for severely impacted communities, areas or sectors, such as cleanup and recovery grants and/or establishment of a Community Recovery Fund.
- **Category D:** Assistance for exceptional circumstances beyond the other categories. This type of assistance must be requested by a state/territory and requires Prime Ministerial approval.⁹¹

⁸⁸ SA Government, answers to questions on notice, 25 September 2025, [pp. 20–21].

⁸⁹ SA Government, answers to questions on notice, 25 September 2025, [p. 22].

⁹⁰ National Emergency Management Agency (NEMA), [Disaster Recovery Funding Arrangements](#), 24 August 2024 (accessed 10 October 2025).

⁹¹ NEMA, [Disaster Recovery Funding Arrangements](#), 24 August 2024 (accessed 10 October 2025).

3.69 SA DPC first engaged with NEMA seeking the treatment of algal blooms under the DRFA on 4 July 2025.⁹² DPC wrote to NEMA on 17 July 2025, setting out the grounds on which it believed the HAB event qualified as an eligible natural disaster under the DRFA. These grounds included that:

- the HAB is a 'compounded, naturally occurring event resulting from a convergence of environmental triggers', with the 2022–23 River Murray flood being a plausible contributing factor;
- the HAB has had significant and ongoing environmental, economic and public health impacts; and
- the SA Government has already committed significant resources, including a \$500,000 relief package to waive license fees for affected license holders for the June quarter; the Rural Support Grant to help individuals cover essential household expenses; and financial counselling and wellbeing support for affected primary producers.⁹³

3.70 DPC wrote that 'the scale and persistence of the event continue to exceed our capacity', despite the measures already put in place by the SA Government.⁹⁴ DPC argued that:

The situation aligns with the intent of the DRFA, particularly under Category D, which provides support for severe, non-standard natural disasters that have a wide-ranging impact on communities, natural assets, and economic livelihoods and to assist when natural hazards cause significant community disruption and state capacity is exceeded.⁹⁵

3.71 On 18 July 2025, the SA Government formally submitted an enquiry with NEMA seeking advice on whether the HAB could be considered an eligible disaster under the DRFA and a 'secondary event' to the SA floods for the purposes of Category D assistance.⁹⁶

3.72 NEMA completed its assessment on 5 August 2025, advising that the HAB is not an eligible natural disaster as defined by the DRFA and that it did not consider the HAB to be a secondary event to the SA flooding event in 2022.⁹⁷ NEMA explained that the DRFA is 'limited to rapid onset events and does not include all possible natural hazards such as drought and heatwaves'. It suggested that the Agricultural Crisis Coordination Centre led by DAFF may offer more appropriate funding arrangements to assist with slow onset events such as HABs. Further, NEMA noted that the 2022 SA flooding was only a 'plausible

⁹² SA Government, answers to questions on notice, 25 September 2025, p. 4.

⁹³ SA Government, answers to questions on notice, 25 September 2025, [pp. 7–8].

⁹⁴ SA Government, answers to questions on notice, 25 September 2025, [p. 8].

⁹⁵ SA Government, answers to questions on notice, 25 September 2025, [p. 8].

⁹⁶ SA Government, answers to questions on notice, 25 September 2025, [pp. 10–17].

⁹⁷ SA Government, answers to questions on notice, 25 September 2025, [p. 19].

contributing factor, and not the primary or only cause of the HAB', and that neither the cold-water upwelling nor the marine heatwave which may have contributed to the HAB are considered natural disasters under the DRFA.⁹⁸

Commonwealth Government response

3.73 It was reported in mid-July that the federal Environment Minister, Senator the Hon Murray Watt, expressed the view that the SA Government had primary responsibility for managing the HAB because it was 'taking place in state-controlled waters', though the Commonwealth was prepared to support SA in managing it.⁹⁹

Funding contributions

3.74 According to DCCEEW, on 20 July 2025 it received a formal request from the SA Government for funding support in four priority areas: science and research, business assistance, community awareness and support, and clean-up. On 21 July 2025, the Federal Cabinet considered and agreed to the funding request, and Minister Watt announced an initial \$14 million of Commonwealth investment.¹⁰⁰ The SA Government announced on 22 July 2025 that it would match the Commonwealth's contribution, bringing the combined support package to \$28 million.¹⁰¹

3.75 On 20 August 2025, the Australian Prime Minister, the Hon Anthony Albanese MP, visited Kangaroo Island to meet with the SA Premier and affected communities. Prime Minister Albanese announced a further \$6.25 million in funding, comprising:

- \$4 million of direct funding to local government for grants to assist local communities;
- \$2.25 million in targeted scientific research support; and
- \$2 million to enhance the monitoring and data collection of marine heatwaves through the CSIRO's water quality system, AquaWatch.¹⁰²

⁹⁸ SA Government, answers to questions on notice, 25 September 2025, [pp. 18–19].

⁹⁹ Phillip Coorey, "'It's a state issue": Watt won't step in over marine crisis', [Australian Financial Review](#), 18 July 2025, (accessed 10 October 2025).

¹⁰⁰ DCCEEW, *Submission 67*, p. 7. See also, Senator the Hon Murray Watt, Minister for the Environment and Water, and the Hon Julie Collins MP, Minister for Agriculture, Fisheries and Forestry, '[Albanese Government commits \\$14 million to help South Australia combat devastating algal bloom](#)', *Media Release*, 21 July 2025 (accessed 28 July 2025).

¹⁰¹ DCCEEW, *Submission 67*, p. 7. See also, The Hon Peter Malinauskas MP, Premier of South Australia, '[State Government reveals next stage of algal bloom support package](#)', *Media Release*, 22 July 2025.

¹⁰² The Hon Anthony Albanese MP, Prime Minister of Australia, and the Hon Peter Malinauskas MP, Premier of South Australia, [Press conference—Adelaide](#), 20 August 2025.

3.76 An additional \$250,000 was committed by the Commonwealth Government for measures to support the giant Australian cuttlefish, bringing the total Commonwealth investment for the HAB to \$20.5 million.¹⁰³

Involvement of federal departments and agencies

3.77 DCCEEW's submission noted that numerous federal departments and agencies have been working on the HAB response:

This has included the Department of the Prime Minister and Cabinet; Department of Agriculture, Fisheries and Forestry; the Department of Education (on the National Collaborative Research Infrastructure Strategy); the Bureau of Meteorology, CSIRO and the National Emergency Management Agency and Australia's Chief Scientist.¹⁰⁴

3.78 Within DCCEEW itself, multiple areas of the department have been involved in the response, such as the International Environment, Reef and Ocean Division, Biodiversity Division, Threatened Species Commissioner and CEWH.¹⁰⁵ The Head of DCCEEW's International Environment Reef and Ocean Division, Ms Katrina Maguire, told the committee:

The Australian Government's response efforts have focused on engaging with the South Australian government to understand the impacts of and support the immediate needs resulting from the harmful algal bloom. This has included delivery of joint funding packages with the South Australian government, investment in tools to improve our ability to forecast and monitor ocean conditions and actions to protect marine species.¹⁰⁶

Scientific research, monitoring and discussions

3.79 As noted above, DCCEEW is an ongoing member of the SA Government's HAB science advisory panel that aims to provide expert scientific advice to inform response and recovery efforts.¹⁰⁷ DCCEEW remarked that its involvement in the panel helps the department:

... remain up to date on the latest science informing how the impacts of the event are managed. This includes identifying emerging research needs, supporting intergovernmental collaboration, and ensuring national perspectives are integrated into regional response efforts. Considerations of the Science Panel will inform the work the Department, such as the NESP [National Environmental Science Program], emerging priority project.¹⁰⁸

¹⁰³ DCCEEW, *Submission 67*, p. 9.

¹⁰⁴ DCCEEW, *Submission 67*, p. 6.

¹⁰⁵ DCCEEW, *Submission 67*, p. 6.

¹⁰⁶ Ms Katrina Maguire, Division Head, International Environment Reef and Ocean Division, DCCEEW, *Proof Committee Hansard*, 24 September 2025, p. 28.

¹⁰⁷ DCCEEW, *Submission 67*, p. 10.

¹⁰⁸ DCCEEW, *Submission 67*, p. 10.

- 3.80 Ms Maguire added that DCCEEW had participated in workshops led by SA DEW and PIRSA and was working to support research projects with the NESP and the Marine Coastal Hub to better understand HABs.¹⁰⁹ DCCEEW had also connected the SA Government with international HAB experts who could share insights on HABs impacts and management responses.¹¹⁰
- 3.81 In addition, following a request from Minister Watt, the Threatened Species Scientific Committee (TSSC) is urgently considering whether any species or ecological communities may need to be assessed as a priority for possible inclusion on the national threatened species list under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).¹¹¹ The TSSC's work with the SA Government and independent scientists to consider potential risks to the Upper Spencer Gulf giant Australian cuttlefish population led to the installation of an air bubble curtain.¹¹²
- 3.82 Discussions between DCCEEW and the SA Government regarding Australia's marine parks and fisheries assessments under the EPBC Act are ongoing throughout the HAB event, as are discussions between the CEWH and the SA Government regarding the health of the Coorong and environmental flows in the Murray-Darling Basin.¹¹³
- 3.83 The Bureau of Meteorology, CSIRO and IMOS have been supporting the SA Government response by providing oceanographic and phytoplankton monitoring data to assist with tracking the spread of the HAB.¹¹⁴

Industry support

- 3.84 The First Assistant Secretary of the Agvet Chemicals, Fisheries, Forestry and Strategy Division, DAFF, explained the division of responsibilities between the SA and Commonwealth governments with regards to commercial fishing and aquaculture industries affected by the HAB:

¹⁰⁹ Ms Maguire, DCCEEW, *Proof Committee Hansard*, 24 September 2025, p. 28. See also, DCCEEW, *Submission 67*, p. 9.

¹¹⁰ DCCEEW, *Submission 67*, p. 9.

¹¹¹ Ms Maguire, DCCEEW, *Proof Committee Hansard*, 24 September 2025, p. 28. See also, Senator the Hon Murray Watt, Minister for the Environment and Water, 'Minister fast-tracks marine life assessments after algal bloom', [Media Release](#), 13 August 2025.

¹¹² Ms Maguire, DCCEEW, *Proof Committee Hansard*, 24 September 2025, p. 28.

¹¹³ Ms Maguire, DCCEEW, *Proof Committee Hansard*, 24 September 2025, p. 28.

¹¹⁴ See, for example, Professor Daniel Ierodionou, Coastal Lead Scientist, Integrated Marine Observing System (IMOS), Coastal Research Infrastructure Program, *Proof Committee Hansard*, 24 September 2025, pp. 40–41; Janet Anstee, Head, AquaWatch Australia, Space and Astronomy Research Unit, Commonwealth Scientific and Industrial Research Organisation (CSIRO), *Proof Committee Hansard*, 24 September 2025, p. 41; CSIRO, answers to questions on notice, 10 October 2025, [pp. 2–5]. For further information on oceanographic monitoring efforts, see Chapter 4.

The South Australian government has the primary responsibility for managing coastal waters affected by the algal bloom, including the commercial fishing and aquaculture industries operating in those areas. The role of the Commonwealth Department of Agriculture, Fisheries and Forestry in this matter is primarily focused on working with the South Australia government and industry to manage export requirements for shellfish and engaging with the South Australian government to understand the broad impacts of the bloom on fishers and aquaculture operators.¹¹⁵

3.85 DAFF's submission set out that the department was in discussions with the SA Government's HAB Taskforce about any potential biosecurity risks associated with the movement of ballast water from SA waters. DAFF said it was investigating whether any additional measures should be implemented domestically to manage the biosecurity risks associated with the movement of ballast water to any domestic ports from SA ports.¹¹⁶

3.86 DAFF also continues to work with the SA Government on the export implications of the closures of shellfish harvest areas as a result of the HAB.¹¹⁷

3.87 As previously mentioned, the committee heard that there are several existing federal programs that could offer support to farmers and fishers experiencing hardship due to the HAB:

- **Rural Financial Counselling Service:** Free, confidential financial counselling is available for small commercial enterprises involved in aquaculture and wild catch fishing who are in, or at risk of, financial hardship.
- **Farm Management Deposit Scheme:** The scheme allows eligible primary producers, including fishers and aquaculture operators, to set aside pre-tax income which can be drawn on in future years.
- **Farm Household Allowance (FHA) program:** The program provides support to farmers, including aquaculture operators, experiencing hardship, through a fortnightly payment for household expenses; activity supplements of up to \$10,000 for training and skill development; a Health Care Card and other allowances to alleviate cost-of-living pressures; and a Services Australia case officer to work with recipients on their financial goals.¹¹⁸

¹¹⁵ Ms Sarah-Jane McCormack, First Assistant Secretary, Agvet Chemicals, Fisheries, Forestry and Strategy Division, Department of Agriculture, Fisheries and Forestry, *Proof Committee Hansard*, 24 September 2025, p. 29.

¹¹⁶ DAFF, *Submission 59*, [p. 4].

¹¹⁷ DAFF, *Submission 59*, [p. 5].

¹¹⁸ DAFF, *Submission 59*, [pp. 5–6]; South Australian Government, *Submission 71*, p. 7.

- **Regional Investment Corporation (RIC) loans:** The Farm Investment Loan available through the RIC helps eligible farm businesses, including certain aquaculture farm businesses, to recover from significant financial impact.¹¹⁹
- 3.88 Wild catch fishers are not eligible for financial support through the FHA program or RIC loans, as their activities are classified as harvesting rather than farming.¹²⁰ In mid-July 2025, the SA Minister for Primary Industries and Regional Development wrote to the federal Minister for Agriculture, Fisheries and Forestry, seeking changes to the eligibility criteria for the FHA program and RIC loan scheme, to extend eligibility to SA's wild catch fishers impacted by the HAB.¹²¹
- 3.89 The First Assistant Secretary of the Farm Resilience Division, DAFF, noted that although wild catch fishers are not eligible for the FHA program or RIC loans, they are eligible for the Rural Financial Counselling Service and the Farm Management Deposit Scheme.¹²²

New Regional Investment Corporation loan stream

- 3.90 On 20 August 2025, the Prime Minister announced that a new RIC loan stream would be created for slow-onset, significant ecological events.¹²³ On 29 August 2025, there was a further announcement that the Commonwealth Government would provide \$1 billion in new loan funding through the RIC.¹²⁴ This \$1 billion in funding would cover existing RIC programs as well as the new 'significant ecological event' loan stream and a climate-related loan product.¹²⁵
- 3.91 At the public hearing in late September 2025, the committee heard that the details and eligibility of the new loan stream were still being developed, including the specific funding allocation for the 'significant ecological event'

¹¹⁹ DAFF, *Submission 59*, [pp. 5–6].

¹²⁰ DAFF, *Submission 59*, [pp. 5–6].

¹²¹ SA Government, answers to questions on notice, 25 September 2025, [pp. 20–21]; Erin Jones, '[At last a trip for minister](#)', *Adelaide Advertiser*, 21 July 2025 (accessed 28 July 2025); Thomas Kelsall, 'South Australian government calls for Commonwealth to support fishers as algal bloom continues', [ABC News](#), 18 July 2025 (accessed 19 August 2025).

¹²² Ms Mel Brown, First Assistant Secretary, Farm Resilience Division, DAFF, *Proof Committee Hansard*, 24 September 2025, p. 34.

¹²³ The Hon Anthony Albanese MP, Prime Minister of Australia, and the Hon Peter Malinauskas MP, Premier of South Australia, [Press conference—Adelaide](#), 20 August 2025.

¹²⁴ The Hon Anthony Albanese MP, Prime Minister of Australia, and the Hon Julie Collins MP, Minister for Agriculture, Fisheries and Forestry, '[\\$1 billion funding boost for Regional Investment Corporation](#)', *Media Release*, 29 August 2025.

¹²⁵ Mr John Howard, Chief Executive Officer, Regional Investment Corporation, *Proof Committee Hansard*, 24 September 2025, p. 51.

loan stream.¹²⁶ The RIC's Chief Executive Officer testified that there was a 'clear sense of the urgency' to set up the new loan stream as soon as possible, but it was too early to indicate a timeframe for its roll-out.¹²⁷

Local government response

3.92 Throughout the inquiry, the committee heard calls from local government representatives for more support to deliver frontline services to the communities affected by the HAB.¹²⁸

3.93 The Mayor of the City of Holdfast Bay gave evidence about the high workload for local councils involved in beach clean ups during the HAB event:

Our team at the depot are working every morning. They're checking the beaches; they're cleaning them up and down every day. If they're not cleaning here, they're cleaning all the way up to Glenelg. We've got a depot crew that have been taken off jobs such as on roads, footpaths and those sorts of things to make that happen.¹²⁹

3.94 The Acting Mayor of the City of Onkaparinga stated that in addition to beach cleans, the council has been acting as 'the conduit to our local communities for information that the state government have been providing'.¹³⁰

3.95 Representatives from the Yorke Peninsula Council requested funding for a dedicated algal bloom support officer who 'the public can go to for answers'.¹³¹

3.96 The Mayor of the City of Mitcham remarked that local councils have the capacity to run community programs to support people affected by the HAB, but that they would need help to do this because it is 'beyond what [they] normally do'.¹³²

3.97 The committee also heard calls for federal funding for local councils to respond to climate-related events such as HABs.¹³³ Local Government Association of

¹²⁶ Ms McCormack, DAFF, *Proof Committee Hansard*, 24 September 2025, p. 29; Mr Howard, Regional Investment Corporation, *Proof Committee Hansard*, 24 September 2025, p. 50.

¹²⁷ Mr Howard, Regional Investment Corporation, *Proof Committee Hansard*, 24 September 2025, p. 52.

¹²⁸ See, for example, City of Victor Harbor, *Submission 2*, [p. 4]; Ms Lauren Jew, Acting Mayor, City of Onkaparinga, *Proof Committee Hansard*, 9 September 2025, pp. 34–35; Dr Moira Jenkins, Mayor, City of Victor Harbor, *Proof Committee Hansard*, 12 September 2025, p. 32.

¹²⁹ Mayor Amanda Wilson, City of Holdfast Bay, *Proof Committee Hansard*, 9 September 2025, p. 38.

¹³⁰ Ms Jew, City of Onkaparinga, *Proof Committee Hansard*, 9 September 2025, p. 35.

¹³¹ Mr Richard Carruthers, Acting Mayor, Yorke Peninsula Council, *Proof Committee Hansard*, 11 September 2025, p. 14. See also, Mr Nick Perry, Manager, Economic Development and Business Sustainability, Yorke Peninsula Council, *Proof Committee Hansard*, 11 September 2025, p. 10.

¹³² Dr Heather Holmes-Ross, Mayor, City of Mitcham, and President, Local Government Association South Australia, *Proof Committee Hansard*, 9 September 2025, p. 35.

¹³³ Local Government Association South Australia (LGA SA), *Submission 25*, p. 11; Councillor Gretel Wilkes, Chair, Adelaide Coastal Council Network, *Proof Committee Hansard*, 12 September 2025, p.

South Australia (LGA SA), the peak body representing 68 councils across the state, highlighted the need for greater support:

SA's coastal councils are increasingly on the frontline of climate change-related events. For example, this winter alone there have been three major storm events coinciding with high tides, which have caused significant storm damage to public infrastructure, private property and natural coastal environments, and the recovery costs exceed many councils' financial capacity.¹³⁴

3.98 In light of the HAB, LGA SA emphasised the need for:

... an expanded local government Climate Resilience Fund with additional funding to invest in:

- grey and green infrastructure (e.g. stormwater, wastewater) to reduce nutrient and dissolved carbon pollution discharge to terrestrial waters (including the Murray River) and, in turn, to coastal, estuarine (including the Coorong) and marine waters
- the protection and restoration of coastal and marine ecosystems such as shellfish reefs, seagrass meadows and kelp forests, to increase their resilience to future algal bloom events.¹³⁵

3.99 Numerous local government representatives drew attention to the importance of including local government in the HAB response.¹³⁶ There was positive recognition of the fact that the SA Coastal Councils Alliance, Adelaide Coastal Councils Network, and representatives from Kangaroo Island Council and Yorke Peninsula Council had been included in the Stakeholder Reference Group convened by the SA Government.¹³⁷

3.100 The Mayor of the City of Victor Harbor pointed out that:

... local councils are key stakeholders in environmental impact. We are the hands on the ground; we're the eyes on the ground. Of all the levels of government, we're the closest to community. Right from the beginning, being included in anything that involves local government, rather than being left out, is of vital importance.¹³⁸

3.101 Likewise, the Acting Mayor of the City of Onkaparinga underscored the value of 'giv[ing] councils a real seat at the table', adding that:

17; Mr Adam Gray, Executive Officer, South Australia Coastal Councils Alliance, *Proof Committee Hansard*, 12 September 2025, p. 27.

¹³⁴ LGA SA, *Submission 25*, p. 11.

¹³⁵ LGA SA, *Submission 25*, p. 12.

¹³⁶ City of Victor Harbor, *Submission 2*, [p. 4]; Ms Jew, City of Onkaparinga, *Proof Committee Hansard*, 9 September 2025, pp. 34–35; Dr Jenkins, City of Victor Harbor, *Proof Committee Hansard*, 12 September 2025, p. 32.

¹³⁷ LGA SA, *Submission 25*, pp. 7–8.

¹³⁸ Dr Jenkins, City of Victor Harbor, *Proof Committee Hansard*, 12 September 2025, p. 32.

Local government is a willing and proven partner for investing in community and business resilience. We're here, we see what's happening and we can make a difference. Right now, collaboration is key, as are the much-welcomed funding announcements.¹³⁹

Views on the adequacy of the government response

3.102 This section outlines the broad views expressed by submitters and witnesses regarding the adequacy of the SA and Commonwealth governments' responses to the HAB.

3.103 Overall, while inquiry participants were appreciative of the government support packages to date, they urged for more to be done to address the scale of impacts of the HAB.

3.104 This sentiment was captured by the Acting Mayor of Yorke Peninsula Council who testified at a public hearing: 'We welcome the initial support provided by both levels of government, but we need more help'.¹⁴⁰ Similarly, the City of Port Lincoln acknowledged and welcomed the joint state and federal support packages, but noted that 'while these measures are critical, they remain initial steps and must be expanded into long-term strategies to secure industry resilience, protect ecosystems, and safeguard community wellbeing'.¹⁴¹

3.105 Since that time, the SA and Commonwealth governments have jointly announced the \$102.5 million Algal Bloom Summer Plan which includes funding directed towards building industry and environmental resilience.¹⁴²

3.106 Throughout the inquiry, concerns were raised in relation to:

- levels of funding, including access to the DRFA;
- delays in government action; and
- the coordination of the government responses, including the fragmentation of the initial response, and calls for greater government coordination and improved emergency management frameworks.

Funding levels

3.107 While inquiry participants welcomed the government funding announced to date, particularly the investment in research and monitoring,¹⁴³ various

¹³⁹ Ms Jew, City of Onkaparinga, *Proof Committee Hansard*, 9 September 2025, pp. 34–35.

¹⁴⁰ Mr Carruthers, Yorke Peninsula Council, *Proof Committee Hansard*, 11 September 2025, p. 9.

¹⁴¹ City of Port Lincoln, *Submission 64*, [p. 2].

¹⁴² Government of South Australia, Australian Government, Algal Bloom Summer Plan, 14 October 2025, p. 3.

¹⁴³ See, for example, Australian Marine Sciences Association (AMSA), *Submission 32*, [p. 3]; Great Southern Reef Foundation (GSRF), *Submission 46*, [p. 6]; Mr Andrew Cameron, Chief Executive Officer, Yorke Peninsula Council, *Proof Committee Hansard*, 11 September 2025, p. 9.

submitters and witnesses argued that the level of funding was inadequate.¹⁴⁴ The Conservation Council SA was of the view that 'there has been a genuine effort to respond, but the funding provided to date does not reflect the scale of the challenge.'¹⁴⁵

3.108 The Australian Marine Sciences Association (AMSA) commended the initial \$28 million support package and said it was 'encouraged to see support for coastal monitoring, new laboratory testing facilities, rapid assessments, citizen science and response planning'.¹⁴⁶ Additionally, the City of Port Lincoln expressed strong support for the additional \$2.25 million in targeted scientific research support and \$2 million for enhancements to CSIRO's AquaWatch system.¹⁴⁷

3.109 However, a range of inquiry participants pointed out that further investment was needed for scientific research and other purposes. For instance, although the Great Southern Reef Foundation (GSRF) 'acknowledge[d] the critical investments toward science' in the government's support package,¹⁴⁸ the GSRF called for greater investment in monitoring for the Great Southern Reef, consisting of an initial \$6 million within the next two years and a sustained \$40 million investment for the program over the next 10 years.¹⁴⁹

3.110 Emeritus Professor Gustaaf Hallegraeff indicated that:

The promise of a new \$2m algal lab underestimates the expensive specialised equipment needed such as LC/MS [liquid chromatography tandem mass spectrometry] and molecular qPCR [quantitative polymerase chain reaction], but also the need for permanent salaries for highly trained expert staff (and their back-ups). ... *A grant support scheme for early career scientists is strongly recommended.*¹⁵⁰

3.111 Further, although the Goyder Institute for Water Research welcomed the \$28 million initial support package, it submitted that further investment was required to support a multi-disciplinary approach to HAB management:

... 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

¹⁴⁴ See, for example, Conservation Council SA, *Submission 24*, [p. 3]; Biodiversity Council, *Submission 66*, p. 10; Ms Georgina Legoe, *Submission 110*, [p. 2]; Name Withheld, *Submission 117*, [p. 5].

¹⁴⁵ Conservation Council SA, *Submission 24*, [p. 3].

¹⁴⁶ AMSA, *Submission 32*, [p. 3].

¹⁴⁷ City of Port Lincoln, *Submission 64*, [p. 2].

¹⁴⁸ GSRF, *Submission 46*, [p. 6].

¹⁴⁹ GSRF, *Submission 46*, [p. 8].

¹⁵⁰ Emeritus Professor Gustaaf Hallegraeff, *Submission 52*, p. 4. Emphasis in original.

disciplines include ecology, toxicity, economics, law and social science among others.¹⁵¹

3.112 The Biodiversity Council's submission similarly highlighted areas where greater investment would be needed:

The total of \$30.25 million is unlikely to be sufficient to provide for the immediate and longer-term needs of the community, biodiversity and impacted industries. Considerably greater investment will be required to support immediate research needs and long-term monitoring and ecological and socio-economic recovery plans.¹⁵²

3.113 Of the \$102.5 million Algal Bloom Summer Plan, only \$17.3 million is directed towards research and monitoring.¹⁵³

Access to Disaster Recovery Funding Arrangements

3.114 Numerous inquiry participants pointed out the limitations of the DRFA, arguing that HAB events ought to be recognised as natural disasters in order to unlock further Commonwealth funding.¹⁵⁴

3.115 The University of Adelaide's Environment Institute argued that, in light of the difficulties in declaring the HAB an 'eligible natural disaster' under the DRFA, there should be a review of the policy and legal frameworks for disasters and nationally significant emergencies.¹⁵⁵

3.116 LGA SA submitted that the DRFA framework should be amended to 'recognise the growing impacts of climate-driven marine disasters, including algal blooms'.¹⁵⁶

Delays in government action

3.117 A large number of inquiry participants criticised the delay in the Commonwealth and state governments' responses to the HAB.¹⁵⁷

3.118 The committee received evidence that a group of marine scientists and environmentalists wrote to the former federal Minister for the Environment and

¹⁵¹ Goyder Institute for Water Research, *Submission 45*, pp. 3-4.

¹⁵² Biodiversity Council, *Submission 66*, p. 10.

¹⁵³ Government of South Australia, Australian Government, Algal Bloom Summer Plan, 14 October 2025, p. 15.

¹⁵⁴ See, for example, Human.Kind Studios and Salty Sips, *Submission 6*, [p. 1]; Surfers for Climate, *Submission 10*, [p. 2]; Mr Bart Butson, *Submission 80*, [p. 3].

¹⁵⁵ The Environment Institute, The University of Adelaide, *Submission 40*, [pp. 6-7].

¹⁵⁶ LGA SA, *Submission 25*, pp. 8-9.

¹⁵⁷ See, for example, City of Victor Harbor, *Submission 2*, [p. 2]; Kangaroo Island Tourism Alliance, *Submission 12*, [p. 1]; Save West Beach Sand, *Submission 13*, pp. 3-4; Ms Monina Gilbey, *Submission 99*, [p. 3]; Ms Bernadette Cranwell, *Submission 105*, [p. 5]; Mr Carruthers, Yorke Peninsula Council, *Proof Committee Hansard*, 11 September 2025, p. 9.

Water, the Hon Tanya Plibersek MP, in October 2023 to warn of the 'far-reaching' repercussions of an upcoming 'severe marine heatwave' in south-eastern Australia. The letter called for an investment of \$40 million over 10 years for a national monitoring program for the Great Southern Reef.¹⁵⁸

3.119 According to Mr Stefan Andrews, the Co-Founder and Director of the Great Southern Reef Foundation, the response that was eventually received to that letter did not address the group's specific requests.¹⁵⁹ Doctors for the Environment Australia argued that 'had [the scientists'] expertise and warning been recognised, the 2025 algal blooms may have been anticipated, with better monitoring and earlier management'.¹⁶⁰

3.120 A range of local councils in areas impacted by the HAB remarked that when the HAB was first detected in March 2025, the state government was slow to act and provided minimal support to affected communities.¹⁶¹ The City of Victor Harbor submitted that:

Local councils, including the City of Victor Harbor, received limited guidance or support during the critical early stages of the event and were left to manage community concerns, health enquiries, and reputational risks with minimal coordination or communication from relevant authorities. It was only after the bloom had spread significantly and gained wider media attention that more formal recognition and response mechanisms were discussed. This delay hampered the ability of councils and local businesses to respond effectively and has highlighted a need for earlier engagement, clearer communication channels, and more inclusive crisis management frameworks that recognise the full extent of environmental, economic, and social impacts on regional communities.¹⁶²

3.121 The Mayor of Alexandrina Council expressed dismay that despite the community raising the alarm about the HAB in early March, their concerns were not heeded until the bloom reached the Adelaide metropolitan beaches. He

¹⁵⁸ Letter to the Hon Tanya Plibersek MP and the Hon Chris Bowen MP dated 20 October 2023 from Great Southern Reef Research Partnership, tabled by Stefan Andrews, Great Southern Reef Foundation (tabled 12 September 2025). See also, Mr Stefan Andrews, Co-Founder and Director, Great Southern Reef Foundation, *Proof Committee Hansard*, 9 September 2025, p. 7; Doctors for the Environment Australia, *Submission 38*, p. 3; Dr Kathie Muir, *Submission 108*, p. 3.

¹⁵⁹ Mr Stefan Andrews, GSRF, *Proof Committee Hansard*, 9 September 2025, p. 7.

¹⁶⁰ Doctors for the Environment Australia, *Submission 38*, p. 3.

¹⁶¹ See, for example, City of Victor Harbor, *Submission 2*, [pp. 2–3]; Mr Perry, Yorke Peninsula Council, *Proof Committee Hansard*, 11 September 2025, p. 10; Mr Keith Parkes, Mayor, Alexandrina Council, *Proof Committee Hansard*, 12 September 2025, p. 22; Mr Michael Pengilly, Mayor, Kangaroo Island Council, *Proof Committee Hansard*, 12 September 2025, p. 28.

¹⁶² City of Victor Harbor, *Submission 2*, [pp. 2–3].

testified: 'it took months and the arrival of the bloom on the metropolitan beaches to get some serious action'.¹⁶³

3.122 The Mayor of Kangaroo Island Council said the government delay was 'disappointing', and that he felt:

We were on our own on the island and the Fleurieu. We had this in March and April. Until it hit the Adelaide metropolitan area, no-one wanted to know about it.¹⁶⁴

3.123 Likewise, the Kangaroo Island Tourism Alliance gave evidence that the Kangaroo Island community's concerns about the causes, health impacts and duration of the HAB 'were not seriously addressed until the HAB reached the Adelaide beaches ... there has been limited and delayed information flow from responsible authorities'.¹⁶⁵

3.124 Similar sentiments were expressed by individual submitters,¹⁶⁶ with one SA community member saying: 'I feel abandoned by the government in this crisis'.¹⁶⁷ A long-term resident of Glenelg, Adelaide, told the committee:

The response from both the state and federal governments has been perceived by many in South Australia as slow and inadequate. This feeling of being let down has been widespread.¹⁶⁸

3.125 Inquiry participants acknowledged that positive steps had been taken since the start of the HAB, such as the establishment of a coordination unit within SA DPC as well as a dedicated taskforce, but these should have occurred sooner.¹⁶⁹

¹⁶³ Mr Parkes, Alexandrina Council, *Proof Committee Hansard*, 12 September 2025, p. 22. See also, Mr Keith Parkes, Mayor, Alexandrina Council, and Chairperson, South Australian Coastal Councils Alliance, *Proof Committee Hansard*, 9 September 2025, p. 37.

¹⁶⁴ Mr Pengilly, Kangaroo Island Council, *Proof Committee Hansard*, 12 September 2025, p. 28.

¹⁶⁵ Kangaroo Island Tourism Alliance, *Submission 12*, [p. 1].

¹⁶⁶ See, for example, Miss Michelle Harris, *Submission 76*, [p. 2]; Mr Daniel Zapata Rincon, *Submission 79*, [pp. 1–2]; Miss Ceri Roscoe, *Submission 86*, [p. 1]; Ms Monina Gilbey, *Submission 99*, [p. 3].

¹⁶⁷ Miss Ceri Roscoe, *Submission 86*, [p. 1].

¹⁶⁸ Ms Monina Gilbey, *Submission 99*, [p. 3].

¹⁶⁹ See, for example, David Hall, *Submission 114*, [p. 3]; Mr Gray, South Australia Coastal Councils Alliance, *Proof Committee Hansard*, 12 September 2025, p. 23.

Coordination of government responses

Fragmentation of the initial response and public messaging

3.126 A wide range of inquiry participants claimed that the initial SA Government response and messaging about the HAB were fragmented and confusing for stakeholders.¹⁷⁰

3.127 The Mayor of Kangaroo Island Council noted that in the early stages of the HAB, although SA DEW swiftly closed several beaches that were first affected:

... the broader response was very, very fragmented. Council and the community didn't know who the lead agency was – whether it was PIRSA, DEW or the Environment Protection Authority. ... There was no clear lead agency, and, therefore, there was no clear public messaging.¹⁷¹

3.128 The City of Victor Harbor similarly stated that the local council was 'not formally notified in the early stages and had to seek information directly from EPA, PIRSA and SA Health'.¹⁷²

3.129 A Kangaroo Island accommodation provider gave evidence of the inconsistency in messaging between different governance bodies:

I had contacted PIRSA, DEW and the Landscape Board on Kangaroo Island in April 2025 because of concern as to which agency was responsible for monitoring the bloom. I was given different responses; all indicated neither knew which was the responsible government department. The Landscape Board indicated that the ocean was not generally within the scope of their engagement. DEW told me that they would only be monitoring areas where there was a national park. PIRSA told me that they were monitoring the situation but waiting to hear from other agencies.¹⁷³

3.130 The committee heard that the information vacuum allowed for the spread of misinformation and conspiracy theories about the causes of the HAB.¹⁷⁴

Calls for greater coordination

3.131 Inquiry participants called for federal leadership and greater cross-jurisdictional coordination between different levels of government in addressing the HAB.¹⁷⁵

¹⁷⁰ See, for example, Seafood Industry South Australia, *Submission 39*, pp. 5-6; Mr Joel Hirsch, General Manager, Spirit of the Coorong, and General Manager, Big Duck Boat Tours, *Proof Committee Hansard*, 12 September 2025, p. 14.

¹⁷¹ Mr Pengilly, Kangaroo Island Council, *Proof Committee Hansard*, 12 September 2025, p. 28.

¹⁷² City of Victor Harbor, *Submission 2*, [p. 2].

¹⁷³ Name Withheld, *Submission 117*, [p. 2].

¹⁷⁴ David Hall, *Submission 114*, [p. 3]; Name Withheld, *Submission 117*, [p. 2]; Mr Pengilly, Kangaroo Island Council, *Proof Committee Hansard*, 12 September 2025, p. 28.

¹⁷⁵ See, for example, Kangaroo Island Council, *Submission 1*, p. 6; Coorong District Council, *Submission 14*, p. 2; City of Onkaparinga, *Submission 18*, p. 4; LGA SA, *Submission 25*, pp. 8–9; Australian and New Zealand Marine Harmful Algal Bloom Network (ANZMHAB Network), *Submission 73*, [pp.

Dr Dominic McAfee, University of Adelaide, underlined the cross-jurisdictional nature of HABs:

... this isn't a South Australian problem. It's a national problem, so there should really be national coordination on climate-driven or environmental events—national disasters—because they transcend state borders.¹⁷⁶

3.132 The Commonwealth and SA governments recognised the need for improved coordination.¹⁷⁷ DCCEEW acknowledged in its submission that the current HAB has 'demonstrated the need for improved coordination of monitoring and preparedness and response to extreme events'.¹⁷⁸

3.133 The SA Government suggested the establishment of a federally funded National Centre for Harmful Algal Blooms, consistent with the US approach to HAB management, to:

...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.¹⁷⁹

3.134 The idea of a national coordinating body for HAB research and management was echoed by a number of other inquiry participants.¹⁸⁰ For instance, Dr Alison Turnbull recommended 'the creation of a centralised centre of excellence' that would support a national reference laboratory/network; coordinate research to

6–7]; Australian Shellfish Quality Assurance Advisory Committee, *Submission 146*, [pp. 4–5]; Mr David Hall, private capacity, *Proof Committee Hansard*, 11 September 2025, p. 20; Ms Victoria MacKirdy, Chief Executive Officer, City of Victor Harbor, *Proof Committee Hansard*, 12 September 2025, p. 29.

¹⁷⁶ Dr Dominic McAfee, Marine Ecologist and Future Making Fellow, University of Adelaide, *Proof Committee Hansard*, 9 September 2025, p. 11.

¹⁷⁷ DCCEEW, *Submission 67*, p. 6; Mr Beattie, South Australian Department of Premier and Cabinet (DPC), *Proof Committee Hansard*, 9 September 2025, p. 22.

¹⁷⁸ DCCEEW, *Submission 67*, p. 6.

¹⁷⁹ SA Government, *Submission 71*, p. 9. For more information on the US approach to HAB management, see Chapter 2.

¹⁸⁰ See, for example, Dr Craig Styan, President, South Australian Branch, Australian Marine Sciences Association, *Proof Committee Hansard*, 9 September 2025, p. 1; Dr Dominic McAfee, Marine Ecologist and Future Making Fellow, University of Adelaide, *Proof Committee Hansard*, 9 September 2025, p. 11; Mr David Hall, private capacity, *Proof Committee Hansard*, 11 September 2025, pp. 20 and 29; Professor Michele Burford, Australian Representative, Intergovernmental Panel on Harmful Algal Blooms, United Nations Educational, Scientific and Cultural Organization/Food and Agriculture Organization of the United Nations, *Proof Committee Hansard*, 24 September 2025, p. 13.

address priority HAB and toxins; and develop national protocols and training exercises across state borders.¹⁸¹

- 3.135 Several inquiry participants raised suggestions to improve the coordination of marine and coastal management more broadly,¹⁸² with Dr Alec Rolston from the Goyder Institute for Water Research calling for 'coordinated marine management ... [that] encompass[es] a catchments-to-coast-and-beyond approach'.¹⁸³ Along similar lines, the University of Adelaide's Environment Institute recommended the establishment of a South Australian Coastal Catchment Authority which would comprise relevant SA Government agencies and have an 'overarching mandate for the ecological health of the state's gulfs, from the source of the catchments to the coastal waters'.¹⁸⁴

Emergency management framework for marine mortality events

- 3.136 Throughout the inquiry, submitters and witnesses pointed out the limitations of existing emergency management frameworks to account for marine mortality events such as HABs.¹⁸⁵
- 3.137 Divers for Climate argued that it is unclear how existing disaster frameworks apply to slow-onset events, and that this lack of clarity undermines the ability to effectively coordinate responses to these events:

The algal bloom has identified a significant gap in how Australia's federal disaster frameworks apply to slow-onset marine hazards. ... Language in the National Emergency Declaration Act is geared to acute events, and declarations are time-limited to a three-month period (with possible extension), which suits surge response and recovery in the context of rapid-onset events such as bushfires and floods, but is ill-suited to slow-onset hazards like the algal bloom, which can persist for months or years and have compounding ecological, social, and economic impacts over time. The temporary framing of declarations leaves little space for sustained coordination, funding, or recovery mechanisms when the hazard does not conform to a discrete, time-bound crisis.¹⁸⁶

¹⁸¹ Dr Alison Turnbull, *Submission 60*, [pp. 3-4].

¹⁸² See, for example, Environment Institute, The University of Adelaide, *Submission 40*, [p. 6]; Dr Alec Rolston, Director, Goyder Institute for Water Research, and Director, CLLMM Research Centre, *Proof Committee Hansard*, 12 September 2025, p. 10; Professor Andrew Lowe, Board Member, Hills and Fleurieu Landscape Board, *Proof Committee Hansard*, 12 September 2025, p. 20.

¹⁸³ Dr Rolston, CLLMM Research Centre, *Proof Committee Hansard*, 12 September 2025, p. 10.

¹⁸⁴ Environment Institute, The University of Adelaide, *Submission 40*, [p. 6].

¹⁸⁵ See, for example, Surfers for Climate, *Submission 10*, [p. 2]; Seafood Industry Australia, *Submission 22*, [p. 2]; LGA South Australia, *Submission 25*, pp. 8-9.

¹⁸⁶ Divers for Climate, *Submission 48*, p. 11.

3.138 The Australian Red Cross also noted that the HAB is 'not easy or simple to categorise in "disaster" terminology':

It has elements of a protracted or slow-onset disaster (no defined start or end, uncertainty around scale, scope, response, declaration and impact). It has elements of a collective trauma event (public witnessing of death and harm, high horror element, media exposure).¹⁸⁷

3.139 In addition, the Fisheries Research and Development Corporation (FRDC) drew attention to the current absence of a coordinating emergency management body for marine mortality events:

In the terrestrial environment the National Emergency Management Authority (NEMA) is responsible for co-ordination of national policy, planning and response. ... Currently, there is no marine equivalent to co-ordinate existing knowledge, capability, capacity and infrastructure or a dedicated science program to support further development of best practice.¹⁸⁸

3.140 The Australian Academy of Science also submitted that greater 'consideration should be given to how marine disasters fit into existing national crisis and disaster frameworks'.¹⁸⁹

3.141 There were some suggestions for amendments to existing frameworks to enable events such as HABs to be declared as natural disasters or national emergencies.¹⁹⁰ Seafood Industry Australia, the national peak body representing Australia's seafood industry, expressed its desire for:

... aquatic resource disasters to be integrated into existing natural disaster frameworks ... [to] bring aquatic resource disasters fully within the purview of the National Emergency Management Agency, rather than the present situation where it is within NEMA's purview for some purposes only.¹⁹¹

Next chapter

3.142 The next chapter sets out evidence relating to the ecological, economic and social impacts of the algal bloom on marine biodiversity and ecosystem health.

¹⁸⁷ Australian Red Cross, *Submission 30*, p. 4.

¹⁸⁸ Fisheries Research and Development Corporation (FRDC), *Submission 49*, p. 3.

¹⁸⁹ Australian Academy of Science, *Submission 69*, [p. 2].

¹⁹⁰ See, for example, Surfers for Climate, *Submission 10*, [p. 2]; LGA South Australia, *Submission 25*, p. 9.

¹⁹¹ Seafood Industry Australia, *Submission 22*, [p. 4].

Chapter 4

Impact on marine biodiversity and ecosystem health

Overview

- 4.1 This chapter outlines the significant ecological, economic and social impacts of the harmful algal bloom (HAB) on marine biodiversity and ecosystem health.
- 4.2 Members of the South Australian community, as well as individuals and organisations outside of South Australia (SA), expressed strong views about its impact on the marine environment. This chapter sets out evidence received on:
- the impacts on marine biodiversity, as species are affected in large numbers, including the ongoing loss of biodiversity by affecting migratory bird species, loss of species habitat affecting breeding patterns, and creating a lengthy time to recovery;
 - the impact of the bloom on the Ramsar-listed Coorong Wetland;
 - recovery and ecosystem resilience; and
 - the need for long term monitoring of the ecosystem to identify further negative impacts, and promote recovery of the marine environment after the algal bloom has dissipated.

Impact of the harmful algal bloom on the marine environment

- 4.3 Members of the SA community, as well as individuals and organisations outside of SA, expressed strong views about the impact of the HAB on the SA marine environment, and commented on its severity.¹
- 4.4 The Biodiversity Council described the bloom as ‘one of the worst marine disasters in living memory’.² The Australian Academy of Science likened the scope and scale of destruction to an ‘underwater bushfire’ with serious and wide-ranging impacts on marine species and ecosystems.³ The Australian

¹ See, for example: City of Victor Harbor, *Submission 2*; City of Onkaparinga, *Submission 18*; Local Government Association of South Australia (LGA SA), *Submission 25*; Victorian National Parks Association, *Submission 27*; Australian Marine Sciences Association (AMSA), *Submission 32*; Yorke Peninsula Council, *Submission 35*; Environment Institute, The University of Adelaide, *Submission 40*; National Health and Medical Research Council (NHMRC) Healthy Environments and Lives (HEAL) Network SA Regional Hub, *Submission 43*; and Biodiversity Council, *Submission 66*.

² Biodiversity Council, *Submission 66*, p. 2.

³ Australian Academy of Science, *Submission 69*, p. 1.

Marine Conservation Society (AMCS) remarked on the HAB as ‘an ecological disaster of national significance’.⁴

- 4.5 The Great Southern Reef Foundation (GSRF) stated that the current HAB is ‘the most extensive marine mortality ever recorded in the state’, and has ‘devastated biodiversity, damaged fisheries and tourism, and caused deep cultural and social loss’. Further, the GSRF stated that the bloom is ‘a preview of climate-driven disasters that will strike more frequently without proactive national investment in preparedness and resilience’.⁵
- 4.6 The GSRF also stated that the reef, which spans 8 000 km from Western Australia to New South Wales,⁶ is a ‘global biodiversity and endemism hotspot with around 70 per cent of the species found nowhere else on earth’ and noted that the reef also contributed more than \$11.5 billion annually to the economy.⁷
- 4.7 Dr Georgina Wood, Vice-President of the SA branch of the Australian Marine Sciences Association (AMCS) told the committee that SA has a significance as a refuge for marine animals experiencing a decline in range, which underscores the severity of the bloom’s impacts:

Many of the organisms that are found here may be found elsewhere in southern Australia. We have predicted that there will be huge range declines over the next century for many of them. South Australia has long been considered a refuge. So, if we're losing species here, we're losing them for the future as well.⁸

- 4.8 The algal bloom has resulted in mass mortalities across a wide range of marine species including fish such as snapper, garfish and pufferfish, large predators and seagrass. RecFish SA Chief Executive Officer Mr Asher Dezsery told the committee that assessment of fish populations had shown catastrophic biomass losses of up to 38 per cent.⁹
- 4.9 The Commonwealth Scientific and Industrial Research Organisation (CSIRO) outlined that although preliminary information indicates that hundreds of species have been affected, the full impacts are not yet known:

Upwards of 450 marine species have been recorded to be affected by the current bloom in South Australia, with fundamental work on the mode(s) of

⁴ Australian Marine Conservation Society (AMCS), *Submission 56*, p. 1.

⁵ Great Southern Reef Foundation (GSRF), *Submission 46*, p. 1.

⁶ Biodiversity Council, *Submission 66*, pp. 17–18.

⁷ Mr Stefan Andrews, Co-Founder and Director, Great Southern Reef Foundation (GSRF), *Proof Committee Hansard*, 9 September 2025, p. 2.

⁸ Dr Georgina Wood, Vice-President, South Australian Branch, AMSA, *Proof Committee Hansard*, 9 September 2025, p. 7.

⁹ Mr Asher Dezsery, Chief Executive Officer, RecFish SA, *Proof Committee Hansard*, 24 September 2025, p. 70.

toxicity and isolation and identification of the causative species still underway. The full impacts of the South Australian bloom are yet to be determined, especially in the context of whether this becomes a seasonal feature of the region, and/or if the bloom spreads.¹⁰

- 4.10 Dr Craig Styan, President of the SA branch of the AMCS told the committee that marine species react differently to algal blooms, but that the algal bloom itself changes through time as well. Dr Styan elaborated on this, and stated:

So you can start off with one particular species or a set of species, and then essentially there is succession. It's a bit like a forest. You go through different stages. You can have different species come through, and, because one species had been there beforehand and cleared out or provided nutrients or whatever it is, that can lead to a different set of species occurring. Blooms can change as well. That's an important thing to be aware of.¹¹

- 4.11 Mr Tripodi summarised the observations of Marine Fishers Association members that species are affected in a particular order:

As the bloom starts to impact an area, there are species that are affected before others. For example, cuttlefish and other cephalopods—calamari—are generally affected first. Then there will be other species, like site associated species, that will start being impacted next, like your leatherjackets, wrasse and reef fish. Then it will slowly progress to your garfish, whiting and snappers later down the list.¹²

- 4.12 Submissions highlighted the significant role of citizen scientists, who have recorded and logged more than 33,000 records of affected marine animals through platforms such as iNaturalist. The Biodiversity Council summarised that affected species recorded in this way include: dolphins, sharks, stingrays, leafy sea dragons, sea lions, sea turtles, cuttlefish, a wide range of fish species, and many smaller invertebrate species such as gastropods, bivalves, crabs, sea cucumbers, and worms.¹³ The Biodiversity Council noted, however, that this will represent 'only a small proportion of animals killed, as most will rot on the sea floor'.¹⁴

- 4.13 Similarly, the AMCS stated that as the impacts are still unfolding, the full extent will not be known for years. The AMCS stated that without urgent action, the impacts on the marine environment may be long-lasting or irreversible.

¹⁰ Commonwealth Scientific and Industrial Research Organisation (CSIRO), *Submission 31*, p. 6.

¹¹ Dr Craig Styan, President, South Australian Branch, AMSA, *Proof Committee Hansard*, 9 September 2025, p. 3.

¹² Mr Pat Tripodi, Executive Officer, Marine Fishers Association Inc, *Proof Committee Hansard*, 9 September 2025, p. 60.

¹³ Biodiversity Council, *Submission 66*, p. 2.

¹⁴ Biodiversity Council, *Submission 66*, p. 2.

- 4.14 The GSRF also noted the potential underrepresentation of mortality from beach observations, and stated that:

For the most part, the diversity and abundance of taxa washing ashore is highly unusual and points to the high mortality resulting from the HAB. Shoreline observations do not capture all species, however, as heavier species such as abalone, likely remain under-represented. Without standardised baseline data from before the HAB, shoreline observations also fail to capture the relative magnitude of impacts that are taking place underwater.¹⁵

- 4.15 Inquiry participants were of the view that the Commonwealth and SA governments had been slow to respond to the bloom, which had allowed negative impacts on the marine environment to increase. Ms Faith Coleman, an estuarine ecologist and citizen science community leader, told the committee that:

The messages now being broadcast are mixed, focused on economics and are often reactionary...

Those who have been out on the water, documenting the impacts, and those who were (in many cases still are) leading the science in the public sphere have been poorly recognised and integrated with the current government monologue. With the increased unpredictability of the climate, this alternating “Nothing to see here” and “Move aside, the Government is here to save the day” approaches to the wicked, adaptive issues are becoming less and less effective, meaning that all levels of political power (including community) need to become more comfortable with collaboration and uncertainty.¹⁶

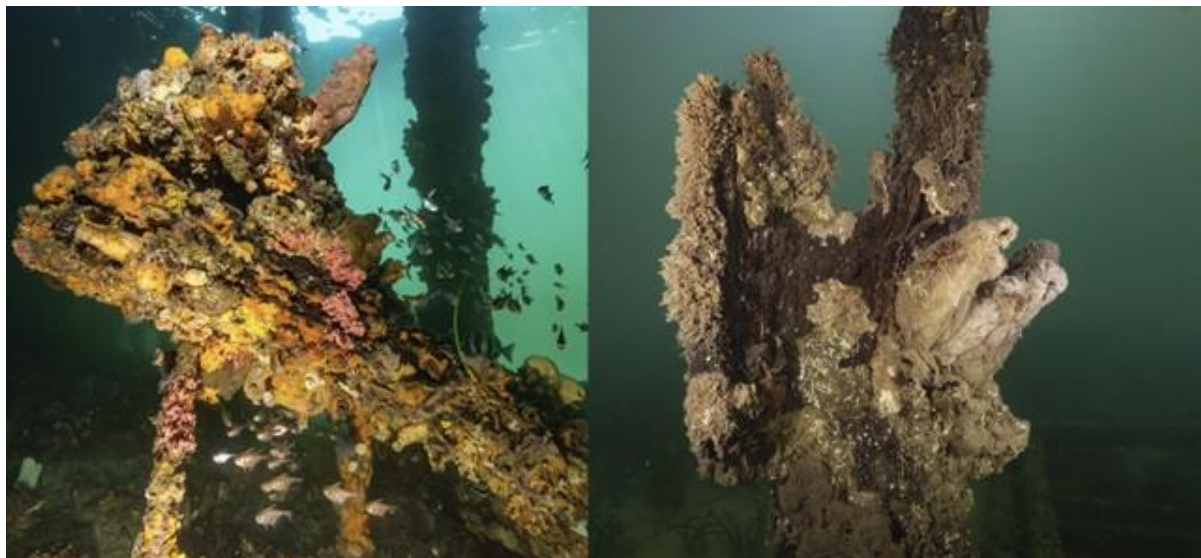
Significant ecological stress caused by the algal bloom

- 4.16 By way of example of the damage to the marine environment caused by the algal bloom, the GSRF provided a before and after image of the jetty pylons at Edithburgh, Yorke Peninsula, at Figure 4.1.

¹⁵ GSRF, *Submission 46*, p. 4.

¹⁶ Ms Faith Coleman, *Submission 33*, [p. 2]

Figure 4.1 Images of jetty pylons at Edithburgh, Yorke Peninsula, showing before and after the algal bloom



Source: Great Southern Reef Foundation, Submission 46, p. 5.

4.17 The Society for Ecological Restoration Australasia stated that ‘preliminary observations and community reports suggest the current bloom in SA is causing significant ecological stress’ on:

- High volumes of **seagrass and seaweed wrack**¹⁷ washed ashore
- Extensive **floating seaweed** detached from the seafloor
- Large numbers of **dead shellfish**, including razorfish (*Pinna bicolor*), cockles, and mussels
- **White patches on the seabed**, indicating potential seagrass dieback.¹⁸

4.18 Members of the public from SA provided evidence to the committee which show fish mortalities and dead marine plant matter which washed up onto SA beaches. Submitters noted the significant impact witnessing this mortality has had on their mental health, and the distress felt when considering the long term impacts of the algal bloom on the marine environment.

4.19 RecFish SA told the committee that there was already significant stress on some fish species in SA waters, which have been exacerbated by the current bloom:

Before the HAB events, South Australian fisheries were already showing some signs of stress. and federal SAFS reports listed several key species—including snapper, calamari, Coorong bream, Coorong greenback flounder, golden perch, school shark, striped trumpeter and others—as depleting or depleted. This has been a real worry during this period as we've been

¹⁷ Wrack is the term used to generally describe the seagrass organic matter that washes up on beaches, and is considered a marine asset as it provides ecological functions for the environment, such as providing habitat for marine life, removing carbon dioxide and generating oxygen. Seagrasses also provide clean water.

¹⁸ Society for Ecological Restoration Australasia, *Submission 50*, p. 2. Emphasis in original.

concerned that these fish would completely collapse because they were already stressed prior to HAB.¹⁹

- 4.20 Dr Charlie Huveneers, Professor, Flinders University, stated that not all species are affected by the HAB in the same way, and that there may be evidence of localised depletion of populations which could see small, local populations detrimentally impacted while the species numbers as a whole are not affected in a significant and irreversible manner:

Just around this beach, for example, there is a big population of southern eagle rays that people can see most mornings when they're walking down the beach. We did not get that many southern eagle rays washing up on the beaches. But, at the same time, we got a lot of these fiddler rays—hundreds of them—washing up on this beach, even though people don't often see them, and also up and down the beach.²⁰

- 4.21 Dr Wood, AMCS, explained that it is important to consider the ecosystem as a whole, when considering the impacts of an algal bloom, and gave the following example of the impact of habitat loss:

A good example is some surveys we did underwater back in June, where we noticed that a lot of the seaweeds, which are the dominant habitat on the rocky reef along this coastline, were doing okay. But the coralline algae, which covers the rocky reef and the habitat below, looked relatively stressed and bleached. This is really important for the recruitment of the seaweeds. Seaweeds do have a really short life history, so, if you were to just go off life history, you would predict that, even if they disappeared now, they might come back relatively quickly. But, if the coralline algae disappears, it will likely get taken over by weedy turf species, and we may see a shift or a hysteresis in the whole system. That will change the entire habitat that many other organisms depend upon.²¹

Threatened or endangered species

- 4.22 The SA coast is home to many threatened or endangered marine species, which have been impacted negatively by the algal bloom. For example, the endangered Australian sea lion and vulnerable white shark have been impacted by the HAB, as well as threatened ecological communities such as the endangered giant kelp community. The Biodiversity Council highlighted that it is possible that some species may now qualify as threatened due to the effects of the HAB.²²

- 4.23 There are various listed threatened species are currently affected by the HAB:

¹⁹ Mr Dezser, Recfish SA, *Proof Committee Hansard*, 24 September 2025, p. 70.

²⁰ Dr Charlie Huveneers, Professor, Flinders University, *Proof Committee Hansard*, 9 September 2025, p. 7.

²¹ Dr Wood, *Proof Committee Hansard*, 9 September 2025, p. 8.

²² Biodiversity Council, *Submission 66*, p. 8. These species are listed in the submission from page 8. See also, for example, *Submissions 1, 25, 27, and 66*.

AMCS has particular concerns regarding impacts to listed threatened species including Australian sea lions (*Neophoca cinerea*), great white shark (*Carcharodon carcharias*) and school shark (*Galeorhinus galeus*) as well as species of declining conservation status including weedy sea dragons (*Phyllopteryx taeniolatus*), leafy sea dragons (*Phycodurus eques*), and giant cuttlefish (*Sepia apama*).²³

- 4.24 The endangered Australian sea lion were said to be at risk of local extinction, as long-term algal blooms could reduce the availability of sardines (a major food source) and disrupt the food chain and local conservation efforts.²⁴ South Australian Native Title Services (SANTS) noted the significance of sea lions, among other marine species, to traditional owners as a food source and also for their cultural importance in creation stories.²⁵
- 4.25 The AMCS set out particular concern for the great white shark, as well as two small species of ray, the coastal stingaree (*Urolophus orarius*) and the pygmy thornback skate (*Dentiraja flindersi*).²⁶
- 4.26 The Conservation Council of South Australia (Conservation Council SA) the flow on impacts of the algal bloom on migratory birds and coastline birds, which are relied upon as a food source by the heavily threatened Australian sea lion. Ms Kristy Bevan, Chief Executive Officer of the Conservation Council SA, stated that the algal bloom ‘puts a lot of those threatened species at the brink of extinction’.²⁷
- 4.27 The Commonwealth Threatened Species Scientific Committee (TSSC) is considering any species or ecological communities that may need to be assessed as a priority for possible inclusion on the national threatened species list in line with the *Environment Protection and Biodiversity Conservation Act 1999*, as requested by the Minister for the Environment and Water, Senator the Hon Murray Watt.²⁸

Giant Australian Cuttlefish

- 4.28 The Giant Australian Cuttlefish population in the Upper Spencer Gulf, a near threatened species, has a critical breeding season in October and November. The

²³ AMCS, *Submission 56*, p. 2.

²⁴ Kangaroo Island Council, *Submission 1*, p. 3. Professor Jochen Kaempf, *Submission 4, Attachment 1*, p. 3.

²⁵ South Australian Native Title Services (SANTS), *Submission 55*, p. 2.

²⁶ AMCS, *Submission 56*, p. 2.

²⁷ Ms Kirsty Bevan, Chief Executive Officer, Conservation Council of South Australia, *Proof Committee Hansard*, 9 September 2025, p. 41.

²⁸ Ms Katrina Maguire, Division Head, International Environment Reef and Ocean Division, Department of Climate Change, Energy, the Environment and Water (DCCEEW), *Proof Committee Hansard*, 24 September 2025, p. 27.

SA Government recorded that numbers of giant cuttlefish have varied in the last decade, with the latest count showing an estimated population at Cuttlefish Coast of 63,374, compared to 81,420 in 2024. The lowest cuttlefish population estimate was approximately 13,500 in 2013, and highest population estimate on record is 247,146 in 2020.²⁹

- 4.29 As noted in Chapter 3, the Commonwealth and SA governments have jointly funded a bubble curtain to protect the eggs and hatchlings if the bloom is detected in nearby waters.
- 4.30 Associate Professor Jochen Kaempf submitted that a simulated bloom of *K. mikimotoi* did not spread into the upper gulf, which provided hope for the cuttlefish population:
- 4.31 Due to a reduced growth rate in hypersaline environments, the simulated *K. mikimotoi* bloom did not spread into the upper reaches of gulfs, which could have devastating effects on the Giant Australian Cuttlefish population in the upper Spencer Gulf. More laboratory experiments are required to confirm this salinity effect on the growth rate of *K. mikimotoi*.³⁰
- 4.32 Monitoring released by the SA Government in October 2025 showed a successful hatching season of cuttlefish with more than 90 per cent of the estimated 800,000 eggs expected to hatch.³¹

Impact on the Ramsar-listed Coorong wetland

- 4.33 The Coorong, Lakes Alexandrina and Albert Wetland Ramsar site is a Wetland of International Importance under the Convention on Wetlands, and has been affected by the bloom, with thousands of marine animals killed.³² The Coorong supports 11 threatened species, six threatened migratory waterbird species and two threatened ecological communities. This coastal lagoon is protected by the Australian and state governments.³³
- 4.34 The SA Government is responsible for managing the Ramsar Wetland, and notified the Commonwealth Environmental Water Holder (CEWH) that the

²⁹ South Australian (SA) Government, [Innovative investment aims to protect giant cuttlefish](#), 28 August 2025 (accessed 10 October 2025).

³⁰ Associate Professor Jochen Kaempf, *Submission 4, Attachment 1*, [p. 26].

³¹ SA Government, New protection for iconic cuttlefish following successful hatching season, *Media Release*, 16 October 2025.

³² The Convention on Wetlands of International Importance (known as the Ramsar Convention) aims to halt the loss of wetlands worldwide, and conserve those that remain. Under the Ramsar Convention, Australia is obliged to maintain the ecological character of the listed sites as they are representative, rare or unique, and important for conserving biological diversity. Ramsar sites are matters of national environmental significance and are 'protected matters'.

³³ DCCEEW, *Submission 67*, p. 10.

HAB had spread to the Coorong's North Lagoon in May 2025. The HAB caused the death of thousands of fish and macroinvertebrates at the Coorong.³⁴

- 4.35 Dr Anne Jensen, environmental consultant, drew attention to the global importance of the Coorong as a breeding site for pelicans and migratory birds, and stated that the algal bloom has exacerbated existing stress, noting 'the Coorong was already under serious environmental stress and this bloom has impacted the healthiest section of the complex, in the North Lagoon'.³⁵
- 4.36 The Coorong District Council stated that the bloom 'has triggered ecological collapse within the Ramsar-listed Coorong wetlands' with mass mortality of species which have destabilised the food web threatening fish stocks, migratory species and biodiversity. The Coorong District Council also stated that the North Lagoon has changed from the healthiest to the highest-risk conditions due to the bloom, and has put the Ramsar status under direct threat.³⁶
- 4.37 The Coorong District Council set out short, medium and long term support requirements in its submission.³⁷
- 4.38 BirdLife Australia noted that the loss of Coorong marine worms would have a flow on effect on shorebirds who feed on them prior to migration.³⁸ Dr Anne Jensen, environmental consultant, told the committee that the HAB had been pushed through the Murray Mouth into the Northern Lagoon of the Coorong during a storm in May 2025, which had a 'devastating impact on all forms of life' in the Coorong. The death of thousands of polychaete worms, as well as crabs and small fish, had caused great concerns for the environment and commercial fishery in the area.³⁹
- 4.39 The Coorong Environmental Trust has put forward a four-point plan to address the issues in the Coorong, describing it as a 'last-ditch attempt' to fix the issues in the North and South lagoons. The plan includes keeping the salinity of the South Lagoon within a narrow range, maximising flows into the South Lagoon, operating water efficiently and using burnt lime to boost water health.⁴⁰
- 4.40 Mr Keith Parkes, Mayor of the Alexandrina Council, told the committee that the South Lagoon of the Coorong is already facing challenges, and praised the work

³⁴ DCCEEW, *Submission 67*, p. 11.

³⁵ Dr Anne Jensen, *Submission 103*, p. 5.

³⁶ Coorong District Council, *Submission 14*, p. 2.

³⁷ Coorong District Council, *Submission 14*, p. 3.

³⁸ BirdLife Australia, *Submission 65*, p. 2.

³⁹ Dr Anne Jensen, *Submission 103*, p. 5.

⁴⁰ Dr Anne Jensen, *Submission 103*, p. 5.

of the Goyder Institute and Coorong, Lower Lakes and Murray Mouth Research Centre (CLLMM Research Centre) in monitoring the area:

The south lagoon of the Coorong is at the absolutely critical stage. It is just about gone—the most beautiful, pristine region in South Australia, if not one of the best regions in the world. It's a Ramsar site, and it's on the edge of tipping. That group is monitoring water, and thank goodness. It's an \$8 million program paid for by the federal government. But they're about to run out. They've got about six or eight months more to go, with no future funding.⁴¹

- 4.41 Dr Jensen set out the complexity of dealing with the effects of the bloom on the Coorong:

Karenia exists in a relatively narrow band of salinity tolerance, so there may be limited opportunities in the Coorong to shift salinity outside the tolerance of the algal bloom. It is suggested that the bloom would decline if the water is too salty or too fresh. That means releases of fresh water from the River Murray could be effective to reduce the bloom in the Coorong. However, while the bloom may stop expanding, it is not known if there are reproductive cysts accumulating in the substrate which could re-emerge in warmer conditions and continue to threaten Coorong ecosystems.⁴²

- 4.42 Ms Kristy Bevan, CEO of the Conservation Council SA, recommended building extensive refuges for the birds in the international bird sanctuary to seek support other than in their normal areas. Ms Bevan stated that without such action, there is a risk of extinction.⁴³

Recovery and ecosystem resilience

- 4.43 The GSRF highlighted the challenges in recovery and restoration of marine environments, and stated that:

Recovery and restoration of species and habitats is challenging, expensive and when successful, takes many years of sustained effort. Significant and sustained funding will therefore be critical to this process.⁴⁴

- 4.44 The GSRF welcomed the fast-tracking of assessments for possible inclusion on threatened species lists, and noted the similarity of this to the response to the Black Summer bushfires. The GSRF saw the level of investment as critical to recovering marine species and habitats affected by the bloom, and suggested that it be similar in value to the investment after the fires.⁴⁵

⁴¹ Mr Keith Parkes, Mayor, Alexandrina Council; and Chairperson, South Australian Coastal Councils Alliance, *Proof Committee Hansard*, 9 September 2025, p. 37

⁴² Dr Anne Jensen, *Submission 103*, p. 5.

⁴³ Ms Bevan, Chief Executive Officer, Conservation Council of South Australia (Conservation Council SA), *Proof Committee Hansard*, 9 September 2025, p. 41.

⁴⁴ GSRF, *Submission 46*, [p. 7].

⁴⁵ GSRF, *Submission 46*, [p. 7].

4.45 Inquiry participants were of the view that there were a range of viable ecological repair strategies which could be implemented in order to assist with marine recovery, including:

- planting and protecting native seagrasses and reeds to improve water clarity through their filtration properties;
- restoring populations of biological filters such as oysters and other shellfish; and
- supporting marine worms (polychaetes), which contribute to long-term ecological balance.⁴⁶

4.46 The construction of artificial reefs was highlighted during the inquiry as being a positive step in marine recovery, however Save West Beach Sand was of the view that recent grants (from joint Commonwealth and state funding) to RecFish SA to construct artificial reefs were ‘inadequate’ at 15 reefs, which would cover just 15 hectares. Save West Beach Sand called for an initial target of 300 hectares in each gulf, with the capacity to expand over time.⁴⁷

4.47 Similarly, Dr Anne Jensen stated that 15 reefs would have ‘minimal effect’ and called for a ‘major effort to expand efforts to re-seed vast areas of seagrass meadows in the gulfs and to replace the lost oyster beds at the head of the two gulfs’.⁴⁸ Dr Jensen also stated that:

All remaining refugia need to be protected. Special measures are needed to protect the cuttlefish breeding site however possible and practical, including artificial protective barriers if required.⁴⁹

4.48 The Yorke Peninsula Council also called for a substantive increase in the number of reefs and amount of area covered. The Council stated that shellfish reefs were an important part of marine restoration, and stated that ‘shellfish reefs are proven science...with Windara Reef [in Gulf St Vincent] one of now four State reefs that are extensively monitored’.⁵⁰

4.49 Mr Stefan Andrews, GRSF, drew attention to the risk of allowing introduced marine species and marine pests to proliferate in the absence of native species, and gave the following anecdotal observation:

... last weekend I jumped in at Kingscote Jetty. Most things were dead there. I think I saw two or three species of fish and three crab species, but one of the few species that were alive on the pylons was European fan worm, which is a species from overseas. So, yes, absolutely, we do open ourselves

⁴⁶ Ms Johanna Williams, *Submission 77*, [pp. 2–3]; Mr Peter Day, *Submission 78*, [p. 3]; Surfers for Climate, *Submission 10*, [p. 2]; Mike Bossley, *Submission 112*, [p. 3].

⁴⁷ Save West Beach Sand, *Submission 13*, p. 3.

⁴⁸ Dr Anne Jensen, *Submission 103*, p. 5.

⁴⁹ Dr Anne Jensen, *Submission 103*, p. 5.

⁵⁰ Yorke Peninsula Council, *Submission 35*, p. 4.

up. A weakened ecosystem is vulnerable, and we need to be monitoring underwater what's going on so we can tell what's happening.⁵¹

- 4.50 The Nature Conservancy submitted that, while it is of the view that the HAB is an ecological crisis of national significance, it is 'also an opportunity to catalyse a new era of marine recovery and resilience-building, and called for restoration to be part of the core infrastructure of recovery. This could be achieved through the restoration of shellfish reefs, which would 'directly contribute to buffering South Australia from the impacts of climate change and the current and future consequences of harmful algal blooms'.⁵²
- 4.51 Shellfish reefs were once part of the South Australian marine ecosystem, until overharvesting led to near extinction. The Nature Conservancy referred to the shellfish reefs as 'the kidneys of our bays, gulfs and estuaries', with their absence leaving the marine environment vulnerable to algal blooms and limited in their ability to recover.⁵³
- 4.52 The Nature Conservancy highlighted the important seawater filtration properties of shellfish reefs, including by removing nitrogen and boosting fish biomass, while supporting the recovery of adjacent habitats like seagrass and kelp. The economic benefits of the creation of reefs by creating new jobs through marine constructure, aquaculture and monitoring, were also noted.⁵⁴ See Figure 4.2.

Figure 4.2 Table showing ecosystem services provided by shellfish reefs

Table 1: Ecosystem services provided by shellfish reefs per 100 ha restored and relatable equivalent

Ecosystem service	Estimate per 100 ha	Relatable equivalent
Seawater filtration³	610 million litres/day	Enough water to fill 244 Olympic swimming pools every day (each pool ~2.5 million litres)
Fish biomass enhancement⁴	618,600 kg/year	About 1.2 million family-sized fish meals every year (assuming 0.5 kg fish per meal)
Nitrogen removal⁵	124,200 kg/year	Equivalent to removing the annual nitrogen load from sewage of ~62,000 people (at ~2 kg N/person/year)
Employment opportunities⁶	1,050 jobs	Jobs equivalent to staffing ten large supermarkets or two mid-sized regional hospitals

Source: *The Nature Conservancy, submission 37, p.5*

- 4.53 The Nature Conservancy recommended that a first tranche of a multi-year Marine Resilience Package for SA should focus on restoring at least 100 hectares

⁵¹ Mr Andrews, *Proof Committee Hansard*, 9 September 2025, p. 10.

⁵² The Nature Conservancy, *Submission 37*, p. 4.

⁵³ The Nature Conservancy, *Submission 37*, p. 4.

⁵⁴ The Nature Conservancy, *Submission 37*, p. 4.

of shellfish reef in priority zones, alongside seagrass and kelp recovery where appropriate.⁵⁵

- 4.54 In relation to the costs of larger scale reefs, the SA Government estimated that larger scale limestone shellfish reefs ‘will cost approximately \$600,000 per hectare’:

An estimate of the cost to restore significant and ecological meaningful areas of limestone shellfish reef restoration for South Australia is more than half a billion dollars.⁵⁶

- 4.55 The involvement of members of the public involved in citizen science was raised by Ms Monina Gilbey, who drew a link between the benefits of being productive in the face of a distressing ecological event and making a contribution to science:

For many of us who feel helpless in the face of this disaster, seeing activities and funding for citizen science projects like new moulded reefs provides a great deal of hope. To enable members of the public to feel like they can do something, it would be helpful to have centralised information about where and how community members can help to build resilient systems, such as contributing to projects like building oyster beds or the "Seeds for Snapper" initiative.⁵⁷

- 4.56 The SA Government announced measures to support fishing activity and to set up the recovery of fish stocks, including establishing a fish stocking program in freshwater bodies.⁵⁸

Immediate and long-term monitoring of the marine environment

- 4.57 The need for investment in long term monitoring of the marine environment was raised throughout the inquiry, including in the context of preparedness and ability to compare the impact of the algal bloom to existing baselines, and support for recovery of the marine environment.

- 4.58 The committee heard that there was a lack of coordination between organisations with existing data and scientific personnel with expertise to respond to it, and that underfunding of scientific data collection had a serious impact on research of the bloom. For example, the Conservation Council stated that the lack of stewardship in bringing existing data together indicated a larger issue:

This highlights a systemic gap: data is being collected but not consistently analysed or applied to prevention and preparedness. Without strong climate action – including a rapid transition away from fossil fuels – these events will become more frequent and more severe. We must strengthen

⁵⁵ The Nature Conservancy, *Submission 37*, p. 2.

⁵⁶ SA Government, answers to questions on notice, 9 September 2025 (received 26 September 2025).

⁵⁷ Ms Monina Gilbey, *Submission 99*, [p. 3].

⁵⁸ SA Government, [Backing SA's recreational fishers and supporting fish stocks](#) (accessed 13 October 2025).

investment in long-term monitoring, forecasting and institutional support for marine science to ensure that existing and future data is actively used to identify high-risk events, guide proactive responses, and protect both ecosystems and communities.⁵⁹

- 4.59 Submitters and witnesses, including Mr Bart Butson, a fisher from Port Wakefield and owner of B and M Buston Fisheries, highlighted the impact of gaps in scientific knowledge on responding to a HAB. Mr Butson suggested that remedying this would be an important step:

This marine disaster has caught our governments and their departments unprepared to deal with the level of devastation very well and it would be wise to bolster our scientific community with greater resources and facilities with the aim of better forecasting and management of our marine environment, so we can avoid or cope with these algal events with better success in the future.⁶⁰

- 4.60 Dr Charlie Huveneers from Flinders University was of the view that marine science investment was critically important to being able to respond to algal blooms and understand the reef ecosystem being impacted by the current bloom:

South Australia was unprepared for this event, and Australia is unprepared for extreme marine events. At present, we can't even assess the true impact of these kinds of events on our marine ecosystems, because we lack the necessary baseline data and consistent monitoring programs. How can we tell you what has changed if we do not even know what was there to begin with? Australia must invest more in marine biodiversity monitoring, especially in temperate regions. Currently, there is a disproportionate focus on tropical systems, with a substantial amount having already been invested in the Great Barrier Reef, for example. Yet, monitoring in our southern waters is largely ad hoc and fragmented.⁶¹

Gaps in scientific understanding and data

- 4.61 Mr Stefan Andrews, Co-Founder and Director of the GSRF, stated that while Australia 'has been a leader in developing biodiversity monitoring methods', 'chronic underfunding' had meant that programs like Reef Life Survey (RLS), Australian Temperate Reef Collaboration (ATRC), and Stereo-Video fish surveys were not able to deliver the data needed to measure impacts, prioritise at-risk species or guide recovery.⁶²

⁵⁹ Goyder Institute for Water Research, *Submission 45*, p. 3

⁶⁰ Mr Bart Butson, *Submission 80*, [p. 2]. This sentiment was echoed in submissions and other evidence, including from Mr Justin Cicolella, *Submission 85*, [p. 2].

⁶¹ Dr Huveneers, Flinders University, *Proof Committee Hansard*, 9 September 2025, p. 2.

⁶² Mr Andrews, GSRF, *Proof Committee Hansard*, 9 September 2025, p. 2. See also, GSRF, *Submission 46*, pp. 7–8.

- 4.62 The lack of stable funding for programs was highlighted also by Save West Beach Sand, which was of the view that long-term marine monitoring and forecasting in the Coorong were under-resourced:

Existing systems do not provide integrated data across sensors, satellite observations, and modelling. A lack of institutional funding and stable programs constrains the ability to prevent or forecast harmful algal blooms.⁶³

- 4.63 The Conservation Council SA stated that critical data already existed, with marine temperatures documented for decades, and the impact of the MHW (marine heat wave) and River Murray flood and cold-water upwelling:

What we were missing, was not data and information, but a dedicated, well-resourced team of scientists tasked with identifying risks, connecting these climate driven factors, and anticipating the “perfect storm” condition that led to this bloom. With proper monitoring, analysis and forecasting, mitigation or management actions could have been implemented earlier to reduce the severity of impacts.⁶⁴

- 4.64 The GSRF noted that there is data available from limited long-term surveys of reefs, including of the Encounter Marine Park on the Fleurieu Peninsula, in which fish, mobile invertebrates and habitat cover had been consistently surveyed annually or biennially for the last 20 years. According to the GSRF, these ‘standardised long term surveys are critical to assess the relative change in population size and community structure on reefs from the HAB’, in contrast with other affected areas such as the Yorke Peninsula and Spencer Gulf, where reefs were surveyed infrequently with one to five observations recorded over a similar period.⁶⁵

- 4.65 The Environment Institute, at the University of Adelaide, called for an urgent scientific program ‘to map the full extent of the ecological damage’ in critical water bodies including the Coorong, Lower Lakes and Murray Mouth region, Spencer Gulf and Gulf St Vincent, and elaborated that:

This must go beyond cataloguing fish kills to include subtidal surveys of benthic habitats (seagrass, macroalgal, reef, and soft-sediment communities) to establish a new, post-bloom baseline. This data is critical for quantifying the loss and setting realistic targets for future restoration efforts.⁶⁶

- 4.66 The Goyder Institute for Water Research called for a collaborative partnership approach to develop the knowledge needed to address this, and future, blooms. They proactively reached out to SA Government agencies on 9 April 2025 to propose a collaborative approach to the bloom, and received responses in April

⁶³ Save West Beach Sand, *Submission 13*, p. 2.

⁶⁴ Conservation Council of South Australia, *Submission 24*, [p. 5].

⁶⁵ GSRF, *Submission 46*, [p. 4]:

⁶⁶ Environment Institute, The University of Adelaide, *Submission 40*, [p. 9].

from both Department for Environment and Water (DEW) and South Australian Environment and Protection Authority (SA EPA).

- 4.67 In late June, the Goyder Institute was requested by DEW to coordinate research and knowledge priorities for the current HAB. The Goyder Institute coordinated more than 50 scientists and provided research priorities to DEW on 15 July 2025, with further information provided through August 2025. The Goyder Institute told the committee that: 'At the time of writing, it is unclear whether funding will be available to address these critical knowledge gaps', but that 'there is an obvious need for further investment in the science'.⁶⁷
- 4.68 The Goyder Institute highlighted that there are a large number of SA Government agencies involved in the response to the current HAB, 'with each agency having different focus areas and responsibilities', and stated that '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'.⁶⁸

Urgent data collection

- 4.69 Numerous inquiry participants emphasised the importance of collecting certain data while the HAB is active, before the opportunity is lost.⁶⁹ For instance, Dr Craig Styan, President of the South Australian Branch of Australian Marine Sciences Association (AMSA), told the committee that 'there's a lot of short-term work that really could be done now [while the bloom persists]', adding:
- ... once [the bloom is] gone, we'll lose the opportunity to study what's actually going on out in the field, and that's important to understand the particular species involved, what toxins they produce and what makes them grow.⁷⁰
- 4.70 The AMSA submission recommended an 'immediate, coordinated effort to collect information on the current HAB, involving local researchers, Traditional Owners and community'.⁷¹ AMSA highlighted that data on the spatial scale of impacts caused by the HAB is urgently needed to assess the breeding populations of affected species, 'forecast how long recovery may take, and

⁶⁷ Goyder Institute for Water Research, *Submission 45*, p. 3.

⁶⁸ Goyder Institute for Water Research, *Submission 45*, p. 3.

⁶⁹ See, for example, Professor Ivan Nagelkerken, *Submission 11*, [p. 2]; AMSA, *Submission 32*, [pp. 4–5]; Australian and New Zealand Marine Harmful Algal Bloom Network (ANZMHAB Network), *Submission 73*, [p. 7]; Dr Styan, AMSA, *Proof Committee Hansard*, 9 September 2025, p. 4; Dr Dominic McAfee, Marine Ecologist and Future Making Fellow, University of Adelaide, *Proof Committee Hansard*, 9 September 2025, p. 9.

⁷⁰ Dr Styan, AMSA, *Proof Committee Hansard*, 9 September 2025, p. 4.

⁷¹ AMSA, *Submission 32*, [p. 4].

whether active restoration (e.g. translocations) could be feasible to facilitate recovery'.⁷²

4.71 Likewise, Professor Ivan Nagelkerken of the University of Adelaide called for immediate scientific funding for 'samples to be collected and studies to be performed during, rather than after the HAB' in order to understand the drivers of the HAB and collect data 'that can be used to model and forecast future HABs and their ecological impacts'.⁷³ Professor Nagelkerken outlined that urgent data collection is required to address the following questions:

- How is the algal bloom tracking along the coastlines and Gulfs of wider Adelaide, and which environmental factors are they associated with (e.g. nutrient concentrations, seawater temperature, pH, dissolved oxygen)?
- Which marine species, what part of their populations, and across which spatial scales have been affected thus far?
- How are the total number of species affected and their population sizes changing due to the HAB as we proceed into spring and possibly summer?
- How have species been differently affected inside and outside South Australia's marine reserves?⁷⁴

4.72 Additionally, researchers from the Australian and New Zealand Marine Harmful Algal Bloom Network (ANZMHAB Network) noted that while the HAB is active, the short-term priorities should be to 'confirm the identity of the toxin producing [algae] species through isolation and culturing' and to 'identify seafood species at risk of accumulating toxins'. This would inform our understanding of animal/human health impacts and help safeguard domestic and export seafood markets.⁷⁵

Ongoing potential contribution of citizen science

4.73 RecFish SA CEO Mr Asher Dezsery was of the view that citizen science had 'played a critical role in identifying how bad this issue was', and said that 'the community really stepped up'. Mr Dezsery also stated that RecFish SA was given quotes for survey work of thousands of dollars, which would have left no budget for work other than surveys. Mr Dezsery said that 'without citizen science there's going to be a fraction done of what actually needs to be done'.

4.74 The work of citizen scientists in contributing to the scientific record and public policy in the absence of long-term monitoring was noted throughout the inquiry by individuals. Mr Peter Day submitted that:

⁷² AMSA, *Submission 32*, [p. 5].

⁷³ Professor Ivan Nagelkerken, *Submission 11*, [p. 2].

⁷⁴ Professor Ivan Nagelkerken, *Submission 11*, [p. 2].

⁷⁵ ANZMHAB Network, *Submission 73*, [p. 11]. See also, Dr Alison Turnbull, *Submission 60*, [p. 4].

The lack of relevant long-term monitoring of marine ecosystems has been clearly exposed by the algal bloom, while the amazing amount of data (over 20,000 observations) generated by interested individuals and recorded in iNaturalist and the SA Marine Mortality events 2025 project underlines the power of community involvement.⁷⁶

- 4.75 The willingness of members of the public, and members of the fishing and seafood industries unable to work during the algal bloom, to contribute to scientific research through citizen science was raised throughout the inquiry. Ms Samantha Carter, who runs the Phytoplankton of South Australia Facebook group, told the committee that citizen scientists are able to mobilise people in a variety of locations:

We can get into places SARDI can't get to. We have local experts, because we're using the community on the ground and saying, 'Hey, what spots do you know? You guys have been fishing here for 30 years. I've rocked in three years ago; what would I know?' But the guys and women who've been here for years and years go, 'Oh, I've seen weird water over here,' or, 'Something strange is going on over there.' We go and get a water sample and we can tell you what's in it. And, because we don't hide our data, it's all over Facebook. Anyone can go and look. It's all over iNaturalist. We actively go out and look for specialists from around the world who can look at it and say, 'What do you see? What can we help with?'⁷⁷

- 4.76 There were also suggestions to fund citizen scientists who can be quickly mobilised to collect and analyse samples while the bloom persists.⁷⁸ Ms Carter told the committee:

We want to work with the government. It is an enormous task and such a huge coastline. This is where citizen science can shine. We can respond much faster locally. The local fishers and boaties know the area and what it should look like. They can get samples to us quickly. ... Locally, we test our Encounter Bay samples from the Bluff jetty or off a boat, because where the government is testing off the boat ramp becomes too stirred up with sediment, diesel, and other human made contributions and may not be really representative. It's this sort of local knowledge that gives citizen science the edge which we're happy to share.⁷⁹

- 4.77 Divers for Climate Chief Executive Officer, Dr Yolanda Waters, put forward the suggestion that dive operators could run citizen science and monitoring initiatives. Dr Waters noted that members of the dive community had lost

⁷⁶ Mr Peter Day, *Submission 78*, [p. 2].

⁷⁷ Ms Samantha Carter, *Private Capacity, Proof Committee Hansard*, 11 September 2025, p. 22. Ms Carter's submission was made under the name Samantha Sea.

⁷⁸ See, for example, Dr Anne E Jensen, *Submission 103*, p. 5; City of Onkaparinga, *Submission 18*, p. 3; Ms Georgina Legoe, *Submission 110*, [p. 2]; Samantha Sea, *Submission 128*, [p. 4]; Councillor Gretel Wilkes, Chair, Adelaide Coastal Council Network, *Proof Committee Hansard*, 12 September 2025, p. 21.

⁷⁹ Samantha Sea, *Submission 128*, [p. 4].

income due to dive sites being closed for the algal bloom, and operating citizen science initiatives could allow dive operators to diversify and make a contribution.⁸⁰ Similarly, Mr Josh Kirkman, Chief Executive Officer of Surfers for Climate, spoke to the willingness of the surfing community to make a contribution:

I'll jump in for surfers real quick and just say that it's every surfers' dream to get paid to surf at some point in their lives, so I think there's a tremendous opportunity to engage with local boardriders and clubs. They are down the beach quite often, and they will surf in anything. Surfers as citizen scientists is a tremendous opportunity. If there's funding that can actually engage them and teach them and give them the tools they need to deliver it, it could be a really great way to build a bit more of a diverse revenue stream into that community. It will also help them to deliver back to the youth that are suffering through this moment. It is taking a big toll on young people, particularly those who like to surf and get in the water for their mental health and otherwise.⁸¹

4.78 The committee heard that people within the fishing industry were interested to assist with the urgent data collection and to contribute their skills towards research.⁸² Mr Ben Barnes, Chairperson of the South Australian Professional Fishers Association, pointed out that fishers possess a huge amount of knowledge, and suggested that 'us[ing] the fishermen to do that research quickly and on a widespread scale is the best way forward here'.⁸³

4.79 Mr Bartholomew Butson, a third-generation inshore marine fisherman from Port Wakefield, noted that he was in discussions with South Australian Research and Development Institute (SARDI) about being involved with their research. He told the committee that being involved in research would give fishers a purpose while there is little work to go around:

The fishermen are lost. There are 40 or 50 guys in Gulf St Vincent who are not doing anything. They need a purpose and they want to be a part of the

⁸⁰ Dr Yolanda, Chief Executive Officer, Divers for Climate, *Proof Committee Hansard*, 24 September 2025, p. 71.

⁸¹ Mr Josh Kirkman, Chief Executive Officer of Surfers for Climate, *Proof Committee Hansard*, 24 September 2025, p. 71.

⁸² See, for example, Mr Ben Barnes, Chairperson, South Australian Professional Fishers Association, *Proof Committee Hansard*, 11 September 2025, p. 2; Mr Bartholomew Butson, Owner, B and M Butson Fisheries, *Proof Committee Hansard*, 11 September 2025, p. 3; Mr Jeffery (Jeff) Wait, private capacity, *Proof Committee Hansard*, 11 September 2025, p. 40; Mr Paul Germein, private capacity, *Proof Committee Hansard*, 11 September 2025, p. 41; Ms Veronica Papacosta, Chief Executive Officer, Seafood Industry Australia Ltd, *Proof Committee Hansard*, 24 September 2025, p. 71.

⁸³ Mr Barnes, South Australian Professional Fishers Association, *Proof Committee Hansard*, 11 September 2025, p. 2.

solution, so anything that the fishing industry can do to utilise its knowledge and equipment would be welcomed.⁸⁴

- 4.80 Mr Paul Germein, a Stansbury fisherman, suggested that fishers could 'study for PIRSA [the South Australian Department of Primary Industries and Regions] and do core samples' while there is little fishing that can be done.⁸⁵

Ongoing research and development of HAB capability

- 4.81 A range of submitters and witnesses advocated for an ongoing national research program that would build HAB expertise and capability within Australia.⁸⁶

- 4.82 Numerous inquiry participants drew the committee's attention to the need for further research into the drivers of the HAB and the identity of the HAB species and their ecological characteristics.⁸⁷ For example, several submitters argued that further investigations are required into the role that nutrient inputs may have had in contributing to the HAB.⁸⁸ Professor Mike Steer, Executive Director of SARDI, acknowledged that:

We don't understand the causative factors, and there needs to be a body of work to understand what those key drivers have been so we can then learn from them in our preparedness going forward.⁸⁹

- 4.83 The Biodiversity Council called for research to 'definitively identify the diversity and dominance of species causing the blooms' and to determine key characteristics of the dominant *Karenia* species in the blooms, such as their environmental and ecological preferences and toxic effects.⁹⁰ In addition, Dr Alison Turnbull submitted that longer term research priorities should include 'development and validation of rapid methods for identifying HAB species and

⁸⁴ Mr Butson, B and M Butson Fisheries, *Proof Committee Hansard*, 11 September 2025, p. 3.

⁸⁵ Mr Germein, private capacity, *Proof Committee Hansard*, 11 September 2025, p. 41.

⁸⁶ See, for example, AMSA, *Submission 32*, [pp. 1 and 5]; Dr Styan, AMSA, *Proof Committee Hansard*, 9 September 2025, p. 1; Mr Chris Beattie, Coordinator, Algal Bloom Response Coordination Unit, South Australian Department of Premier and Cabinet (DPC), *Proof Committee Hansard*, 9 September 2025, p. 22.

⁸⁷ See, for example, Kangaroo Island Tourism Alliance, *Submission 12*, [p. 2]; The Environment Institute of Australia, New Zealand, South Australian Division, *Submission 42*, [p. 5]; Tourism Industry Council South Australia (TiCSA), *Submission 54*, p. 2; Dr Alison Turnbull, *Submission 60*, [p. 4]; Biodiversity Council, *Submission 66*, p. 2.

⁸⁸ The Environment Institute of Australia, New Zealand, South Australian Division, *Submission 42*, [p. 5]; Biodiversity Council, *Submission 66*, p. 2; Dr Anne E Jensen, *Submission 103*, p. 4.

⁸⁹ Professor Michael (Mike) Steer, Executive Director, South Australian Research and Development Institute (SARDI), *Proof Committee Hansard*, 9 September 2025, p. 17.

⁹⁰ Biodiversity Council, *Submission 66*, p. 2.

toxins'; 'mitigation techniques for protecting high value species'; and 'effective techniques to monitor our extensive and often remote coastline'.⁹¹

- 4.84 Inquiry participants from the US also underlined the importance of sustained funding and investment in developing regional and national HAB expertise. Dr Donald Anderson, Director of the US National Office for Harmful Algal Blooms, said that the current SA HAB as well as:

... patterns of the incidence of these kind of blooms globally and the presence of multiple other dangerous species in Australian and South Australian waters suggest that this really should be viewed as a motivation to develop a robust regional HAB capability and a robust national capability.⁹²

- 4.85 Dr Cynthia Heil, Director of the Red Tide Institute in Florida, US, stated that annual recurring funding at the state level is vital in helping to build stable HAB expertise:

... having sustained funding available is absolutely critical, and that has made a difference in Florida in terms of the development of the monitoring program. We have a state agency that is tasked by state law with doing this ... They have been able to maintain the expertise ... and they have been able to maintain collaborations with academia, with other state agencies and with the federal government to develop different areas of expertise and utilise other people's expertise to better research, to better monitor, and to develop products ...⁹³

- 4.86 From a New Zealand (NZ) perspective, Dr Kirsty Smith from the Cawthron Institute mentioned that it was helpful to have a 'core national research program that holds capability in harmful algal blooms'.⁹⁴ She explained that the unpredictability of HAB events 'requires stable, highly specialised national expertise and capability' that can respond quickly to changing environments and associated risks.⁹⁵

- 4.87 Representatives from the SA Government supported the idea of sustained and coordinated research into HABs, with Mr Chris Beattie from the Algal Bloom Response Coordination Unit in the SA Department of Premier and Cabinet pointing out that there is an 'opportunity to establish a national research

⁹¹ Dr Alison Turnbull, *Submission 60*, [p. 4].

⁹² Dr Donald Anderson, Senior Scientist, Woods Hole Oceanographic Institution, *Proof Committee Hansard*, 24 September 2025, p. 2.

⁹³ Dr Cynthia Heil, Director, Red Tide Institute, Mote Marine Laboratory and Aquarium, *Proof Committee Hansard*, 24 September 2025, p. 7.

⁹⁴ Dr Kirsty Smith, Science Manager, Molecular and Algal Ecology, Cawthron Institute, *Proof Committee Hansard*, 24 September 2025, p. 12.

⁹⁵ Dr Smith, Cawthron Institute, *Proof Committee Hansard*, 24 September 2025, p. 13.

platform ... to better support our academics and our researchers within the government departments'.⁹⁶

- 4.88 Ms Coleman, a leading citizen scientist providing scientific training to coastal communities, stated that, in her view, there was an overreliance on the industry regulator to analyse algae which are harmful to seafood but not necessarily to other marine life:

We also tend to just count the species that are hazardous to seafood, and there are hundreds of times that number of species that speak more to ecological condition. Some species are hazardous to the environment but not to seafood. Many of our decisions have been made by the industry regulator.⁹⁷

- 4.89 The committee received evidence that currently in Australia there is limited expertise on marine HABs.⁹⁸ According to Professor Shauna Murray from the ANZMHAB Network:

... there is a very specific knowledge and technical skill base that's needed to research marine HABs, and there are probably fewer than 10 scientists nationally that are trained in this area.⁹⁹

- 4.90 Nonetheless, the committee heard that there are 'world experts' among the small number of scientists who work in this field in Australia.¹⁰⁰ Emeritus Professor Gustaaf Hallegraeff told the committee that, in his view, there was limited expertise at the state government level to respond to the bloom, although there were expertise in academia:

South Australia has very limited marine HAB taxonomy expertise (I am aware of 2 staff at PIRSA), no culturing expertise for ecophysiological studies, nor HAB toxin analytical chemistry, but yes solid oceanographic modelling skills eg. at Flinders University. This scale of this event was impossible to predict, nor can it be stopped, except for monitoring, predicting and managing its impacts (closure of shellfish industry)...A large number of ad hoc competing committees were created, many without or with very limited algal experts involved. At the same time, the limited number of marine HAB experts in Australia were perhaps not widely

⁹⁶ Mr Beattie, South Australian Department of Premier and Cabinet, *Proof Committee Hansard*, 9 September 2025, p. 22. See also, Dr Mark John Doubell, Research Scientist, Oceanography Subprogram Leader, SARDI, *Proof Committee Hansard*, 9 September 2025, pp. 18–19.

⁹⁷ Ms Faith Coleman, private capacity, *Proof Committee Hansard*, 11 September 2025, p. 31.

⁹⁸ Professor Shauna Murray, *Submission 72*, [pp. 1–2]; ANZMHAB Network, *Submission 73*, [p. 7]; Dr Styan, AMSA, *Proof Committee Hansard*, 9 September 2025, p. 5; Professor Shauna Murray, Committee Member, ANZMHAB Network, *Proof Committee Hansard*, 24 September 2025, pp. 12–13.

⁹⁹ Professor Murray, ANZMHAB Network, *Proof Committee Hansard*, 24 September 2025, p. 12.

¹⁰⁰ Dr Styan, AMSA, *Proof Committee Hansard*, 9 September 2025, p. 5.

known outside their discipline. This has now been swiftly corrected by the creation of the ANZ Marine HAB Network...¹⁰¹

4.91 The formation of the ANZMHAB Network was seen as a positive step in building Australian knowledge of HABs. Dr Allison Turnbull explained that the network is made up of 'experienced harmful algae and marine toxin researchers and human health risk managers in Australia', and highlighted their work in supporting the identification of the algae and toxins, and providing advice to the South Australia Scientific Advisory Panel for Harmful Algae. The Network will continue to support research and capability development, and help to build preparedness for future HAB events.¹⁰²

4.92 However, Professor Murray noted that the Network has not received funding to date and would appreciate secretariat funding as well as ongoing and targeted marine HAB research funding to improve our understanding of 'the fundamental taxonomy, distribution and abundance of various different marine HAB species in key places around Australia'.¹⁰³ The ANZMHAB Network highlighted the gaps in current HAB research:

In general, in Australia, research into HABs by agencies such as the Fisheries Research and Development Corporation has been reactive, following a HAB of high concern to the fisheries and aquaculture industry. This funding covers applied research of immediate concern to industry. Often little ongoing funding is available for fundamental research to create transformational change in our understanding of this complex area.

... We suggest that a new, on-going funding mechanism for HAB research could be considered, so that longer term preparedness can occur, new scientists can be trained, and capability can be extended and solidified.¹⁰⁴

4.93 Dr Alec Rolston, Director, Goyder Institute for Water Research, and Director, Coorong, Lower Lakes and Murray Mouth Research Centre (CLLMM Research Centre) spoke to the committee about a paucity of science personnel able to be drawn upon to undertake this work, and stated that:

...many of them are on short-term contracts. It's the nature of the current academic environment, and what that means is that maintaining those excellent people in those roles so that they are available to respond to these emerging and critical events is very challenging. ... where we have the short-term funding cycle, that is typical of state and federal government funding, it means that that longer term retainment of capability and capacity

¹⁰¹ Emeritus Professor Gustaaf Hallegraef, *Submission 52*, p. 4.

¹⁰² Dr Allison Turnbull, *Submission 60*, [p. 3]. Ms Faith Coleman, however, told the committee that in her view, the scientific panel had not operated in a coordinated manner, and referred to the virtual meeting as 'chaos', and said that she was 'not seeing a lot of clear direction out of that, to be honest'. Ms Faith Coleman, private capacity, *Proof Committee Hansard*, 11 September 2025, p. 31.

¹⁰³ Professor Murray, ANZMHAB Network, *Proof Committee Hansard*, 24 September 2025, p. 17.

¹⁰⁴ ANZMHAB Network, *Submission 73*, [pp. 10–11].

is very difficult to do. ... the structures in place to maintain that capacity within these organisations isn't there because it's all short term and reliant on external funding.¹⁰⁵

4.94 Dr Charlie Huveneers from Flinders University echoed statements about a lack of appropriately skilled scientific personnel, and reflected that he was aware of several organisations 'struggling to recruit because there aren't enough people'.¹⁰⁶ Indeed, the difficulty in recruiting suitably experienced marine scientists has become such a challenge that it was being discussed in the National Marine Science Plan.¹⁰⁷

4.95 Port Lincoln's former marine science centre, which had been built through public donations, was highlighted by Port Lincoln's Mayor, Ms Diana Mislov. Ms Mislov called for a partnership between Commonwealth and state government to 'reinstate this asset and bring both education on marine science and the collection and monitoring of data back to the regions in our seafood capital'.¹⁰⁸ Ms Mislov continued that investment in marine scientists was critical:

I think there's a piece to be done in educating and growing our marine scientists, as we used to, here in Port Lincoln as well. There's a big future in ecological sustainability, and I'm not sure that we're seeing that across the state or the nation. Maybe there's resourcing, which I'm taking to mean money in this case, or an application for funding to re-establish those centres that might be able to house enough scientists to monitor and alert and create those initial reactions.¹⁰⁹

4.96 The committee also heard support for the establishment of the Southern Ocean Discovery Centre which will 'position South Australia as a national leader in marine education, health literacy, and environmental resilience', with a business case having been developed by the centre. The committee were told that it would cost \$25 million to design and construct this centre.¹¹⁰

4.97 Ms Kristy Bevan, CEO of the Conservation Council SA, contended that knowledge gaps extend to the issues underlying the bloom, and stated that:

...even if we do get on top of this bloom, the conditions that caused the bloom have not been dealt with, and therefore we know for a fact that it is likely that these unprecedented events will occur more intensely and more often, which are just the perfect scenarios for additional blooms. If we don't get a break in those systems, then, in addition to the fish stocks, which are

¹⁰⁵ Dr Alec Rolston, Director, Goyder Institute for Water Research, and Director, Coorong, Lower Lakes and Murray Mouth Research Centre, *Proof Committee Hansard*, 12 September 2025, p. 16

¹⁰⁶ Dr Huveneers, Flinders University, *Proof Committee Hansard*, 9 September 2025, p. 4.

¹⁰⁷ Dr Huveneers, Flinders University, *Proof Committee Hansard*, 9 September 2025, p. 5.

¹⁰⁸ Ms Diana Mislov, Mayor, City of Port Lincoln, *Proof Committee Hansard*, 10 September 2025, p. 2

¹⁰⁹ Ms Mislov, City of Port Lincoln, *Proof Committee Hansard*, 10 September 2025, p. 10:

¹¹⁰ Southern Ocean Discovery Centre, *Submission 123*, p. 3.

diminishing here in South Australia, we will see other species which rely on those in terms of the food web start to decline.¹¹¹

Oceanographic monitoring

4.98 The committee heard that oceanographic monitoring can 'help forecast when bloom conditions occur and potential movement and distribution of blooms as they develop'.¹¹²

4.99 Several inquiry participants suggested leveraging and expanding existing tools, such as those developed by the Bureau of Meteorology (BoM), CSIRO and the Integrated Marine Observing System (IMOS).¹¹³ These include, for example:

- the MHW forecasts provided by CSIRO and the BoM;¹¹⁴
- AquaWatch Australia (AquaWatch), led by CSIRO, which provides estimates of marine and freshwater water quality;¹¹⁵ and
- the IMOS Australian Ocean Data Network which provides a range of biological, chemical, atmospheric and water data on a national scale.¹¹⁶

4.100 Dr Mark Baird, Research Program Director at CSIRO, elucidated the contribution that AquaWatch can make to addressing the HAB:

One of the best ways that we can monitor blooms is through remote sensing. So CSIRO has been developing for the last four years the AquaWatch program, which enables us to have higher resolution remote sensing of algal blooms in both the inland and marine waters. I think this is part of having that timely response that you want, and it can also be delivered in a very coordinated way.¹¹⁷

4.101 CSIRO's submission stated that AquaWatch is 'being readied to focus on the SA region' through collaborations with SARDI and that the program is intended to

¹¹¹ Ms Bevan, Conservation Council of South Australia, *Proof Committee Hansard*, 9 September 2025, p. 41.

¹¹² Fisheries Research and Development Corporation (FRDC), *Submission 49*, pp. 9–10. See also, Environment Institute, The University of Adelaide, *Submission 40*, [p. 9].

¹¹³ See, for example, Surfrider Foundation Australia, *Submission 26*, [p. 5]; Dr Christopher Keneally, *Submission 29*, [p. 4]; AMSA, *Submission 32*, [p. 5]; Environment Institute, The University of Adelaide, *Submission 40*, [p. 9]; Dr Huveneers, Flinders University, *Proof Committee Hansard*, 9 September 2025, p. 10; Professor Craig Simmons, Chief Scientist, Department of State Development, *Proof Committee Hansard*, 9 September 2025, p. 31.

¹¹⁴ CSIRO, *Submission 31*, pp. 4–5; CSIRO, [Marine heatwave forecasts help predict coral bleaching, fish kills and algal blooms](#), 12 August 2025, (accessed 1 October 2025).

¹¹⁵ CSIRO, *Submission 31*, pp. 4, 7–9; CSIRO, [AquaWatch Australia](#), (accessed 1 October 2025).

¹¹⁶ CSIRO, *Submission 31*, pp. 7–9; IMOS, [Integrated Marine Observing System](#), (accessed 1 October 2025).

¹¹⁷ Dr Mark Baird, Research Program Director, Environment Research Unit, CSIRO, *Proof Committee Hansard*, 24 September 2025, p. 41.

inform decisions-makers during events such as the current HAB.¹¹⁸ At a public hearing, Janet Anstee, the Head of AquaWatch, informed the committee that AquaWatch is currently working to aggregate its own data with data from SARDI, IMOS and Coastal Research Infrastructure (CoastRI) sites to deliver data visualisations on an open access platform that will be freely available for SA communities to view.¹¹⁹

4.102 Professor Daniel Ierodiaconou, the Coastal Lead Scientist at IMOS, remarked that IMOS had been 'in active discussions via SARDI since 11 April with biweekly meetings about the HAB specifically',¹²⁰ and that IMOS data has been 'central to scientific analysis of the 2025 bloom'.¹²¹

4.103 However, the committee heard evidence that there are gaps in existing IMOS monitoring. CSIRO pointed out that although 'satellite remote sensing provides efficient, large-scale monitoring ... current IMOS ocean colour products are coarse and lack validation for SA waters'.¹²²

4.104 Additionally, according to Professor Ierodiaconou, 'most of IMOS's infrastructure is located offshore, limiting our ability to fully track bloom initiation, transport and inshore impacts or support rapid local responses'.¹²³ He therefore advocated for investment in the CoastRI program to extend Australia's coastal observing and modelling capability into the near shore.¹²⁴

4.105 In a similar vein, AMSA submitted that existing national programs like IMOS 'lack the spatial and temporal coverage needed for early HAB detection' and encouraged greater investment in these programs while developing complementary programs to address gaps.¹²⁵

¹¹⁸ CSIRO, *Submission 31*, p. 4.

¹¹⁹ Janet Anstee, Head, AquaWatch Australia, Space and Astronomy Research Unit, CSIRO, *Proof Committee Hansard*, 24 September 2025, p. 41.

¹²⁰ Professor Daniel Ierodiaconou, Coastal Lead Scientist, Integrated Marine Observing System (IMOS), Coastal Research Infrastructure Program, *Proof Committee Hansard*, 24 September 2025, p. 41.

¹²¹ Professor Ierodiaconou, IMOS, *Proof Committee Hansard*, 24 September 2025, p. 40.

¹²² CSIRO, *Submission 31*, p. 9.

¹²³ Professor Ierodiaconou, IMOS, *Proof Committee Hansard*, 24 September 2025, p. 40. See also, FRDC, *Submission 49*, p. 2.

¹²⁴ Professor Ierodiaconou, IMOS, *Proof Committee Hansard*, 24 September 2025, p. 40. See also, FRDC, *Submission 49*, pp. 8–9.

¹²⁵ AMSA, *Submission 32*, [p. 5].

- 4.106 Some inquiry participants argued that there should also be investment in predicting the location, magnitude and frequency of ocean upwellings and their nutrient inputs.¹²⁶
- 4.107 Professor Mike Steer from SARDI acknowledged that existing oceanographic infrastructure off the Eyre Peninsula 'clearly needs to be extended' and that the next tranche of government investment would include 'upscaling the opportunity to undertake detection and monitoring'.¹²⁷
- 4.108 Department of Climate Change, Energy, the Environment and Water (DCCEEW) officials told the committee that IMOS, which has been in operation for more than a decade, 'is world leading in the provision of infrastructure to monitor oceanic conditions', with data and information shared publicly to underpin research on the marine environment, weather and climate forecasting.¹²⁸ Oceanographic data is brought together from the Commonwealth and states, universities and institutions.¹²⁹

Calls for investment in long term monitoring programs

- 4.109 Dr Huveneers called for 'a joint consortium or marine institute, like WA's Oceans Institute, New South Wales' Sydney Institute of Marine Science and Tasmania's Institute for Marine and Antarctic Studies', which 'would facilitate a more coordinated approach'. Dr Huveneers suggested that using these facilities as a model:

...such a framework would ensure that, when extreme events occur, we have the capability, expertise and data to respond effectively. Without stronger monitoring, planning and collaboration, South Australia—and Australia—will remain unprepared for the impact of climate change on our marine environments.¹³⁰

- 4.110 Academics, including from the GSRF, suggested a variety of types of monitoring which should be undertaken and funded in order to combat the current, as well as future, blooms. These included:
- physical environment monitoring and forecasting (including temperature, waves, currents, nutrients) to help predict marine heatwaves (MWHs);
 - monitoring of HABs at their outset, including monitoring their taxonomy, extent and intensity;

¹²⁶ The Environment Institute of Australia, New Zealand, South Australian Division, *Submission 42*, [p. 5]; Mr Vic Neverauskas, *Submission 101*, p. 6; Dr Anne E Jensen, *Submission 103*, p. 4.

¹²⁷ Professor Steer, SARDI, *Proof Committee Hansard*, 9 September 2025, p. 14.

¹²⁸ Ms Maguire, DCCEEW, *Proof Committee Hansard*, 24 September 2025, p. 27.

¹²⁹ Ms Belinda Jago, Branch Head, Ocean and Wildlife Branch, Department of Climate Change, Energy, the Environment and Water, *Proof Committee Hansard*, 24 September 2025, p. 29.

¹³⁰ Dr Huveneers, Flinders University, *Proof Committee Hansard*, 9 September 2025, p. 2.

- biodiversity monitoring to calibrate and contextualise the information provided through other types of monitoring, and to inform of the condition of marine species and habitats and any changes present.¹³¹
- 4.111 The GSRF explained that long-term biodiversity monitoring was an essential foundation to forecast the ecological impacts of extreme events and develop ‘scalable, realistic prevention/adaptation strategies’. The GRSF was of the view that this should be coordinated between Commonwealth and state management agencies due to the impact on the Great Southern Reef, which extends between multiple states.¹³²
- 4.112 The GSRF recommended the establishment of a ‘Great Southern Reef Integrated Monitoring Program’, which would ‘provide the fundamental knowledge base to support resilience-based management, protect biodiversity and inform sustainable use of the Great Southern Reef. The GSRF called for a two-stage investment from the Commonwealth, with a \$6m immediate response to establish the program within the next two years, and a sustained \$40m program to deliver the program over the next decade.¹³³
- 4.113 This level of funding would mimic funding for the Great Barrier Reef’s Reef Integrated Monitoring and Reporting Program (RIMReP). This proposal was supported by other submitters.¹³⁴
- 4.114 The Biodiversity Council also called for a large investment akin to the RIMReP model, and to immediately begin research to understand the impact of the bloom on biodiversity and species population, including a minimum of \$10m to undertake research, identify species in need of emergency intervention, and monitor the recovery of species and ecosystems.¹³⁵
- 4.115 The Environment Institute, University of Adelaide, suggested that existing platforms should be used for monitoring and modelling programs, and suggested that Coast RI and citizen science may be suitable. The Environment Institute also suggested that existing funding instruments could be drawn upon, including the National Environmental Science Program (NESP), and funding provided through the Australian Research Council (ARC), National Health and

¹³¹ GSRF, *Submission 46*, pp. 6–7.

¹³² GSRF, *Submission 46*, pp. 6–7.

¹³³ GSRF, *Submission 46*, pp. 7–8. A breakdown of the coverage of each tranche of investment is provided in the submission. The LGA South Australia was supportive of this approach. LGA South Australia, *Submission 25*, p. 11.

¹³⁴ Victorian National Parks Association, *Submission 27*, [pp. 2–3]; Coorong District Council, *Submission 14*, p. 3.

¹³⁵ Biodiversity Council, *Submission 66*, p. 3.

Medical Research Council (NHMRC) and Medical Research Future Fund (MRFF).¹³⁶

4.116 Other submitters also called for significant investment in marine ecosystem surveillance and applied research.¹³⁷

Next chapter

4.117 Chapter 5 continues to discuss the ecological, economic and social impacts of the algal bloom on industries which rely on ocean health, and on regional and coastal communities.

¹³⁶ Environment Institute, The University of Adelaide, *Submission 40*, [pp. 9-10].

¹³⁷ Doctors for the Environment Australia, *Submission 38*, p. 12; Surfrider Foundation Australia, *Submission 26*, [p. 2]; City of Onkaparinga, *Submission 18*, p. 4; Kangaroo Island Council, *Submission 1*, p. 7; Mr Peter Day, *Submission 78*, p. 3; LGA South Australia, *Submission 25*, p. 1; Ms Siggi Frede, Chair, Tourism Industry Council South Australia, *Proof Committee Hansard*, 9 September 2025, p. 46; Ms Mislov, City of Port Lincoln, *Proof Committee Hansard*, 10 September 2025, p. 2.

Chapter 5

Impact on marine industries and coastal communities

Overview

- 5.1 This chapter outlines the impact of the harmful algal bloom on South Australia's (SA) marine industries, including commercial fisheries and aquaculture operators, tourism and recreational sectors, as well as on regional and coastal communities.
- 5.2 This chapter also canvasses the views expressed about the adequacy of financial assistance and other support to industry provided by the Commonwealth and SA Governments as well as other measures to support recovery and long-term resilience.

Economic impacts of the harmful algal bloom on marine industries

- 5.3 SA's marine industries make a significant contribution to the state's economy. Marine industries encompass a broad range of sectors, including commercial fishing and aquaculture, post-harvest and supply chain businesses such as seafood processors, as well as tourism and recreational industries that depend directly on the health and accessibility of the coastal and marine environment.
- 5.4 SA's fisheries and aquaculture industries contribute an estimated \$788 million in Gross State Product, and directly employ more than 6,250 South Australians.¹
- 5.5 The SA Government estimated that around 200 businesses 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.²
- 5.6 The committee heard evidence about the widespread economic impacts of the algal bloom across the fishing, aquaculture and tourism sectors. These impacts ranged from direct financial losses due to closures of fisheries and harvesting areas and stock mortality, to longer term reputational harm and business uncertainty.
- 5.7 Seafood Industry South Australia, a peak body representing all wild catch, aquaculture and post-harvest elements of the SA seafood industry, described the current algal bloom as a 'crisis of unprecedented scale for the seafood

¹ Seafood Industry South Australia, *Submission 39*, p. 3.

² South Australian (SA) Government, *Submission 71*, p. 2.

industry', risking 'long-term damage to the state's seafood economy, the viability of marine-based industries, and the communities they sustain'.³

- 5.8 It outlined that closures of fisheries and aquaculture operations in the Gulf St Vincent, Kangaroo Island, Lakes and Coorong and Spencer Gulf, has led to a substantial or complete loss of income-generating capacity for operators for several months due to reductions in catch.⁴
- 5.9 Local governments and representative bodies across affected regions, including the Coorong District Council, Kangaroo Island Council, the City of Port Lincoln, the Yorke Peninsula Council, Local Government Association of South Australia (LGA SA) and the Eyre Peninsula Local Government Association, provided evidence of severe economic disruption to local industries and small businesses.
- 5.10 The City of Port Lincoln noted that the closure of shellfish harvesting areas such as Boston Bay, Bickers Island and Proper Bay, has resulted in production losses and uncertainty for aquaculture operators.⁵
- 5.11 Similarly Kangaroo Island Council highlighted the impact on its local commercial fisheries, oyster and abalone industries due to closures or reduced access to fishing grounds during algal bloom events.⁶
- 5.12 The Yorke Peninsula Council reported that businesses along the St Vincent Gulf coast are experiencing trade downturns between 8.5 per cent and 40 per cent:
- The professional fishing industry is at a standstill, with marine ecosystems severely impacted. Oyster growers remain in limbo, unable to sell product and facing prolonged income loss with no relief in sight.⁷
- 5.13 While the total economic cost is difficult to determine, the evidence provided to the committee indicated substantial losses to date and the likelihood of ongoing impacts.
- 5.14 Yumbah Aquaculture, a producer and farmer of abalone, oysters and mussels, estimated the direct costs to its business from the algal bloom at approximately \$5 million, factoring in lost harvest, enforced closures and urgent capital works to mitigate risk.⁸
- 5.15 Safcol Australia, a major supplier of fresh, packaged and frozen seafood, reported that in the last three months of 2025, it had received 20 to 25 per cent less fish by quantity, and saw a 27 per cent drop in value compared to the

³ Seafood Industry South Australia, *Submission 39*, p. 3.

⁴ Seafood Industry South Australia, *Submission 39*, p. 3.

⁵ City of Port Lincoln, *Submission 64*, p. 2.

⁶ Kangaroo island Council, *Submission 1*, p. 3.

⁷ Yorke Peninsula Council, *Submission 35*, p. 2.

⁸ Yumbah Aquaculture Ltd, *Submission 28*, p. 2.

previous year.⁹ This represented an average loss of around \$200,000 per month to scalefish fisheries.¹⁰ As an operator of the Adelaide fish market, Safcol Australia also reported decreased auction prices of 25 per cent due to reduced consumer demand.¹¹

5.16 Ian Mitchell of Safcol Australia described the current situation:

We've got one fisherman at Port Wakefield who hasn't caught a fish since 21 August—not a fish. He goes out every day, wastes his money on fuel and ice, and comes back with nothing. It's heartbreaking for these guys. I'm a person that sits in the middle of our buyers—retailers, wholesalers—and our fishermen that go out to supply them. I'm sitting between the two, and there's a lot of doom and gloom at the moment. I have fishermen on the phone, in tears, talking. I offer my ear to all these people. I'm not just the market manager; I feel like I'm their mate. I've been dealing with these people for 25 years. I feel sorry for the guys that haven't been able to make a wage, and I feel sorry for our retailers who, at the moment, are buying a record number of squid cartons, because they're filleting fish and freezing it because the public won't eat it.¹²

Workforce impacts

5.17 The workforce of the sectors impacted by the algal bloom, such as the seafood industry, have been described as specialised, but often seasonal and casualised, labour particularly concentrated in regional coastal communities.¹³

5.18 Inquiry participants highlighted the significant impacts on the workforce, including across the fishing, aquaculture and tourism sectors. One submitter estimated that if the algal bloom spreads to major seafood producing areas, it is reasonable to expect that 'between 5,000 and 10,000 workers would be displaced statewide'.¹⁴

5.19 The committee heard evidence about businesses standing down staff and/or reducing the hours of their staff. Yumbah Aquaculture, for example, reported that its operations at Kangaroo Island and Port Lincoln had been dramatically disrupted, with employees in these locations stood down or working reduced hours.¹⁵ The CEO of Yumbah stated:

⁹ Mr Ian Mitchell, Fish Market Manager, Safcol Australia Pty Ltd, *Proof Committee Hansard*, 9 September 2025, p. 52.

¹⁰ Mr Ebrahim Bidhendi, Company Director, Safcol Australia, Pty Ltd, *Proof Committee Hansard*, 9 September 2025, p. 56.

¹¹ Safcol Australia, *Submission 63*, p. 2.

¹² Mr Mitchell, Safcol Australia Pty Ltd, *Proof Committee Hansard*, 9 September 2025, p. 54

¹³ SevenSeas Creative Australia Pty Ltd, *Submission 153*, p. 2.

¹⁴ SevenSeas Creative Australia Pty Ltd, *Submission 153*, p. 3.

¹⁵ Yumbah Aquaculture Ltd, *Submission 28*, p. 2.

With the closure of our mussel operations we had to stand down around 45 casual staff. We also had to reduce the hours of our permanent staff.

That was a duration of approximately four weeks.¹⁶

- 5.20 In the Port Lincoln and Eyre Peninsula region, one oyster business at Coffin Bay reported a 40 to 50 per cent impact in terms of staff operating levels.¹⁷ Another business reported reducing their staffing hours by 30 to 35 per cent in the July to August period.¹⁸
- 5.21 Commercial fishing owner-operators that rely on crew also described having to terminate staff. A commercial crab fishery observed that it had shut down one of its vessels due to consistently declining catch rates, leading to job losses for its casual crew:
- The second vessel...has a young skipper who has been with us for seven years but only recently was promoted from a deckhand to a skipper of his own vessel and two casual crew.
- Much like the other vessel, visual observations were noticed first before a sharp and consistent decline in catch rate followed, from above 3.6kg/ pot lift pre-June, to 1.4kg/pot in June, 0.8kg/pot in July and 0.3kg/pot in August. As a result, the decision was made to shut down this vessel until further notice. Our skipper was redeployed to Spencer Gulf to join the other two vessels and unfortunately, the two casual crew had to be let go.¹⁹
- 5.22 Tourism-dependent businesses, such as caravan parks, were also reported to have laid off staff, reduced hours and, in some instances, having to operate without paid employees.²⁰
- 5.23 Workforce retention was identified as one of the most critical challenges facing SA's marine industries, with the risk of losing skilled staff and industry expertise due to the unknown duration of the algal bloom.
- 5.24 Seafood Industry SA submitted that any long-term recovery will rely on the ability to 'sustain and retain our skilled workforce in circumstances where activity has stopped or is significantly reduced'.²¹
- 5.25 A number of submitters recommended targeted workforce strategies, including specialised financial assistance, such as a JobKeeper-style program, to provide a safety net for workers and ensure they remain connected to their industry,

¹⁶ InDaily, [Major SA seafood business reveals multimillion-dollar algal bloom hit](#) (accessed 30 September 2025).

¹⁷ SevenSeas Creative Australia Pty Ltd, *Submission 153*, p. 5.

¹⁸ SevenSeas Creative Australia Pty Ltd, *Submission 153*, p. 5.

¹⁹ DM & KL Holder, *Two Gulf Crabs*, *Submission 144*, p. 2

²⁰ Tourism Industry Council South Australia (TiCSA), *Submission 54*, p. 2.

²¹ Seafood Industry South Australia, *Submission 39*, p. 5.

employer and regions. These, and other proposals, are set out further in this chapter.

Reputational damage and consumer confidence

5.26 The algal bloom has also impacted public perception of SA seafood, with concerns raised about declining consumer confidence and reputational damage to seafood export markets even where seafood is sourced from unaffected waters.

5.27 According to the South Australian Department of Primary Industries and Regions (PIRSA), in 2023–24 the major export markets for SA seafood (such as rock lobster, southern bluefin tuna, abalone, oysters and prawns) were Japan (\$121 million), Hong Kong (\$41 million), China (\$15 million) and Vietnam (\$14 million).²²

5.28 Seafood Industry SA outlined the damaging impact of the algal bloom on seafood consumption:

[A]s significant as the algal bloom has been for our industry, at this stage, the change in seafood consumption may be as or more harmful. We are starting to see seafood operators who are unaffected by the algal bloom – which is to say, they're fishing in waters that are unaffected by the algal bloom – having to lay off staff, such is the drop in consumer demand led by concerns around the safety of consuming seafood.²³

5.29 In a similar vein, Mr Pat Tripodi of the Marine Fishers Association Inc, described the impact of the algal bloom on Melbourne-based consumers with reports of SA seafood being rejected over safety concerns:

...[t]he majority of our fish are local – to South Australians and interstate to Sydney and Melbourne. But we have definitely felt big impacts in customer confidence, consumer confidence. It actually started in Melbourne before it did in South Australia. We started having people in the Melbourne markets turning our product away over fears it might be unsafe.²⁴

5.30 Several submitters, including the City of Port Lincoln, emphasised the need for careful messaging to avoid deterring international export markets and domestic consumers. The Mayor of Port Lincoln stated:

Port Lincoln is pleased with the language being used of 'marine mortality events' and/or 'significant ecological event', as this terminology – rather than

²² South Australian Government, Department of Primary Industries and Regions (PIRSA), [South Australian Seafood: Major export markets & products](#) (accessed 6 October 2025).

²³ Ms Alison Lloyd-Wright, Chair, Seafood Industry South Australia, *Proof Committee Hansard*, 9 September 2025, p. 53.

²⁴ Mr Pat Tripodi, Executive Officer, Marine Fishers Association Inc., *Proof Committee Hansard*, 9 September 2025, p. 58.

'catastrophe', 'disaster' or 'emergency'—is less likely to deter our international export markets and domestic fish markets.²⁵

- 5.31 Muriel Scholz of Regional Development Australia Yorke and Mid North recounted that an abalone diver from Port Hughes had been advised not to catch their quota due to reputational risks with overseas buyers:

I was talking to an abalone diver from Port Hughes, which is a bit further up. What they have found is that they caught their quota, which is now in the freezer, and they were going to go out again in September. They were told by the wholesaler, 'Don't bother, because we're not selling anything.' He put that to the dual thing of—internationally there has been word that we have got an algal bloom, and they are being wary. Also, he thinks—and it's his opinion—that a lot of the overseas buyers are waiting to see if the price drops down.²⁶

- 5.32 Another submitter described reports of 'major interstate, international and interstate buyers have reduced or completely cut purchases, local and statewide sales are down more than 50%'. They further observed the significant impacts on the workforce due to 'negative perceptions of the safety of the product... whether or not the algal bloom has been present in local waters'.²⁷
- 5.33 The SA Government's 'Buy SA Seafood' campaign was launched in September 2025 to encourage South Australians, and other domestic markets, to eat SA seafood. This was discussed in Chapter 3.

The loss of livelihood and the impact on industry viability

- 5.34 The committee heard evidence about the severe financial stress faced by smaller local operators including individual commercial fishers, many of whom reported that it had become commercially unviable to continue fishing in affected areas.
- 5.35 Mr Michael Pennington, a commercial fisherman from Ardrossan with 16 years of experience, stated that his 'business has been shut for 90 days now with not one fish being caught'.²⁸

²⁵ Ms Diana Mislov, Mayor, City of Port Lincoln, *Proof Committee Hansard*, 10 September 2025, p. 2. See also, Mr Thomas McNab, President and Chair, Abalone Industry Association SA, *Proof Committee Hansard*, 10 September 2025, p. 13; Mr Richard Carruthers, Acting Mayor, Yorke Peninsula Council, *Proof Committee Hansard*, 11 September 2025, p. 14.

²⁶ Ms Muriel Scholz, Economic Development Officer, Regional Development Australia Yorke and Mid North, *Proof Committee Hansard*, 11 September 2025, p. 14.

²⁷ SevenSeas Creative Australia Pty Ltd, *Submission 153*, p. 2.

²⁸ Mr Michael Pennington, Private Capacity, *Proof Committee Hansard*, 11 September 2025, p. 42.

- 5.36 Mr Nathan Eatts, a sixth-generation fisherman from Cape Calamari, reported that he had not caught calamari for 147 days.²⁹ He described the declines in catch rates and its impact on the mental health of commercial fishers:

[O]nly 24 kilos of calamari has been caught commercially in GSV [Gulf St Vincent] since 1 July, and that would normally be well over 20 tonnes. The same goes for other commercially valuable species. They've been severely impacted, and it's just not viable to go fishing for them.

It's an extremely stressful time for me and other commercial fishers, and our mental health is suffering. We're watching our businesses, which we've poured our hearts and souls into for years and years, just being destroyed—and there isn't anything we can do about it. It's not only the licence holders that are struggling; it's also all our workers that are associated with our businesses.³⁰

- 5.37 Mr Bart Butson, a fisher from Port Wakefield and owner of B and M Buston Fisheries, described similarly devastating impacts on catches in Gulf St Vincent:

Our catches in GSV [Gulf St Vincent] now are very low. There's not enough to commercially fish. There's next-to-no squid—it's like they never existed and it's very strange. There's almost no garfish. It's been hard to be a fisherman lately. It's been absolutely horrible, to be honest, to have to ply your trade out on the water and to see it. I know what happens—we see the footage on the news and we see the beaches, and that's hard enough. But to actually have to go out in it and with it, and see the fish dying has been heartbreaking.³¹

- 5.38 Mr Butson outlined that the algal bloom had moved progressively north through the gulf, describing it as a 'curtain of doom' as it approached their fishing grounds:

Where I fish from is at the top of the gulf at Port Wakefield. I've heard from my colleagues at the very south part of the gulf that this horrible coloured water was coming and that, once it came, there would be no squid to be found...

Then it was like a curtain of doom, honestly. I would hear from my colleagues, fisherman at Edithburgh and Stansbury: 'You're not going to like this when this comes. This is terrible. The fish disappear overnight and/or they move.' The guys from Edithburgh and Stansbury were reporting, just talking to their fellow fishers in other areas, saying that they had to move because they were fishing one day and they caught a bunch of squid and whiting and then the next day the water was dirty and there was nothing.

It seemed to affect the calamari and cuttlefish first. Where I was fishing at the top of the gulf was the last place, and we knew it was coming. We felt hopeless about it. We noticed that the cuttlefish were on the top of the water

²⁹ Mr Nathan Eatts, Private Capacity, *Proof Committee Hansard*, 12 September 2025, p. 7.

³⁰ Mr Eatts, Private Capacity, *Proof Committee Hansard*, 12 September 2025, p. 2.

³¹ Mr Bart Butson, Owner, B and M Buston Fisheries, *Proof Committee Hansard*, 11 September 2025, p. 1.

dead. We could see hundreds and hundreds. Just one day after a storm—I'll digress a little—the government scientists were telling us that after the first storms it would dissipate and get better. I wish that happened. But after the first storm, we saw dead cuttlefish, and from that point on, within two weeks there were no squid. I haven't seen a squid since.

Then the garfish disappeared; they must have been a little bit more resilient...but we also witnessed dead white pointer sharks, dead gummy sharks, dead bronze whaler sharks, dead fiddler rays and dead smooth rays. All of the bottom-feeding fish died quickly as well. They were probably amongst the first group of fish to die. I guess self-preservation was kicking in and I was thinking, 'Perhaps it's the fish that can't move that will die, and the garfish and whiting will be alright.' But, in time, we found out that wasn't the case because the garfish then died. There's very few of those left. The records show that there are hardly any being caught. The whiting species appear to be the most resilient, and they were the last ones to hang in there.³²

- 5.39 A commercial fishing business operating as Two Gulfs Crab, described the same pattern of decline in catch. The business reported a 'sharp and consistent decline in catch rate' in the Gulf St Vincent, forcing it to cease operations in the area:

This vessel started to experience the effects of HAB [harmful algal bloom] around the 9th of July. This came firstly in the form of visual observations of a change in water quality and an unusual amount of dead sea life observed and ultimately followed by a sharp and consistent decline in catch rate, from averaging above 3.5kg/pot up to June, to 1.9kg/pot in July and finally 0.1kgs/per pot in August. As a result, the decision was made to cease fishing in GSV from August.³³

- 5.40 The company estimated that if the algal bloom were to continue through to 30 June 2026, the financial impact would be approximately 65 per cent, with 'significant financial loss and cash flow strain for the second half of the financial year and beyond.'³⁴

- 5.41 Commercial fishers also described the loss in value in commercial fishing licenses, with some reporting that the decline in value had jeopardised their retirement plans. Mr Ashley Perkins, a commercial fisher from the Yorke Peninsula, stated that the value of fishing licenses had been pushed to a 'new low' with their current value about half or even less compared to pre-1998 levels:

Prior to 1998, a licence was worth around \$200,000—for a hook licence. Twenty-seven years later, with 200 licences left out of the original 600, the value is about half or even less. So, for fishers like myself—I'm in my 60s; I'm looking at retirement. That investment, when I got into the fishery, was

³² Mr Butson, B and M Buston Fisheries, *Proof Committee Hansard*, 11 September 2025, pp. 3-4.

³³ DM and KL Holder Pty Ltd – Two Gulfs Crab, *Submission 144*, p. 1.

³⁴ DM and KL Holder Pty Ltd – Two Gulfs Crab, *Submission 144*, p. 3.

always intended to be sold off at the end of my career and used as a big part of my superannuation. That's gone. I don't have that anymore.³⁵

- 5.42 Similar concerns were raised by the owners of a commercial fishing business who were planning their transition to retirement:

This is now jeopardised and elongated by the financial restraints that will occur. The ongoing uncertainty is significant and must not be underestimated.³⁶

Concerns about overfishing

- 5.43 Due to the devastating marine mortality caused by the HAB, several commercial fishers called for the immediate ceasing of fishing within affected areas to ensure surviving fish stock have a chance to recover and breed. For example, Mr Butson stated:

From my own perspective, I do think it's necessary that we stop fishing, and I think it will be necessary for the government to help us out until the fish become sustainable again...

...But, from what I see, for the fish and the marine species to have the best opportunity to recover as quickly as they can, I think we should give them a break. I think we should stop catching them.³⁷

- 5.44 Mr Michael Pennington, a commercial fisher, stated that allowing any continued fishing in impacted areas represented 'complete and utter mismanagement of the highest degree', recommending that commercial fishing should cease until comprehensive stock assessments are completed.³⁸
- 5.45 Measures to ensure the sustainability of fish stocks and longer-term fisheries management is set out later in this chapter.

Delays in brevetoxin testing results and impacts on industry

- 5.46 The committee heard concerns from industry representatives about the lack of local testing capability to test for brevetoxins during the algal bloom crisis.
- 5.47 As outlined in Chapter 3, the SA Government announced that Agilex Biolabs in Adelaide will begin conducting regular brevetoxin testing for PIRSA from October 2025. Prior to the establishment of this local testing capability, the closest facility available was located in New Zealand.

³⁵ Mr Ashley Perkins, Private Capacity, *Proof Committee Hansard*, 11 September 2025, p. 42.

³⁶ DM and KL Holder Pty Ltd – Two Gulfs Crab, *Submission 144*, p. 3.

³⁷ Mr Butson, B and M Buston Fisheries, *Proof Committee Hansard*, 11 September 2025, pp. 3–4.

³⁸ Mr Pennington, Private Capacity, *Proof Committee Hansard*, 11 September 2025, p. 42.

- 5.48 The Chair of the SA Oyster Growers Association, Mr Peter Treloar, stated that ‘a nine-day testing time for product to be sent to New Zealand to be tested and for the results to come back is significant when time is critical’.³⁹
- 5.49 These delays have had significant impacts for producers and led to precautionary and extended harvest closures, particularly within the shellfish industry.
- 5.50 The uncertainty and delay with brevetoxin test turnaround times has also created significant operational challenges. Oyster and abalone growers reported difficulties in managing stock movements due to the risk of transferring brevetoxin to unaffected growing areas, and called for clear guidance on acceptable levels for safe stock movement.⁴⁰
- 5.51 Some industry participants described brevetoxin as a ‘moving picture’, highly variable and difficult to monitor without rapid local testing. The President and Chair of the Abalone Industry Association SA, Mr Thomas McNab stated:
- Bivalves express the brevetoxins very quickly, so it's week by week that you're testing, and, by the time you get those results back, the brevetoxins might have been expressed. It's a moving picture, so to speak, so it's really hard. Until we have the facilities in Australia and we can do quick testing within days, it's going to be hard to have that full, centralised dataset that you can actually monitor day by day.⁴¹
- 5.52 For some operators, the delay in testing results has led directly to product loss. As discussed in Chapter 7, Kuti Co, a First-Nations led enterprise, continued harvesting during the algal bloom period while awaiting brevetoxin test results. The company was later required to recall and destroy around 40 tonnes of pippis after receiving positive brevetoxin results two weeks later.⁴²

Impacts on tourism

- 5.53 The committee received extensive evidence about the significant impacts of the algal bloom on SA’s tourism industry, particularly in regional areas which rely heavily on marine-based tourism. These impacts were felt through losses in revenue, cancellations and operational disruptions, as well as concerns about reputational damage.
- 5.54 Tourism operators, particularly those in coastal regions, reported substantial financial losses. A July 2025 survey by Tourism Industry Council SA (TiCSA), a

³⁹ Mr Peter Treloar, Chair, South Australian Oyster Growers Association, *Proof Committee Hansard*, 10 September 2025, p. 14.

⁴⁰ See, for example: Mr Treloar, South Australian Growers Association, *Proof Committee Hansard*, 10 September 2025, pp. 14–16. Mr Wood, p. 15.

⁴¹ Mr McNab, Abalone Industry Association SA, *Proof Committee Hansard*, 10 September 2025, p. 20.

⁴² Mr Derek Walker, Board Member, Ngarrindjeri Regional Authority and Managing Director, Kuti Co, *Proof Committee Hansard*, 12 September 2025, p. 48.

peak body for the SA tourism industry, found that of responding businesses in the Yorke Peninsula, Fleurieu Peninsula, Eyre Peninsula, Kangaroo Island and Adelaide metropolitan areas:

- 99 per cent have lost income;
- the average financial loss was \$52,000, with 14 per cent experiencing losses of more than \$100,000;
- all businesses have reported cancellations or anticipate continuing a downturn in business for the next 3 months.⁴³

5.55 The committee heard directly from local councils, tourism operators and small businesses about significant downturns in revenue related to the impact of the algal bloom.

5.56 Kangaroo Island Tourism Alliance, a peak industry body representing over 120 member businesses on Kangaroo Island, reported that various tourism and aquaculture operators had cancelled bookings or reduced bookings due to the algal blooms:

The emergence of algal blooms, particularly in sensitive marine park sanctuary zones in areas such as Nepean Bay and Pelican Lagoon, and across our northern coastline threatens the very essence of our tourism offering. Visitors are drawn to our pristine coastlines, clean waters and safe swimming and fishing environments. Algal blooms compromise visitor safety, reduce visual appeal, and directly impact tourism experiences such as marine tours and fishing, and more widely the flow on visitor spend within island.⁴⁴

5.57 The Yorke Peninsula Council outlined that its local businesses are reporting downturns of as much as 40 per cent with reports of widespread summer booking cancellations. Mr Richard Carruthers, Acting Mayor of the Yorke Peninsula Council stated:

If the bloom persists and summer visitation is reduced by 30 per cent, that will represent a \$75 million hit to our community, just for summer.⁴⁵

5.58 The Yorke Peninsula Council also described the direct financial impact to the council as an operator of six caravan parks and 19 campgrounds:

As a direct impact to council—we own and operate six caravan parks and 19 campgrounds around the place, and they're all down by about half of what they would be this time last year. If that trajectory continues, we're talking about an over \$1 million hit direct to council, which is pretty

⁴³ TiCSA, [Financial Impact of Harmful Algal Bloom on South Australian Tourism Businesses](#), *Media Release*, 12 August 2025 (accessed 30 September 2025). The survey received 97 responses on the current (as of 22 July 2025) and future financial impact of the algal bloom.

⁴⁴ Kangaroo Island Tourism Alliance, *Submission 12*, p. 1.

⁴⁵ Mr Carruthers, Yorke Peninsula Council, *Proof Committee Hansard*, p. 9.

significant for a small council of our size that has limited resources and is very stretched.⁴⁶

- 5.59 The Eyre Peninsula Local Government Association stated that in affected areas, particularly the southern and eastern coastline that ‘fishing and agriculture businesses have been temporarily shut down, and tourism operators have suffered both immediate and long-term cancellations’.⁴⁷
- 5.60 The City of Victor Harbor outlined some significant disruptions, while acknowledging that the algal bloom coincided with a seasonal tourism downturn. For example, a major attraction, the Victor Harbor Horse Drawn Tram was suspended for several weeks ‘due to health concerns for the horses and staff from airborne particles’.⁴⁸

Impacts of the algal bloom on other businesses, including recreational fishers

- 5.61 Local operators, including accommodation providers, dive operators and those in the recreational fishing industry, also described the financial and personal impacts of the algal bloom on their livelihoods and communities.

The recreational fishing industry

- 5.62 The algal bloom has had far-reaching impacts for SA’s recreational fishing sector, with ecological damage to fish stocks and economic and social consequences for businesses and communities that rely on this activity.
- 5.63 Mr Asher Deztery, Chief Executive Officer of RecFish SA, a peak body for recreational fishers in SA, highlighted the economic contribution of the industry stating:
- RecFish SA represent a billion-dollar industry with 360,000 participants every year. There is \$380 million in recreational fishing tourism as well. But behind these numbers lies something a lot deeper. There’s a real, shared relationship with nature and that’s obviously now under threat.⁴⁹
- 5.64 Local councils, including the Yorke Peninsula Council, the Alexandrina Council, and the City of Port Lincoln, outlined that the decline and loss of marine species had discouraged visitors to these communities and negatively affected recreational fishing and tourism activity.

⁴⁶ Mr Nick Perry, Manager, Economic Development and Business Sustainability, Yorke Peninsula Council, *Proof Committee Hansard*, 11 September 2025, pp. 9–10.

⁴⁷ Mayor Geoff Churchett, Board Member, Eyre Peninsula Local Government Association, *Proof Committee Hansard*, 10 September 2025, p. 3.

⁴⁸ City of Victor Harbor, *Submission 2*, p. 2.

⁴⁹ Mr Asher Deztery, Chief Executive Officer, RecFish SA, *Proof Committee Hansard*, 24 September 2025, p. 69.

- 5.65 Mr Richard Carruthers, Acting Mayor of Yorke Peninsula Council, emphasised the central role of recreational fishing and crabbing to local economies and community identity:

Our council has taken this period, where there's no fish or crabs to be had, to do some repairs on our jetty. Unfortunately, the word around our town—specifically Ardrossan, where I live—is that, if this doesn't improve, our town will be a ghost town. There's no reason to come to Ardrossan. People generally come here to crab or fish.⁵⁰

- 5.66 Mr Brad Martin from OzFish Unlimited, a recreational fishing conservation charity, told the committee that recreational fishers had experienced similar challenges to commercial operators due to the decline in key marine species. He observed that this had flow-on effects across related industries, such as bait suppliers and coastal tourism operators:

It's a very similar sentiment to the commercial fishers. We're seeing this change in the availability and movements of recreational species, and, therefore, that's also changing people's experiences of recreational fishing. You can go to jetties up along the coast at the moment, and most of them will probably have no one there. That's reflecting the fact that people don't want to go fishing, because there are all these concerns around whether there's fish available and whether it's worth the effort. That's applying not just to the metro coast but to regional coasts as well. We're seeing that short-term impact to recreational fishing and all the knock-on effects to the tackle industry and to tourism. But we also have these longer term concerns around the environment, because we know that to have healthy fish populations we need a healthy environment. We don't have that right now, so that's a big part of why OzFish really focuses on that fish habitat restoration work...⁵¹

- 5.67 Environmental organisations, including the Biodiversity Council, submitted that marine-based tourism and recreational fishing businesses were also suffering losses due to species mortality.⁵²
- 5.68 Individual recreational fishers also outlined the personal and mental-health impacts due to the loss of recreational fishing activity. Mr Peter Meadows, a long-term Port Lincoln resident, described a sense of 'doom and gloom' among retirees who could no longer enjoy fishing.⁵³
- 5.69 On 3 August 2025, the SA Government announced a series of measures to support recreational fishers and support the recovery of fish stocks. These include funding for a recreational fishing reef to support the survival and

⁵⁰ Mr Carruthers, Yorke Peninsula Council, *Proof Committee Hansard*, 11 September 2025, p. 9.

⁵¹ Mr Brad Martin, South Australia Project Manager, OzFish Unlimited, *Proof Committee Hansard*, 9 September 2025, p. 54.

⁵² Biodiversity Council, *Submission 66*, p. 6.

⁵³ Mr Peter Meadows, Private capacity, *Proof Committee Hansard*, 10 September 2025, p. 28.

reproduction of key recreational species; opening more reservoirs to recreational fishing where consistent with public health advice; and supporting RecFish SA to deliver fishing events and competitions to boost participation.⁵⁴

Other operators, including charter companies and accommodation providers

5.70 Divers for Climate described the impact of the algal bloom on its sector as ‘severe’ with some operators experiencing ‘deeply-felt economic consequences, with lost income and cancelled tours directly linked to the degraded marine environment’.⁵⁵ It warned that if the algal bloom continues for twelve months, ‘there is a real chance that at least two operators will be forced to close’.⁵⁶

5.71 Mr Andrew Wright of Calypso Star Charters, a charter company operating shark cage diving tours, likened the algal bloom’s impact to those of COVID-19 on the tourism industry:

I guess this algal bloom situation, to me, is probably just a repeat of the drama that the tourism industry faced through COVID—lots of things on lots of fronts attacking you. I suppose we ended up more resilient because of that, so this is just another hurdle in the road.

Yes, numbers absolutely are down. We've got data going back for 25 or 30 years of white sharks' visitations to the islands that we go to, and it shows a fair bit of variation. We've had bad patches in the past...

We've had cancellations and people saying, 'We're not coming. We're worried. We've got skin irritations. We don't want to go and swim with the sea lions.' But I think it's got worse since the media made a big song and dance about it...[O]nce it started washing up on West Beach and it was very visible, that was when the media grabbed hold of it, ran with it and shouted it. That was probably the turning point, where we noticed the phone ringing and people concerned about it. It's not that we were hiding it before. We were fielding questions, but not nearly the volume we have had since then.⁵⁷

5.72 Mr Josh Kirkman, Chief Executive Officer of Surfers for Climate, similarly highlighted the severe economic consequences for coastal communities:

The economic toll I witnessed was stark. Bait sales were down 80 per cent, surf camps shut and the national surf titles relocated. For small coastal

⁵⁴ SA Government, *Media Release*, [Backing SA's recreational fishers and supporting fish stocks](#), 3 August 2025.

⁵⁵ Divers for Climate, *Submission 48*, p. 7.

⁵⁶ Divers for Climate, *Submission 48.1*, p. 2.

⁵⁷ Mr Andrew Wright, General Manager, Calypso Star Charters, *Proof Committee Hansard*, 10 September 2025, p. 30.

businesses, when the sea turns toxic, livelihoods become terminal overnight.⁵⁸

- 5.73 The committee also received evidence about the broader flow-on effects on hospitality, retail and other service industries. The Port Vincent Progress Association, a community organisation, reported widespread concern among its local business owners about declining turnover and reduced seasonal trade:

[S]he's [a business owner] had to let people go... they've reduced their hours of operation, and they've also had to change their supply chain. They couldn't take on local fish, because people weren't game to eat local fish. That's dollars to them. By the way, she's lost about 24 per cent turnover from the same time last year to this point in time. The IGA has reduced its opening hours because of the fluctuations in traffic. Similarly, they were going to hire people over the summer, but they're now going to sit on their hands and wait. Everyone is really concerned about the future, which is the message that's come through well here today. There's potential for a continued loss in turnover during the summer months.⁵⁹

- 5.74 A seasonal accommodation provider on Kangaroo Island also reported that the bloom had created a 'dire financial burden':

The bloom has had — and will continue to have — a severe impact on seasonal accommodation businesses like ours. The ongoing presence and possible continuance of the bloom into the peak summer season presents a dire financial burden, threatening property maintenance and viability of eco-tourism-dependent enterprises'.⁶⁰

The role of industry support

- 5.75 As set out in Chapter 3, a number of government measures are being provided to support businesses impacted by the algal bloom. These include:

- grants of up to \$10,000 for eligible small businesses and not-for-profit organisations in the marine industry whose revenue has been impacted as a result of the algal bloom;
- grants of up to \$100,000 to support eligible licence holders that have been unable to catch or harvest their typical volume of marine species, or have been unable to operate due to extended harvest closures;
- access to free financial counselling, mental health support and workforce advice; and

⁵⁸ Josh Kirkman, Chief Executive Officer, Surfers for Climate, *Proof Committee Hansard*, 24 September 2025, pp. 68–69.

⁵⁹ Mr Greg Mills, Vice President, Port Vincent Progress Association Inc, *Proof Committee Hansard*, 11 September 2025, p. 49.

⁶⁰ Ms Georgina Legoe, *Submission 110*, p. 2.

- waived fisheries and aquaculture license fees for the September quarter.⁶¹
- 5.76 As discussed in Chapter 3, to stimulate visits to coastal regions affected by the algal bloom, the SA Tourism Commission launched the *Coast is Calling* travel voucher program providing 20,000 vouchers for accommodation and experiences valued up to \$500.⁶²
- 5.77 Inquiry participants expressed support for the assistance provided by government. For example, the Chair of the SA Oysters Growers Association welcomed the government's measures:
- The state government announced, some weeks ago, relief for small businesses affected by the harmful algal bloom. That was up to an amount of \$100,000 per business, and that's been very much appreciated.⁶³
- 5.78 Similarly, the Chair of Seafood Industry South Australia acknowledged 'the support provided by the SA and Commonwealth governments in the immediate response and our gratitude for that'.⁶⁴
- 5.79 Individual commercial fishers also welcomed the financial support. For example, Mr Butson, Owner, B and M Butson Fisheries, stated:
- I'm very grateful that the government has put some support programs there. Without that, there would be even greater hardship for the fishers.⁶⁵
- 5.80 While acknowledging this support, several concerns were raised about the eligibility criteria, the difficulty in accessing support, and the adequacy of financial support available.

Eligibility barriers

- 5.81 Some submitters indicated that they were ineligible for the small business grant as they were unable to demonstrate a 30 per cent decline in turnover, particularly businesses in the tourism sector which operate seasonally.⁶⁶

⁶¹ SA Government, Office for Small & Family Business, [Supporting industry through the Algal Bloom event](#) (accessed 26 September 2025).

⁶² South Australian Tourism Commission, [The Coast is Calling South Australians with new travel vouchers](#) (accessed 3 October 2025).

⁶³ Mr Treloar, South Australian Oyster Growers Association, *Proof Committee Hansard*, 10 September 2025, p. 14

⁶⁴ Ms Lloyd-Wright, Seafood Industry South Australia, *Proof Committee Hansard*, 9 September 2025, p. 53.

⁶⁵ Mr Butson, B and M Butson Fisheries, *Proof Committee Hansard*, 11 September 2025, p. 2. See also, Mr Bart Butson, *Submission 80*, p. 2.

⁶⁶ To qualify for the small business grant, applicants are required to meet certain eligibility criteria including demonstrating a decline in business turnover of 30 per cent or more in any consecutive three-month period from 1 April 2025 to 31 October 2025, compared to the same period in the previous year.

- 5.82 Divers for Climate, for example, reported that none of its seven dive operators in SA had received financial assistance despite experiencing financial hardship due to lost revenue. It explained that four of its operators were unable to satisfy the 30 per cent decline in turnover requirement because of the seasonal nature of dive tourism, while another operator anticipated meeting the threshold only after the eligibility period had closed.⁶⁷
- 5.83 An accommodation provider cited its difficulty in demonstrating a 30 per cent decrease in turnover as its bank's statements included deposits for future bookings:

Despite having seen a significant decrease in accommodation bookings in the months April to July 2025, we are not currently an eligible small business due to the criteria requiring a downturn in income as evidenced by bank statements. Our bank statements include deposits for future bookings such that, despite actual turnover for nights stayed being more than a 30% decrease, as we hold amounts for future bookings - some of which might very well cancel - our losses, which may be very significant, are not eligible. Therefore, the current support package does not support many small businesses such as our own. Whilst we have committed to an active marketing program with significant expenditure, the downside is that there may be no future benefit whatsoever, should the bloom persist.⁶⁸

- 5.84 Mayor Geoff Churchett of the Eyre Peninsula Local Government Association, told the committee that fishers in Streaky Bay were unable to qualify for financial assistance because they were still catching fish, but unable to sell it:

One other issue that's been reported from over in Streaky Bay is that they're catching plenty of fish, as I said, so that excludes them from the criteria of getting the government grants. They're catching the fish, so they don't qualify, but they just can't sell it. I think the criteria of those grants have got to be looked at as well, for those people that are impacted in different ways.⁶⁹

- 5.85 The Eyre Peninsula Local Government Association recommended greater discretion in assessing applications, noting that the current criteria 'could potentially exclude businesses that have experienced cumulative distress, reputational loss, or partial closures and therefore remain vulnerable'.⁷⁰
- 5.86 Some submitters also reported that several operators had not applied for financial assistance, as they did not consider they would qualify for the grants. Tourism Industry Council Australia reported that 85 per cent of respondents to

⁶⁷ Divers for Climate, *Submission 48.1*, p. 1.

⁶⁸ Name Withheld, *Submission 117*, [p. 5].

⁶⁹ Mayor Geoff Churchett, Board Member, Eyre Peninsula Local Government Association, *Proof Committee Hansard*, 10 September 2025, p. 5.

⁷⁰ Eyre Peninsula Local Government Association, *Submission 44*, [p. 4].

its survey had not applied for a grant as they did not consider themselves eligible.⁷¹

- 5.87 Similarly, the Chair of Fleurieu Peninsula Tourism outlined the findings from its business survey across its membership:

We only received 27 responses, which is an interesting insight into how people are feeling at the moment. People tend to fill out surveys when they feel confident and happy. In this case, of those 27 surveys, basically only five people thought they were going to get an algae business grant, and the rest thought they wouldn't achieve the requirements. So the money that has been offered is only assisting a very small number of businesses at this point.⁷²

- 5.88 Secondary businesses, such as gift shops that experienced significant downturns in revenue but were not directly involved in fishing or tourism, also reported that they were not eligible for financial assistance.⁷³ Mayor Amanda Wilson of Holdfast Bay highlighted the exclusion of indirectly impacted businesses, such as coffee shops and restaurants:

... [w]hen you've got the whole esplanade not being walked on, you've got all of the coffee shops, all of the restaurants — we've got 330 small businesses just in the Jetty Road Glenelg precinct who are dependent on that walking-by traffic every single morning. They're just not there anymore. They are the people that are going to require assistance going forward.

... They need to show that they've had a loss for three months in a row. They can only access \$10,000. I don't think that, if they are coffee shops are on Jetty Road, they can apply.⁷⁴

- 5.89 Other submitters, including Yumbah Aquaculture, outlined that the financial assistance had been 'structured to favour small commercial fishers, recreational/tourism businesses and biodiversity measures' and that it was deemed ineligible due to the scale of its business.⁷⁵

Administrative burden in accessing assistance

- 5.90 Several commercial fishermen raised concerns about the difficulty in accessing financial aid. Mr Ashley Perkins, while noting the improvements made by the SA Government, stated that '[f]unding for affected fishers and business has been slow and complicated'.⁷⁶

⁷¹ Ms Linda Lacey, Head, Programs and Strategy, TiCSA *Proof Committee Hansard*, 9 September 2025, p. 46.

⁷² Mr Matthew Hurley, Chair, Fleurieu Peninsula Tourism, *Proof Committee Hansard*, 12 September 2025, p. 30.

⁷³ Mr Perry, Yorke Peninsula Council, *Proof Committee Hansard*, 11 September 2025, p. 10.

⁷⁴ Mayor Amanda Wilson, Holdfast Bay, *Proof Committee Hansard*, 9 September 2025, p. 37.

⁷⁵ Yumbah Aquaculture, *Submission 28*, p. 2.

⁷⁶ Mr Ashley Perkins, *Submission 135*, p. 1.

- 5.91 Mr Nathan Eatts of Cape Calamari highlighted that while he has received some assistance, the process of navigating the eligibility criteria has been difficult and '[i]t's just that ticking all the boxes to access it has been the challenging part'.⁷⁷
- 5.92 Divers for Climate submitted that its operators consistently reported the schemes were 'overly complex, administratively burdensome, and poorly adapted to the realities of running a small business'. The application process was described as 'confusing, requiring operators to navigate dense eligibility criteria and unclear guidance'.⁷⁸
- 5.93 The Yorke Peninsula Council also observed that it was assisting applicants with financial assistance processes, noting that 'people have found it very frustrating to access the state government assistance'⁷⁹ and the 'red tape seems to be horrendous for some people in small businesses'.⁸⁰
- 5.94 The Port Vincent Progress Association also recommended that the SA Government could 'review the complexity of the grant application'.⁸¹
- 5.95 The committee heard that SA Government representatives were encouraging businesses to apply for financial assistance even if they were uncertain about their eligibility.⁸² In addition, the SA Government website states that businesses should apply, even if the business is not certain of its eligibility.⁸³

Adequacy of financial support

- 5.96 Concerns were also raised about the adequacy of the financial assistance available, with many inquiry participants suggesting that the assistance did not reflect the extent of losses experienced by businesses.
- 5.97 Tourism Industry Council South Australia (TiCSA) noted the disparity between the losses incurred by businesses and the assistance offered. For example, its survey of over 100 operators found 'an average loss per business of \$52,000 with 14 per cent experiencing losses of more than \$100,000'. For businesses who have

⁷⁷ Mr Eatts, Private Capacity, *Proof Committee Hansard*, 12 September 2025, p. 3.

⁷⁸ Divers for Climate, *Submission 48*, p. 13.

⁷⁹ Mr Perry, Yorke Peninsula Council, *Proof Committee Hansard*, 11 September 2025, p. 10.

⁸⁰ Mr Carruthers, Yorke Peninsula Council, *Proof Committee Hansard*, 11 September 2025, p. 11.

⁸¹ Mr Greg Mills, Vice President, Port Vincent Progress Association Inc, *Proof Committee Hansard*, 11 September 2025, p. 48.

⁸² Ms Lacey, TiCSA, *Proof Committee Hansard*, 9 September 2025, p. 51.

⁸³ SA Government, Office for Small & Family Business, [Frequently Asked Questions](#), Algal Bloom Support Package (accessed 13 October 2025).

received it, that '\$10,000 [is] purely for operations, purely to get their staff paid and bills paid through this time'.⁸⁴

- 5.98 In a similar vein, Mr Matthew Hurley from Fleurieu Peninsula Tourism and an accommodation business owner outlined the inadequacy of the small business grant:

In summer, the real concern for us is, as I said, that we're normally banking a fund to let us survive the next winter over summer. The base operating cost for my business is about \$10,000 a month. So that \$10,000 pays base operating numbers for one month, not for five or six. That's the real issue.⁸⁵

- 5.99 Several commercial fishers provided evidence to the committee that the grant amounts, while welcome, were not sufficient for long-term viability and that support was required beyond the immediate crisis.⁸⁶

- 5.100 Mr Nathan Eatts, a commercial fisherman from Cape Calamari, described how the grant funding was immediately consumed by bills:

The tier 1 stuff that I have received has pretty much gone to bills. I haven't caught a squid since April. Those bills were piling up and they had to be paid, so most of that's gone. But we're definitely going to need something moving forward. I don't know what that looks like.⁸⁷

- 5.101 He further outlined:

For the commercial guys—the tier 1—there's \$25,000. That's the grant plus your license fee stuff back. But when we're talking \$4,000 or \$5,000 a quarter with electricity bills to run cool rooms, freezers and ice machines, and then you add your fuel on top of that, it soon adds up.⁸⁸

- 5.102 The Mayor of the City of Port Lincoln expressed similar concerns about the adequacy of the small business grant given the scale of loss in revenue:

\$10,000 really isn't enough. That's just nothing, really, when you think about the loss of revenue that these businesses might incur over that longer period of time. It's a difficult question to answer because I don't know what the answer is. How much is enough? How long is a piece of string? But it's not enough for some of these businesses to see out their livelihoods.⁸⁹

⁸⁴ Ms Lacey, Tourism Industry Council South Australia, *Proof Committee Hansard*, 9 September 2025, p. 50.

⁸⁵ Mr Hurley, Fleurieu Peninsula Tourism, *Proof Committee Hansard*, 12 September 2025, p. 33.

⁸⁶ See, for example, Mr Ben Barnes, Chairperson, South Australian Professional Fishers Association, *Proof Committee Hansard*, 11 September 2025, p. 6.

⁸⁷ Mr Eatts, Private Capacity, *Proof Committee Hansard*, 12 September 2025, p. 3.

⁸⁸ Mr Eatts, Private Capacity, *Proof Committee Hansard*, 12 September 2025, p. 9.

⁸⁹ Ms Mislov, City of Port Lincoln, *Proof Committee Hansard*, 10 September 2025, p. 5.

Access to ‘Coast is Calling’ tourism vouchers

5.103 Inquiry participants welcomed the ‘Coast is Calling’ travel vouchers program, with several councils and businesses stating that they had registered for the program or had been accepted for the voucher program.

5.104 The City of Port Lincoln and the Yorke Peninsula Council, for example, expressed their support for the voucher program and considered that it should continue.⁹⁰

5.105 Mr Andrew Cameron, Chief Executive Officer, Yorke Peninsula Council confirmed that several of their caravan parks had successfully registered for the program:

The tourism commission have been extremely helpful and sympathetic to our cause. The voucher system—I think three or four of our parks have been successful in that. There was recently some television exposure as well, managed by the SATC [South Australian Tourism Commission]. We were very grateful for that.⁹¹

5.106 Mr Max Tooze from Neptune’s Surf Coaching stated that his business had been accepted for the voucher program which would be good for helping to bring bookings back.⁹²

5.107 While the voucher program was well supported, some noted that the initiative had been introduced late:

On the positive side ... things like the voucher scheme to promote tourism are very positive and very well received. It is very late in the piece. With our occupancy, our business has been down since March.⁹³

5.108 Divers for Climate stated that awareness of the program was not universal, with only about half of its operators aware of the program, and only one was actively participating. Another dive operator described the scheme as ‘unworkable’ because the terms of use of the voucher meant they could not accept a booking for a dive experience that might be cancelled due to the presence of the algal bloom stating:

The risk of incurring costs, staff wages, travel costs etc outweighed the \$100 voucher reward if we were unable to deliver the experience on the day due to the presence of algae, or even bad weather, and then not able to claim the voucher reward.⁹⁴

⁹⁰ City of Port Lincoln, *Submission 64*, p. 3.

⁹¹ Mr Andrew Cameron, Chief Executive Officer, Yorke Peninsula Council, *Proof Committee Hansard*, 11 September 2025, pp. 11–12.

⁹² Mr Max Tooze, Owner, Neptune’s Surf Coaching, *Proof Committee Hansard*, 11 September 2025, p. 19.

⁹³ Mr Hurley, Fleurieu Peninsula Tourism, *Proof Committee Hansard*, 12 September 2025, p. 30.

⁹⁴ Divers for Climate, *Submission 48.1*, p. 1.

Changes made to the industry support measures

5.109 On 19 August 2025, the SA Government announced changes to its business grants in response to industry consultation and feedback. These changes are intended to extend and expand the availability of business grants available and make financial assistance more accessible to a wider range of businesses.⁹⁵

5.110 For both the small business grant and the fisheries and aquaculture assistance grant, these key changes included:

- extending the application closing date from 12 September 2025 to 30 November 2025;
- extending the period in which a business can demonstrate a decline in business turnover to any consecutive three-month period from 1 April 2025 to 31 October 2025;
- extending the requirement to demonstrate a decline in catch harvest to any consecutive three-month period from 1 April 2025 to 31 October 2025;
- reducing the requirement to demonstrate a minimum business turnover from \$100,000 to \$75,000.⁹⁶

5.111 In addition to these and other changes to the grant programs, fishing licensing fees were waived for both the June and September quarters, with these fees to be reviewed on a quarter-by-quarter basis.

5.112 An additional \$160,000 will also be invested in the *Stay A Float* program to support the mental health and wellbeing of individuals within the seafood industry.⁹⁷

5.113 As set out in Chapter 3, in October 2025 the SA and Commonwealth governments jointly announced the Algal Bloom Summer Plan including additional investment in the fishing and marine sector.

5.114 At a public hearing, representatives of the SA Government outlined the progress and take-up of these measures. Mr Chris Beattie, SA Department of Premier and Cabinet (DPC), stated that ‘significant progress’ had been made including the release of ‘\$1.4 million in fee relief, which has been granted to impacted businesses through a range of business support programs’:⁹⁸

What I would say is that significant progress has been made across a number of our programs—small-business grants, for example. We've had 35 of those

⁹⁵ PIRSA, [More businesses eligible for algal bloom financial support](#), 19 August 2025 (accessed 30 September 2025).

⁹⁶ Other changes to the grant programs are available at [More businesses eligible for algal bloom financial support](#).

⁹⁷ PIRSA, [More businesses eligible for algal bloom financial support](#), 19 August 2025 (accessed 30 September 2025).

⁹⁸ Mr Chris Beattie, Coordinator, Algal Bloom Response, Department of the Premier and Cabinet (DPC), South Australia, *Proof Committee Hansard*, 24 September 2025, p. 18.

approved and 20 are under assessment. For fee relief for our licence holders—fisheries and aquaculture—there have been 27 impacted licence holders who have had fee relief approved and a number—21-odd applications—are still pending...

We've recently extended contracts with respect to the *Stay Afloat* mental health program. Our rural business support programs are assisting 13 businesses with financial counselling. Our tourism voucher scheme is in flight, with 20,000 vouchers on offer, and that has been well oversubscribed by South Australians.

Of course, our media campaigns are in flight, with a \$750,000 'buy SA seafood' campaign, which is in market; a \$750,000 algal bloom public information campaign, which is also in market; and, of course, the 'Coast is Calling' tourism campaign, which has kicked off in support of this voucher scheme. So progress is tracking well.⁹⁹

5.115 Several inquiry participants gave evidence that the SA Government's changes to the eligibility criteria was welcomed:

Following feedback through our association on the challenges some operators were having accessing financial assistance, we are pleased with the immediate responsiveness of the Government of South Australia, to improve the accessibility of financial assistance by streamlining the application process and adjusting the criteria to reflect the seasonality of some species.¹⁰⁰

5.116 Similarly, Regional Development Australia Yorke and Mid North, a not-for-profit association funded by three levels of government, welcomed the recent changes to improve accessibility:

Support packages funded by Federal and State Governments are providing support to impacted businesses, with recent changes to eligibility and administration requirements improving the accessibility of these supports. This flexibility will continue to be needed going forwards, as conditions and circumstances continue to evolve over the coming months. This is evident in the prawn and crab fisheries based in Wallaroo and Port Broughton, which have not yet been impacted to the same extent as marine scale fishers, but may as fishing seasons move into their (traditional) peak periods.¹⁰¹

5.117 Several business operators also acknowledged recent improvements to the eligibility criteria and the waiver of fishing license fees. Mr Max Tooze of Neptune's Surf Coaching, explained that while his business had not qualified initially, the recent changes had made him eligible:

I have to wait till the end of September. I didn't qualify, because I didn't make enough during that period last year earlier in the grant funding. But,

⁹⁹ Mr Beattie, DPC, South Australia, *Proof Committee Hansard*, 24 September 2025, p. 20.

¹⁰⁰ Seafood Industry South Australia, *Submission 39*, p. 6.

¹⁰¹ Regional Development Australia Yorke and Mid North, *Submission 34*, [p. 3].

now that they've expanded it, I'll be able to get that at the end of this month.¹⁰²

5.118 A representative of Southern Rocklobster described his experience with having license fees for affected operators waived or refunded:

I've made an application through the association to PIRSA [Department of Primary Industries and Regions] for licence fee relief for the September quarter. I've got to say, PIRSA have been really helpful, and we're working on having licence fees for the September quarter waived or refunded, because the licence holders paid in advance.¹⁰³

5.119 Several witnesses also expressed support for the continuation and expansion of mental health and well-being programs for affected fishers and their families. For example, the Mayor of City of Port Lincoln described the *Stay Afloat* program as a vital service for those working in the fishing industry and recommended that it should continue to receive funding:

We were heartened to hear that a program called *Stay Afloat* will continue to be funded. That was really heartening because that's particular to the fishery and crew people—the fisherpeople—so that's one good thing. But I think more can be done in that space, with more longer-term programs, because quite often the funding is not there and you don't know if you're going to get it. So any kind of permanency around that would be great.¹⁰⁴

5.120 Similarly, the Southern Fishermen's Association described the *Stay Afloat* program as a 'really useful resource' and welcomed the additional investment in the program.

5.121 Some inquiry participants told the committee that changes to the industry support measures did not go far enough. For example, the Mayor of Port Lincoln outlined that the eligibility criteria and limited application window for small business grants failed to capture the full extent of the downturn:

... for small business, those grants of \$10,000 are only available upon meeting the criterion of a three-month period that shows returns of revenue that are at least 30 per cent down from those of a similar period the year before. And the window is too small. That window is only open until the end of November, I believe, which was extended from an earlier, shorter period. I think that we won't see some of those impacts until maybe even this time next year, because people are selling frozen stock, depending on what kind of business they're in. If you're in that market seafood business, you might be having frozen stock for sale now, but that's depleting the stocks that you might have used in the off season. So it's distorted revenue.

¹⁰² Mr Tooze, Neptune's Surf Coaching, *Proof Committee Hansard*, 11 September 2025, p. 18.

¹⁰³ Mr Thomas Cosentino, Executive Officer, Southern Rocklobster, *Proof Committee Hansard*, 12 September 2025, p. 4.

¹⁰⁴ Ms Mislov, City of Port Lincoln, *Proof Committee Hansard*, 10 September 2025, p. 6.

I think those impacts are going to be longer term. The criteria should extend that grant period.¹⁰⁵

Proposals to support industry viability and recovery efforts

5.122 A range of proposals were put forward to improve the viability and long-term resilience of marine industries and coastal communities affected by the harmful algal bloom. These suggestions ranged from immediate financial support for impacted businesses, to longer term measures focused on environmental management and sustainability.

5.123 Mr Kyriakos Toumazos, Executive of the South Australian Northern Zone Rock Lobster Fishermen's Association, told the committee:

While immediate state and federal response measures have been welcomed and appreciated, the focus was on urgent relief. The next phase for us is that we must secure the future of the South Australian seafood industry by ensuring that people's seafood businesses and processes are retained, regional economies and communities remain viable, consumer confidence and market demands are rebuilt, sustainability of fish stocks is protected and enhanced, and South Australia is prepared for any future events such as this.¹⁰⁶

5.124 Broadly, these proposals canvassed by industry representatives and other submitters included:

- workforce retention and income support, including the introduction of a JobKeeper-style program;
- measures to restore consumer confidence in SA seafood products; and
- longer-term environmental management and planning to support recovery and the resilience of the industry.

Workforce retention and ongoing financial support

Calls for the continuation and expansion of financial assistance

5.125 While the financial assistance provided to date was widely welcomed, many submitters argued that the financial assistance should be extended beyond the initial grant period to reflect the likely multi-year recovery process required following the algal bloom.

5.126 TiCSA recommended that direct financial support for affected tourism businesses be expanded with further tranches of funding:

Expand direct financial support for impacted tourism businesses – building on initial emergency grants of up to \$10,000 for impacted marine and coastal tourism operators to provide further tranches of funding with a broader definition of impacted businesses, higher funding amounts and continued

¹⁰⁵ Ms Mislov, City of Port Lincoln, *Proof Committee Hansard*, 10 September 2025, p. 4

¹⁰⁶ Mr Kyriakos (Kyri) Toumazos, Executive, South Australian Northern Zone Rock Lobster Fishermen's Association, *Proof Committee Hansard*, 9 September 2025, p. 53.

support for the duration of the crisis, especially if it extends into traditional peak periods.¹⁰⁷

5.127 Local government representatives, including the City of Port Lincoln, the Yorke Peninsula Council and the Eyre Peninsula Local Government Association, also called for financial assistance to be continued beyond the initial grant period.

5.128 The City of Port Lincoln recommended that financial support be maintained into 2026, as the impacts of the algal bloom are likely to extend over successive summer seasons:

The HAB [harmful algal bloom] may continue to impact for at least the next 6 to 12 months, therefore a longer-term approach is required over summer and potentially the subsequent 2026 summer season (December 2026 onward).

It is important also to understand current and future relief measures need to be extended for areas as the HAB expands, for example the Spencer Gulf and in particular the area around Port Lincoln. The financial impacts of the HAB are likely to expand in coming months and therefore any relief programme needs to consider this and needs to be continuing not with strict cut offs for financial or other support.¹⁰⁸

5.129 The Biodiversity Council considered that the scale of financial assistance offered to date was modest compared to the funding provided for other environmental disasters, such as the prevention of future fish kills in the Murray-Darling Basin, and investment in wildlife and habitat recovery following the 2019-20 Black Summer bushfires. It noted that while grants provided some immediate relief, they were unlikely to ensure long-term viability for most operators:

Most businesses are eligible for grants of up to \$10,000, with larger amounts of up to \$100,000 available to the hardest-hit harvesters. These measures are welcome, yet they exclude employees of affected businesses who have lost their income. Beyond the immediate financial strain, the bloom is expected to generate medium- to long-term disruption across supply chains and workforce availability. Consequently, although government support may ease short-term pressures, the prospects for recovery remain uncertain.¹⁰⁹

A JobKeeper-style payment

5.130 The concept of a JobKeeper-style income-subsidy program was identified by several submitters as a key mechanism to help businesses retain skilled staff and maintain workforce continuity during extended periods of disruption.¹¹⁰

¹⁰⁷ TiCSA, *Submission 54*, p. 2.

¹⁰⁸ City of Port Lincoln, *Submission 64*, p. 3.

¹⁰⁹ Biodiversity Council, *Submission 66*, p. 11.

¹¹⁰ The JobKeeper Payment was a wage subsidy program designed to help businesses affected by COVID-19 to cover the costs of their employees' wages. Eligible businesses, subject to certain

5.131 Seafood Industry SA called for the establishment of a targeted JobKeeper-style program for the seafood industry:

[K]eeping skilled and experienced staff in our industry is going to be essential to our ability to recover from this event. With some operators already commencing layoffs, a small, sector-specific, JobKeeper-style program would be incredibly valuable for our industry to keep staff in the industry, connected to employers and supporting the regional communities that rely on the seafood industry.¹¹¹

5.132 Divers for Climate similarly supported a JobKeeper-style payment as a necessary support for dive operators and their employees that ‘will sustain dive shops during prolonged algal bloom impacts and retain staff in the industry’.¹¹²

5.133 Commercial fishing representatives also expressed support for such a proposal. The South Australian Professional Fishers Association, in response to questions about a JobKeeper-style payment, stated that ‘anything that we can get to keep people in our industry and still focused on the skill set that they have would be a help’.¹¹³

5.134 Mr Nathan Eatts, a line fisherman operating as part of a business partnership, agreed that a JobKeeper-style model could provide critical support, noting that ‘it would have to tick all the boxes and go to business partners as well as employees’.¹¹⁴

5.135 The importance of retaining skilled workers was emphasised as critical across the commercial fishing, aquaculture, and tourism sectors. The Australian Southern Bluefin Tuna Industry Association highlighted the importance of workforce retention, warning that if the industry were to cease operations for one or two years, ‘the social impact, the welfare needs and then all the negative things that happen in a community when your unemployment levels go up very rapidly’ would be significant.¹¹⁵

5.136 The Southern Fishermen’s Association also supported a JobKeeper-style scheme as a way to retain the industry’s skill set:

turnover thresholds, would be able to access a wage subsidy from the Commonwealth Government to continue paying their employees.

¹¹¹ Ms Lloyd-Wright, Seafood Industry South Australia, *Proof Committee Hansard*, 9 September 2025, p. 53.

¹¹² Divers for Climate, *Submission 48.1*, p. 4.

¹¹³ Mr Barnes, South Australian Professional Fishers Association, *Proof Committee Hansard*, 11 September 2025, p. 6.

¹¹⁴ Mr Eatts, Private capacity, *Proof Committee Hansard*, 12 September 2025, p. 4.

¹¹⁵ Mr Daniel Casement, Chief Executive Officer, Australian Southern Bluefin Tuna Industry Association, *Proof Committee Hansard*, 9 September 2025, p. 58.

That is where I think there is some value in something like JobKeeper, to keep skills within the industry. It can add some value as this rides out...

[y]ou get to a point eventually where—how long do you keep that going? And that's the unknown in relation to what's happening with the bloom at the moment.¹¹⁶

Other measures, including an industry co-ordinator for the algal bloom

5.137 Inquiry participants proposed a range of complementary measures to help maintain business viability and workforce stability, including:

- financial assistance to maintain accreditation and membership requirements during periods of lost income;¹¹⁷
- business and financial counselling and advisory programs to assist with income diversification and strengthening business resilience;¹¹⁸
- initiatives to support the upskilling and retraining of employees, including career transition support.¹¹⁹

5.138 A central industry co-ordinator for the algal bloom crisis was also proposed by several inquiry participants. Industry representatives, including Seafood Industry South Australia and the South Australian Sardine Industry Association, recommended the appointment of an industry-based coordinator to provide guidance, coordination and direct support across sectors.¹²⁰

5.139 Ms Claire Webber, representing the South Australian Sardine Industry Association, told the committee:

It would be really helpful to have a HAB [harmful algal bloom] coordinator for industry that is working for the Seafood Industry SA body, which is funded for a minimum of 12 months or two years, so that we have a central point of contact that we can go to and that that person has access to all the people within the government, science and laboratories to address specific industry issues as they arise.¹²¹

¹¹⁶ Mr Keith Rowling, Executive Officer, Southern Fishermen's Association Inc, *Proof Committee Hansard*, 12 September 2025, p. 5.

¹¹⁷ Divers for Climate, *Submission 48.1*, p. 4.

¹¹⁸ See, for example: Divers for Climate, *Submission 48.1*, p. 41; City of Port Lincoln, *Submission 64.1*, p. 16 referring to the Seafood Industry South Australia's 23 July 2025 statement on the Harmful Algal Bloom response.

¹¹⁹ SevenSeas Creative Australia, *Submission 153*, p. 5.

¹²⁰ See, for, example: Seafood Industry South Australia, [Harmful Algal Bloom Response](#), 23 July 2025; Ms Claire Webber, Executive Officer, South Australian Sardine Industry Association, *Proof Committee Hansard*, 10 September 2025, p. 19.

¹²¹ Ms Webber, South Australian Sardine Industry Association, *Proof Committee Hansard*, 10 September 2025, p. 19.

- 5.140 Seafood Industry South Australia also called for additional funding to support the engagement of an algal bloom project manager within its organisation.¹²²
- 5.141 Local government representatives, including the Yorke Peninsula Council, similarly recommended funding for a ‘dedicated Algal Bloom Response Officer’ to ‘coordinate local recovery and stakeholder engagement’.¹²³

Measures to restore consumer confidence

- 5.142 Several submitters recommended measures to rebuild consumer and market confidence in SA seafood products, both domestically and internationally, to support recovery across the seafood and tourism sectors.
- 5.143 Safcol Australia called for strong public messaging to communicate that ‘fresh fish caught in South Australian waters are 100 per cent safe to eat’. It also suggested a follow-up campaign to ‘win back consumer trust in SA caught fresh fish’ once the algal bloom had subsided.¹²⁴
- 5.144 Seafood Industry South Australia also supported longer-term strategies to sustain and drive consumer demand, including an associated digital campaign to ‘drive a growth in long-term demand’.¹²⁵ It also recommended measures to support market access, including ‘advocacy, international promotions, trade shows or networks’ to support re-entry into any lost export markets.¹²⁶
- 5.145 The City of Port Lincoln, as part of a broader national response to the algal bloom, suggested a national communications plan to protect the reputation of seafood and tourism, urging governments to ‘fund rapid deployment of consumer confidence campaigns led by trusted science and industry voices’.¹²⁷
- 5.146 The Australian Southern Bluefin Tuna Industry Association recommended the establishment of a government-led communication framework to support responsible media reporting, ‘including guidance for describing environmental events in a manner that avoids undue market alarm.’¹²⁸

Sustainability of fish stocks and longer-term fisheries management

- 5.147 The committee also heard evidence about the potential long-term effects of the algal bloom on the sustainability of SA’s fish stocks. Industry representatives,

¹²² Seafood Industry South Australia, [Harmful Algal Bloom Response](#), 23 July 2025 (accessed 16 October 2025).

¹²³ Yorke Peninsula Council, *Submission 35*, p. 6.

¹²⁴ Safcol Australia, *Submission 63*, p. 2.

¹²⁵ Seafood Industry South Australia, *Submission 39*, p. 7.

¹²⁶ Seafood Industry South Australia, *Submission 39*, p. 8.

¹²⁷ The City of Port Lincoln, *Submission 64*, [p. 4].

¹²⁸ Australian Southern Bluefin Tuna Industry Association, *Submission 53*, [p. 2].

commercial fishers and scientists emphasised the urgent need for various protective measures to ensure the recovery of populations of affected marine species.

5.148 As outlined earlier in this chapter, several commercial fishers called for immediate closures to allow fish populations to recover.

5.149 Some industry representative groups also agreed that protecting breeding stock was critical to restoring ecosystem health.¹²⁹

5.150 Submitters outlined various measures to guide long-term recovery and future resilience. These included comprehensive fish stock assessments, flexible quota management and the potential for license buybacks and exit packages.

Comprehensive stock assessments

5.151 The Fisheries Research and Development Corporation (FRDC) is supporting the South Australian Research and Development Institute (SARDI) and PIRSA in conducting rapid assessments to estimate available biomass and determine the sustainable harvest potential of remaining stocks.

5.152 Commercial fishers and researchers called for urgent and comprehensive evaluation of both marine ecosystems and fish stocks to enable government to make informed decisions on how fisheries are managed.

5.153 Some submitters emphasised that funding for stock assessment must be maintained on a continuous basis. One commercial fisher noted that funding was only allocated until December 2025, recommending that data collection 'must continue until things return to normal, not just for a three-month block.'¹³⁰

5.154 As set out in Chapter 4, several witnesses also recommended the establishment of a centralised, coordinated data and monitoring system to benchmark the condition of SA's marine ecosystems. This would support evidence-based management and allow industry and government to plan future recovery efforts.

Other proposed measures

5.155 Other proposed measures that were raised during the inquiry included:

- allowing flexibility in harvest quotas or caps between different areas while maintaining sustainability;¹³¹

¹²⁹ See, for example: Mr Asher Dezser, Chief Executive Officer, RecFish SA, *Proof Committee Hansard*, 24 September 2025, pp. 69–70.

¹³⁰ Mr Butson, B and M Buston Fisheries, *Proof Committee Hansard*, 11 September 2025, p. 4.

¹³¹ Ms Webber, South Australian Sardine Industry Association, *Proof Committee Hansard*, 10 September 2025, p. 18.

- changes to fisheries policies to safeguard future stocks, such as lowering bag limits, and introducing maximum-size limits (alongside existing minimum sizes) to protect breeding stock;¹³²
- structural adjustments to reduce overall fishing capacity, such as temporary quota leasing arrangements or voluntary licence buyback schemes to assist the retirement of fishers and reduce pressure on depleted stocks.¹³³

Next chapter

5.156 Chapter 6 considers the evidence received about the health impacts of the harmful algal bloom.

¹³² Mr Peter Day, *Submission 78*, [p. 2].

¹³³ See, for example: Dr Sarah Wheeler, *Submission 15*, p. 4; Mr Batholomew Butson, Owner, B and M Buston Fisheries, *Proof Committee Hansard*, 11 September 2025, p. 2; Mr Toumazos, South Australian Northern Zone Rock Lobster Fishermen's Association, *Proof Committee Hansard*, 9 September 2025, p. 56.

Chapter 6

Health impacts of the algal bloom

- 6.1 This chapter examines the significant and wide-ranging health impacts of the harmful algal bloom (HAB) in South Australia (SA). These impacts include direct physical effects on individuals and longer-term consequences for mental health and well-being arising from the loss of livelihood and community disruption.
- 6.2 It also considers the SA Government's health advice provided to the community and the concerns raised about the timing, availability, and consistency of public health information.

Direct health impacts on the community

- 6.3 According to the SA Government's health advice, exposure to the algal bloom may cause a range of short-term physical effects, including skin and eye irritation and respiratory symptoms such as coughing and shortness of breath. The ingestion of 'self-collected bivalve molluscs (like oysters, cockles, mussels, pipis, scallops) or abalone' can also cause gastro-intestinal issues.¹
- 6.4 In March 2025, the SA Government explained that the algal bloom affecting coastal waters was primarily composed of *Karenia mikimotoi* (*K. mikimotoi*) algae, along with other algae species:

Karenia mikimotoi is toxic to fish and invertebrates and can cause general allergic-type responses in humans.

Human exposure, including through breathing in algae particles, can cause respiratory and eye irritation or skin rashes in some people, while ingestion could cause stomach upsets or flu-like symptoms.²

- 6.5 In April 2025, the SA Government Environment Protection Agency (SA EPA), advised people to avoid swimming at beaches while there is discoloured water and foam, and to avoid walking on beaches if experiencing any symptoms.³ The SA EPA provided the following information:

The algae does not produce a toxin that is harmful to humans or one that could cause long term effects. However, exposure can cause skin irritation, eye irritation and respiratory symptoms such as coughing and shortness of

¹ South Australian (SA) Government, [Algal Bloom Update: Health Advice](#) (accessed 10 October 2025). The SA Government's changing advice on health is discussed later in the chapter.

² Environment Protection Agency, Government of South Australia (SA EPA), [Microalgae bloom on the Fleurieu Peninsula identified](#), 25 March 2025 (accessed 18 August 2025).

³ SA EPA, [SA *Karenia mikimotoi* algal bloom update](#), 10 April 2025 (accessed 18 August 2025).

breath. These symptoms resolve within several hours after leaving the beach and adjacent area.

...

If people are experiencing symptoms outside their homes, SA Health recommends they remain indoors with windows closed until the symptoms pass. If symptoms are more severe or do not resolve, then seek medical advice from a GP and call 000 if a medical emergency.⁴

- 6.6 The *K. mikimotoi* and brevetoxin in the water can become aerosolised due to choppy weather conditions and winds, which can result in the algae particles becoming airborne and reaching people on or near to beaches.
- 6.7 Professor Michael (Mike) Steer, Executive Director of the South Australian Research and Development Institute (SARDI), likened the effect to ‘walking through the Botanic Gardens during spring, when there’s a lot of wind and activating the pollen’.⁵

Evidence of physical health impacts

- 6.8 Several inquiry participants raised public health concerns about exposure to the HAB. The NHMRC Healthy Environments and Lives (HEAL) Network SA Regional Hub, a group of researchers, academics and policy experts, outlined potential physical health impacts from exposure, including skin and respiratory irritation, reduced physical amenity of coastal environments for recreation and exercise, and the emotional distress of witnessing widespread marine mortality.⁶
- 6.9 The committee heard numerous personal accounts describing physical health impacts following exposure to the algal bloom. Local residents and beachgoers reported coughing, breathing difficulties and eye or skin irritation after contact with sea spray and foam.
- 6.10 A Henley Beach resident described a sudden coughing fit and asthma attack while visiting Victor Harbor, despite being some distance away from the beachfront:

My first personal experience was on the Saturday morning of 22 March when I drove down the hill from Waitpinga to go shopping at the Victor market and supermarket (not on the beachfront). I got out of the car and had an instant and significant coughing fit that turned into an unseasonal asthma attack. At this point the only publicly available information was the posts individual surfers were posting warning of skin and breathing irritation from contact with the water. There was no public health alert (other than those two beaches being closed for swimming) and it was

⁴ SA EPA, [SA *Karenia mikimotoi* algal bloom update](#), 10 April 2025 (accessed 18 August 2025).

⁵ Professor Michael (Mike) Steer, Executive Director, South Australian Research and Development Institute (SARDI), *Proof Committee Hansard*, 24 September 2025, p. 25

⁶ National Health and Medical Research Council (NHMRC) Healthy Environments and Lives (HEAL) Network SA Regional Hub, *Submission 43*, pp. 6–7.

obvious that the local state and federal governments were very slow to realise the significance of the health implications of this bloom. They clearly thought or hoped that it was temporary and would wash away within days or weeks.

I learnt quickly that when we could see sea mist in the air above Victor/Middleton/Goolwa there was a high risk of irritation. From our house we have a view across the wide Encounter Bay area as far as the Coorong, and the mists carrying aerosolised algal particles often extend up to a kilometre back from the coast over the houses at Middleton, Surfers and Goolwa South. But the mist wasn't always a reliable indicator. I took the dog for a long beach walk at Hayborough and Chiton (between Victor Harbor and Pt Elliot) on a clear day in early April, and she had a swim. There were no dead creatures on the beach and the air was still and seemed clear. However, by the time we finished and drove home to Waitpinga both the dog and I were coughing! It had caused an asthmatic reaction in my dog! At this time there were still no public health warnings re walking on the beach. The South Coast was out of sight and out of mind!⁷

- 6.11 Other individuals reported similar respiratory symptoms and eye irritation after exposure to sea spray. Surfers described experiencing itchy and stinging eyes, sometimes accompanied by blurred vision.
- 6.12 Mr Anthony Rowland, a surfer and resident of Victor Harbor for 40 years, outlined raising the alarm about the algal bloom in Waitpinga Beach as early as March 2025:

I'm the surfer that raised the alarm. I know these waters very well. I have had many ear infections, eye irritations et cetera from things in the water in South Australia and parts of Australia, generally due to stormwater and river run-off. But the symptoms I have experienced in the past were absolutely nothing like what I felt on 15 March; hence, I knew there was something wrong that I had never experienced before, and it highlighted the severity of the situation.

The morning I first got sick was a beautiful, clear, hot day—no foam, no discolouration of the water and absolutely nothing out of the ordinary. By the end of the surf, I knew something was terribly wrong...

I also feel that the health advice given from day one up till now is slightly incorrect. As they say, remove yourself and you'll feel better. In my experience, the effects after a few hours of exposure in the water can last 36 to 48 hours and the symptoms are more severe than they suggest—perhaps because we are being told of symptoms of *Karenia mikimotoi*, but, as we now know, there may be brevetoxins in the mix.⁸

⁷ Dr Kathie Muir, *Submission 108*, pp. 1–2.

⁸ Mr Anthony Rowland, Private Capacity, *Proof Committee Hansard*, 12 September 2025,

6.13 Divers for Climate reported that 85 per cent of its dive operators reported physical symptoms after diving, including ‘flu-like symptoms, stinging skin, ear aches, ear infections and sore eyes’.⁹

6.14 Commercial fishers also reported adverse physical effects. Mr Michael Pennington, a commercial fisher from Ardrossan, described becoming ill for several days and developing painful boils after exposure to sea foam:

When I was still fishing and ran into a lot of sea foam, I was sick for three or four days at a time. I also got the boils, like you guys were talking about earlier, all up my arm to my shoulder and didn't go away for about six weeks. It would keep you up at night. You couldn't sleep, and there was nothing doctors—they prescribed numerous different creams and antibiotics, and nothing worked for it whatsoever. Then, all of a sudden, one day it went away. They had no answers as to what it was.¹⁰

6.15 Mr Ashley Perkins, a commercial fisher on the Yorke Peninsula, reported similar experiences after prolonged exposure to the water:

[T]here's lots of advice coming out of SA Health about short-term exposure to this bloom. But guys like myself—and I am still fishing; I work in the Spencer Gulf—are exposed day after day. What I'm finding is that, after two or three days fishing, I start falling ill—so ill that I cannot continue to fish. The longest period I've had of sickness now is a week, but this has happened over the last several months—repeat, repeat, repeat. You go out, you go to work, you get sick, you have a few days at home, you recover, you go back to work and you get sick again. This is going on and on, and we're not getting any advice out of SA Health as to what we should be doing to either protect ourselves or, at least, stay off the water.¹¹

6.16 Concerns were also raised about pets becoming ill or dying after exposure to affected waters or by consuming dead fish washed up on beaches.¹² Ms Monina Gilbey, a long-term resident of Glenelg, recounted that an acquaintance told her that their dog ‘became seriously ill after a beach walk and needed immediate veterinary assistance, possibly from being exposed to or ingesting a poisonous fish affected by the bloom.’¹³

Mental health impacts

6.17 A recurring theme in the evidence was the significant mental health impacts of the algal bloom on affected individuals and communities. Many inquiry

⁹ Divers for Climate, *Submission 48.1*, p. 3.

¹⁰ Mr Michael Pennington, Private Capacity, *Proof Committee Hansard*, 11 September 2025, p. 42.

¹¹ Mr Ashley Perkins, Private Capacity, *Proof Committee Hansard*, 11 September 2025, p. 42.

¹² Local Government Association of South Australia (LGA SA), *Submission 25*, p. 6.

¹³ Ms Monina Gilbey, *Submission 99*, [p. 2].

participants expressed uncertainty about the duration of the algal bloom and anxiety about its long-term social and economic impacts.

- 6.18 Doctors for the Environment Australia highlighted that the HAB could have a wide range of mental health impacts:

Mental health may be directly affected through exposure to the death and destruction of living and non-living aspects of the environment by the algal bloom. Loss of natural environments can contribute to climate anxiety and eco-despair, so people may experience helplessness, fear and grief in response to the deteriorating state of the environment. Mental health will also be affected indirectly through loss of livelihoods and reduced access to fish and seafood.¹⁴

- 6.19 The Australian Red Cross observed that the disruption caused by the algal bloom 'is already showing similar patterns to other disasters and emergencies'. It identified various psychosocial impacts including to mental and physical health, feelings of anxiety from financial insecurity, loss of social connection and family disruption, fear and loss of hope, and loss of identity.¹⁵

- 6.20 The Chair of the Royal Australian College of General Practitioners South Australia (RACGP SA), Dr Sian Goodson, told the committee that SA general practitioners (GPs) had seen the distress that the HAB has caused among the community:

The SA algal bloom has affected many of our patients in South Australia. GPs are primarily concerned about the mental health impacts on patients who are feeling distressed and not feeling safe to walk on the beach and those whose businesses are affected and about the ongoing prosperity in coastal areas and feel sadness for the effects we're witnessing on our marine life.¹⁶

- 6.21 Residents and community members described feelings of sadness, grief and helplessness on seeing thousands of dead or dying marine animals, including fish, rays, sharks, dolphins and sea dragons, washing up onshore.

- 6.22 A local resident reported avoiding walks on the beach 'because I cannot bear the sight of dead marine animals dotting the shoreline':

Every spring and summer, I spend time snorkelling on Yorke Peninsula and the Fleurieu peninsula's south coast. As for so many, it has been a joy to have these marine paradises so close to Adelaide.

¹⁴ Doctors for the Environment Australia, *Submission 38*, p. 8.

¹⁵ Australian Red Cross Society, *Submission 30*, p. 5. Its observations are a summary of community sentiment directly collected by Australian Red Cross staff, volunteers and members working through response and recovery activities in impacted Local Government Areas.

¹⁶ Dr Sian Goodson, Chair, Royal Australian College of General Practitioners (RAGCP) South Australia, and Chair, RACGP Board of Directors, RACGP Ltd, *Proof Committee Hansard*, 24 September 2025, p. 45.

Those wonderlands, of unimaginable and indescribable colour, with such richness of animal and plant life, now look like nuclear wastelands; environments bereft of colour, housing dead vegetation and haunted by dead creatures. It is a tragedy of enormous intensity and scale.¹⁷

6.23 Divers for Climate reported that many of its dive operators and community members have described the emotional toll of witnessing ‘degraded marine environments, dead or absent species, and the uncertainty of not knowing when or if conditions will improve’.¹⁸

6.24 Similarly, other community members described the loss of enjoyment and connection associated with their local beaches:

The “blue spaces” in which we once found solace, calm and healing are now a source of eco-anxiety and grief. My partner and I would regularly walk along Hallett Cove Beach, and other local beaches along the coast, as our favourite form of leisure, exercise and connection to nature.

But lately we’ve been avoiding visiting these beautiful coastal locations – after bearing witness to dozens of dead rays, fish and other marine life in the first few minutes of walking, the heartbreak and smell of death soon becomes too overwhelming.¹⁹

6.25 The committee received evidence about the loss of recreation, connection and community from the algal bloom. Local swimming groups, such as Brave the Waves and Chilly Pits, described the loss of community and identity from having to suspend their regular swims due to health risks, and being met with ‘a beach littered with creatures washed up on the shore, lifeless and left to rot’.²⁰

6.26 Brave the Waves stated:

Brave the Waves is not just about exercise; it is a community of connection, grief support, resilience, and celebration of our natural environment. Being unable to safely swim has disconnected us from each other and the coast, especially during times when connection and well-being are more important than ever.²¹

6.27 As set out in Chapter 5, the committee heard evidence about the mental health impacts on businesses affected by the algal bloom, due to income loss and uncertainty. Some individuals also described the emotional distress from witnessing dying marine life in areas where they earned their livelihood.

6.28 For example, Mr Bart Butson, a fisher from Port Wakefield and owner of B and M Buston Fisheries, stated that the emotional distress was twofold:

¹⁷ Ms Jane Edwards, *Submission 94*, p. 1.

¹⁸ Divers for Climate, *Submission 48*, p. 9.

¹⁹ Ms Gemma Weedall, *Submission 90*, p.1.

²⁰ Chilly Pits, *Submission 7*, p. 1.

²¹ Brave the Waves, *Submission 3*, p. 1.

The emotional distraught that the fishers are suffering from is twofold; it's economic, they are struggling to pay their bills now, and it is also the trauma of seeing their beloved sea sick and the dying sea life that we witness every day that we go fishing, and from a personal perspective, it's just heartbreaking. A fisher said to me recently that it makes him feel physically sick.²²

- 6.29 The Coorong District Council claimed that community mental health and resilience programs 'have not been sufficiently resourced despite growing psychological stress among fishers, Indigenous custodians, and tourism operators'.²³

SA Government health advice and information gaps

- 6.30 The committee heard that while the SA Government provided health advice through SA Health and the SA EPA, concerns were expressed about inconsistent messaging and delays in updating the public with critical information.

Health advice for asthmatics

- 6.31 Concerns about the adequacy and timing of health advice for individuals with asthma was highlighted during the inquiry. Several inquiry participants identified delays of the SA Government in recognising respiratory risks associated with airborne particles, and a failure to communicate these risks in a timely and accessible way.

- 6.32 The committee heard that reports of respiratory symptoms, including breathing difficulties, emerged in early March 2025 from surfers and residents along the Fleurieu Peninsula. Mr Keith Parkes, Mayor of Alexandrina Council, stated:

Back in March, when we first started to get this issue—and it was evidenced by the number of cockles dying on the beach—we were starting to get people who were surfing at Middleton telling us that they were getting itchy eyes. Then we had people living in close proximity to the coast—you get the sea mist coming in over the sand dunes—experiencing respiratory irritations like getting bad hay fever. They were starting to talk to us about that. So we spoke to the government; we spoke to SA Health.²⁴

- 6.33 Despite these early reports, the committee was told that the SA Government only updated its advice in September 2025 to warn that some algal species released in the air 'may trigger symptoms in people with asthma', and advising people with asthma to carry their reliever medication with them while on beaches.²⁵

²² Mr Bart Butson, *Submission 80*, [p. 2].

²³ Coorong District Council, *Submission 14*, p. 2.

²⁴ Mr Keith Parkes, Mayor, Alexandrina Council; and Chairperson, South Australian Coastal Councils Alliance, *Proof Committee Hansard*, 12 September 2025, p. 39.

²⁵ SA Government, [Health Advice – Advice for people with asthma](#) (accessed 10 October 2025).

6.34 Dr David Cunliffe of SA Health explained that the shift in advice followed the late August 2025 detection of brevetoxin in water and coastal foam:

We've had brevetoxin detected in some of the shellfish-harvesting areas, and last week it was reported that we had brevetoxin in the foams off Adelaide Beach, so we have expanded our advice to include potential impacts of brevetoxin, which does increase potential risk to asthmatics.²⁶

... Our advice has evolved as the bloom has. The initial advice was that the dominant species, which initially was *Karenia mikimotoi* and related *Karenia*, didn't produce a toxin and didn't pose an increased risk for people with asthma. The detection of brevetoxin in water, which has been quite recent, does modify that because the evidence from Florida is that that does have an increased impact on people with asthma, particularly those who've got active symptoms.²⁷

6.35 He further explained:

The basic advice about foam has not changed: avoid it—because the foam means high concentrations of the algae, which could lead to respiratory irritation, shortness of breath and soreness of eyes. The modification we've now added is that asthmatics should have their medication available. It is not going to have long-term impacts on anybody.²⁸

6.36 While this updated advice was communicated at a press conference and published online, several witnesses expressed concern that the updated advice for asthmatics was not widely communicated to the public.

Information gaps and the timeliness of public health communication

6.37 Inquiry participants also raised broader concerns about information gaps and the timeliness of SA Government communication regarding the health impacts. These include concerns that the long-term health implications of exposure to the algal bloom are still not well understood.

6.38 Local government representatives, such as the Yorke Peninsula Council, expressed concern about the timeliness of health information provided by the SA Government. Mr Richard Carruthers, Acting Mayor, Yorke Peninsula Council stated:

... I think the government was really slow on the health issue, even up to today. People still ask, 'Can I walk along the beach?' and I say, 'Of course you can walk along the beach.' Then only this week they came out and said, 'Well, if you're an asthma sufferer, you probably should take your inhaler

²⁶ Dr David Cunliffe, Principal Water Quality Adviser, SA Health, *Proof Committee Hansard*, 9 September 2025, p. 24.

²⁷ Dr Cunliffe, SA Health, *Proof Committee Hansard*, 9 September 2025, p. 25.

²⁸ Dr Cunliffe, SA Health, *Proof Committee Hansard*, 9 September 2025, p. 27.

with you.' We haven't heard that before. Why didn't they come out and say that at the start?'²⁹

- 6.39 The Yorke Peninsula Council also highlighted that delayed and inconsistent health information from the SA Government impacted on trust with their local communities:

We had one representative, I believe, from SA Health come to the most recent state government led forum and make a short presentation, but through the various public meetings that I've been a part of or hosted we've had many people say that they're worried about the health impacts and that they don't necessarily trust the information. A lot of people are saying there is no information, and, even though I tell them there is, where to find it and that we're trying to share that information as best we can, they're either distrustful or not receiving it as well as they should be.³⁰

- 6.40 Dr Goodson from Royal Australian College of General Practitioners (RACGP) SA provided evidence that the government's initial public health messaging was unclear but that improvements had been made over the course of the HAB:

Initially, I think there was a bit of confusion. There wasn't very clear news. People living in the communities weren't sure what was happening, and GPs weren't really upskilled to know how to best advise, but that has really improved now. Now we do have good public health messaging. There have been specific resources for GPs to use to enable them to speak with knowledge to patients about the irritant effects of these algal bloom toxins or irritants.³¹

- 6.41 The Stretton Institute School of Social Science at the University of Adelaide recommended that 'further research, especially on coastal residents who will be suffering long term exposure in SA' should occur as the current evidence is insufficient to determine the long-term physical health impacts:

Earlier SA Health advice said the algae does not have long term impacts (see Algal Bloom community information flyer from SA Government), but we note the 4th September notification doesn't include this advice. We are concerned that the evidence is insufficient to determine conclusively what the long-term physical health impacts are.³²

- 6.42 Other inquiry participants also raised that insufficient or no advice was provided to vulnerable groups, including First Nations communities. Mr Garry Goldsmith of the Narungga Nation Aboriginal Corporation stated:

²⁹ Mr Richard Carruthers, Acting Mayor, Yorke Peninsula Council, *Proof Committee Hansard*, p. 13.

³⁰ Mr Nick Perry, Manager, Economic Development and Business Sustainability, Yorke Peninsula Council, *Proof Committee Hansard*, 11 September 2025, p. 13.

³¹ Dr Goodson, RACGP SA, and RACGP Board of Directors, RACGP Ltd, *Proof Committee Hansard*, 24 September 2025, p. 45.

³² Stretton Institute School of Social Science University of Adelaide, *Submission 74*, p. 2.

And, when we hear the public health advice around ending up with a sore tummy and maybe a headache, are we talking about a 28-year-old, fit, non-Aboriginal person? Or are we talking about a 75-year-old Aboriginal woman eating a staple diet during this upcoming season of gynburra and birra-ungky—all of those things that are succumbing to this phenomenon? How is that going to affect this woman? Are we going to take the chance and tell our community, when we haven't received any advice, that it's okay to eat and to catch—your traditional right?³³

6.43 At a public hearing in late September, Professor Craig Williams, a researcher in the National Health and Medical Research Council (NHMRC) national Healthy Environments and Lives Network (HEAL), stated that he was not aware of any existing programs specifically to help at-risk groups, such as people for whom English is not their primary language.³⁴ Dr Goodson from RACGP SA added that while she was not aware of any extra communications targeted at people for whom English is not their first language, she was also seeing many English language speakers who had not heard the public health messaging, regardless of their cultural background.³⁵

6.44 The Doctors for the Environment Australia also expressed concern that the SA Government was potentially 'downplaying' the potential health impacts of the algal bloom:

SA Health developed a fact sheet for health professionals which focused on reassurance, reducing exposure, and avoiding unnecessary investigations of symptoms attributable to contact with algal bloom. At a population level however, with vast numbers of people exposed for extended periods, the burden of symptoms attributable to the bloom could be significant, even without life-threatening presentations. Even if most cases are mild, more significant presentations can occur, particularly severe asthma. DEA [Doctors for the Environment Australia] is concerned at the downplaying of the potential health impact of the algal bloom by SA Health, with no plan for reporting or surveillance, and describing the exposure as 'a naturally occurring bloom'.³⁶

Next chapter

6.45 The next chapter explores the cultural and economic impacts of the algal bloom on First Nations communities.

³³ Mr Garry Goldsmith, Director, Narungga Nation Aboriginal Corporation, *Proof Committee Hansard*, 11 September 2025, p. 37.

³⁴ Professor Craig Williams, private capacity, *Proof Committee Hansard*, 24 September 2025, p. 47.

³⁵ Dr Goodson, RACGP SA, and RACGP Board of Directors, RACGP Ltd, *Proof Committee Hansard*, 24 September 2025, pp. 47–48.

³⁶ Doctors for the Environment Australia, *Submission 38*, p. 7.

Chapter 7

Cultural and economic impacts on First Nations communities

- 7.1 This chapter describes the profound cultural, economic and social impacts of the harmful algal bloom on First Nations communities, particularly those with close ties to the South Australian coastline. It also outlines the key issues raised regarding consultation and engagement with First Nations groups as part of the government's response to the harmful algal bloom.
- 7.2 The committee expresses its appreciation to all First Nations organisations and individuals that provided evidence to the inquiry and appeared at the public hearings.

Cultural and spiritual impacts of the harmful algal bloom

- 7.3 The committee heard evidence about the significant cultural and spiritual impacts of the algal bloom on First Nations communities. Several inquiry participants described its impact as spiritually and emotionally damaging, severing multi-generational connections to Sea Country.
- 7.4 The First Nations of South Australia Aboriginal Corporation (FNSAAC) emphasised that the current environmental crisis was more than a scientific issue and one that 'directly threatens Aboriginal families' health, culture and connection to Sea Country'.¹
- 7.5 The Kurna Yerta Aboriginal Corporation described the algal bloom as a 'cultural emergency and crisis for Kurna and other First Nations of South Australia':

Our connection to Country is in law, life and spirit and extends across all Country – to the lands, waters and sky. Our coastlines, estuaries, reefs and salt waters are part of our living and ancient culture – our Creation stories, our ceremonial grounds, our ancestral knowledge and the places in which we nurture and nurture us. If Country is sick, our people are sick.²

- 7.6 Kurna Yerta Aboriginal Corporation noting that many culturally significant sites across Kurna Country had been affected:

We are bearing witness to a crisis. We have many important places across Kurna Country which are affected by this crisis that have cultural, ecological and social values. We have walked our Country and seen the devastation of marine life being washed up on our shores, of sands being discoloured, and waters foaming at the hands of the algal bloom. We worry

¹ First Nations of South Australia Aboriginal Corporation (FNSAAC), *Submission 58*, p. 1.

² Kurna Yerta Aboriginal Corporation, *Submission 61*, p. 1.

about the Port River 'Yertabulti', the Onkaparinga River 'Ngankiparinga', the Adelaide International Bird Sanctuary 'Winaityinaityi Pangkara' and all our coastline and oceans and all associated plants and animals.³

7.7 A Kurna Ngarrindjeri Traditional Owner characterised the algal bloom as both a cultural harm and spiritual disruption and 'a direct threat to the rights of our people and the future of our lands and waters'.⁴

7.8 South Australian Native Title Services (SANTS), the Native Title Service Provider for South Australia (SA), highlighted their support for First Nations people's right to self-determination, and stated that the current algal bloom is significantly impacting Traditional Owners. SANTS raised concerns over the level of engagement by the SA Government with First Nations people. SANTS also noted the impact on marine species which hold significance to Traditional Owners in terms of food sources and culturally important in creation stories, and also that:

Reports of the impact on the many ecosystems such as wetlands, mangroves, kelp, seagrass and shellfish reefs is significant for traditional owners who [have] access to and use of those areas in accordance with traditional laws and customs is being impacted. Such ecosystems are highly valued because of they are resource rich environments in which to go collecting foods and resources (resources for the making of cultural artefacts).⁵

7.9 The Department of Climate Change, Energy, the Environment and Water (DCCEEW) acknowledged that First Nations people have been sustainably managing sea Country for thousands of years, and maintain a 'profound and enduring connection with sea Country'. DCCEEW stated that:

The Department recognises the algal bloom may have contributed to cultural, spiritual and economic losses to First Nations communities along impacted areas of the South Australian coastline. Working together with those communities will be an integral part of restoration, recovery and monitoring efforts to improve preparedness for future marine events.⁶

Economic impacts of the algal bloom

7.10 The committee received evidence about the economic consequences of the algal bloom on First Nations communities, particularly marine-related enterprises.

7.11 The SA Government outlined that food-safety closures affecting oyster, mussel and pipi harvesting due to brevetoxin detection had disrupted First Nations

³ Kurna Yerta Aboriginal Corporation, *Submission 61*, p. 1.

⁴ Kurna Yerta Aboriginal Corporation, *Submission 61*, [p. 3].

⁵ South Australian Native Title Services (SANTS), *Submission 55*, p. 2.

⁶ Department of Climate Change, Energy, the Environment and Water (DCCEEW), *Submission 67*, p. 15.

businesses along the Fleurieu Peninsula. Businesses conducting Indigenous cultural tours have also experienced significant downturns in revenue.⁷

7.12 The Kurna Yerta Aboriginal Corporation stated that its tourism businesses, cultural guides and marine operators were ‘facing cancellations, financial stress, and an uncertain future’. It warned that without immediate support ‘we risk losing not just businesses but the next generation of Kurna tourism leaders, educators, and cultural entrepreneurs’.⁸

7.13 The committee heard directly about the significant economic impacts of the algal bloom from Kuti Co, a Ngarrindjeri-owned enterprise, that harvests pipis in the Lower Lakes and Coorong. The company was forced to cease harvesting on 17 June 2025 following the detection of high brevetoxin levels.⁹

7.14 Kuti Co’s Managing Director, Mr Derek Walker, described the subsequent closure, loss of income and employment for ten young Ngarrindjeri people:

We were still harvesting, and it went off for testing, and then we were told the harvest for two weeks—once they got the numbers back—had to be recalled. So there was product recalled back to the factory. We had to destroy about 40 tonnes. The cost of destroying that product, at that particular time, certainly caused us great angst—and the costs of business. On top of that, we have this difficulty of reopening the business, which is causing us great concern...¹⁰

We now have considerable debt. We have debt with banks... That means that we're in quite a difficult situation. We're going forward into a period of the unknown. We haven't received any income since 17 June, and we're bothered about that...

We have five young men that harvest for us on the beach. We have some younger women that were packing in the factory. They're out of work too because the industry has basically shut down, but the costs don't shut down and running the business doesn't shut down, so we're concerned about that. That's 10 young Ngarrindjeri that are out of work at this point in time.¹¹

⁷ South Australian (SA) Government, *Submission 71*, p. 5.

⁸ Kurna Yerta Aboriginal Corporation, *Submission 61*, [p. 3].

⁹ Mr Derek Walker, Board Member, Ngarrindjeri Regional Authority; and Managing Director, Kuti Co, *Proof Committee Hansard*, 12 September 2025, p. 48.

¹⁰ Mr Walker, Ngarrindjeri Regional Authority; and Managing Director, Kuti Co, *Proof Committee Hansard*, 12 September 2025, p. 49.

¹¹ Mr Walker, Ngarrindjeri Regional Authority and Managing Director, Kuti Co, *Proof Committee Hansard*, 12 September 2025, p. 48.

Loss of traditional food sources and knowledge transfer

7.15 The algal bloom has also disrupted access to traditional food sources, such as pipis, dusky morwong and cockles. Several First Nations representatives described its loss for cultural identity and the transfer of cultural knowledge.

7.16 Mr Derek Walker told the committee that the spread of the algal bloom had disrupted a food source that had been accessed for millennia:

Everyone knows this is Ngarrindjeri country, and this meeting is being held on Ngarrindjeri country. What's been happening in and around this algal bloom and the brevetoxin issue is causing great concern. This is the first time in our history that we are struggling to access country and struggling to access a protein source that we've accessed for millennia. It is causing great concern.¹²

7.17 Mr Garry Goldsmith, from the Narungga Nation Aboriginal Corporation, explained that his people are known as the 'butterfish mob' because of their connection to the dusky morwong, a staple food source that has been impacted by the algal bloom. He stated that the loss of this species was 'not just about a fish but about identity'.¹³

7.18 The closure of traditional fishing areas has also disrupted cultural practice and inter-generational learning. Surfers for Climate reported on its conversations with Mr Jeffrey Kropinyeri of the Ramindjeri People, who described being unable to gather cockles, an important food source, and its impact on passing on cultural knowledge to his grandchildren:

We normally go down and get cockles, we can't do that now.... that's one of our biggest food sources... Is it going to be five years before it's any good to eat... if ever... in my life I probably will never, ever eat them again.

I'm unable to teach my grandsons about cockling, you know. And that's something that I did with my grandparents... And so, you know, every time there's something getting skipped and you lose it... it's really sad.¹⁴

7.19 In a similar vein, the intrinsic link between the health of the environment, cultural health and the transfer of cultural practices was also highlighted:

Absolutely, because this is an event [the algal bloom] that everyone's trying to deal with. Being disconnected from a food source that had been about for a long time causes a significant issue. But we know ecologically there have been huge changes. The last 30 years of deterioration ecologically has been greater than any other time in history. Given our cultural character is connected to ecological character, what we see is a decline in cultural health. We're concerned about that—we really are—and we want to be able to

¹² Mr Walker, Ngarrindjeri Regional Authority and Managing Director, Kutti Co, *Proof Committee Hansard*, 12 September 2025, p. 48.

¹³ Mr Gary Goldsmith, Director, Narungga Nation Aboriginal Corporation, *Proof Committee Hansard*, 11 September 2025, p. 35.

¹⁴ Surfers for Climate, *Submission 10*, p. 5.

engage with our young people around those cultural practices. It's very difficult when you can't get in the water. We've got a team that go in the water every day, and they're not there now.¹⁵

The impacts on social and emotional well-being

7.20 The emotional and social impacts of the algal bloom was also emphasised, with some describing widespread grief arising from the loss of connection to the ocean.

7.21 Mr Mark Koolmatrie, a Ngarrindjeri Elder, outlined the emotional impact of the algal bloom:

Economically, as a tour owner—I can put a figure on that. But we cannot put a figure on the emotional toll this has taken on our people. We can't go to the beaches, we can't take our families there, we can't be healed by the waters. We can't be healed and strengthened by being on what our people call ruwi, land... How can we have the loss of totems, of connections? When they are sick and when they die, so do we. We, as First Nations people, have an automatic connection to the land, the waters and the cosmology—our storylines, our songlines. If they are broken and lost, so are we as a people.¹⁶

7.22 Mr Karl Telfer, a Traditional Owner, told the committee that he had been unable to visit the ocean since the algal bloom began because of the distress it had caused him as a 'saltwater man'. This loss of connection was associated with a sense of hopelessness and psychological loss:

But how do you help the psychological loss that is happening right now, when we walk on the beaches? We have a spiritual connection to something like a stingray, which is a big part of our kondoli, the whale Dreaming story. How do we see that, when we have a spiritual connection to dolphins and to certain fish? That is our responsibility in life. How do we deal with that and the long-lasting effects of this damage, which is affecting us holistically?

My brother here has talked about how this is not about economics for us. This is far more than just economics, because you can get a grant, an injection of cash, that will help a business. But, for me, this is long-lasting. My tour company is all about telling stories. The storytelling is so important to what I do, and the storytelling is far-reaching. The storytelling has lasted for generations, for centuries, and it may be cut off because we've got nothing that we can do. Who knows? There might be a healing. Across our country we've had fires, drought and flood. We've had impacts; we've had the pandemic. Now we're reaching just another one. We have to be very resilient people. The businesses that are talking to you have to be very resilient. But

¹⁵ Mr Walker, Ngarrindjeri Regional Authority; and Managing Director, Kuti Co, *Proof Committee Hansard*, 12 September 2025, p. 52.

¹⁶ Mr Mark Koolmatrie, Ngarrindjeri Elder, Private capacity, *Proof Committee Hansard*, 9 September 2025, pp. 62–63.

how long is that piece of string? How long can resilience last? How long can our people last with loss?¹⁷

- 7.23 The Goyder Institute for Water Research and the Coorong, Lower Lakes and Murray Mouth Research Centre (CLLMM Research Centre) reported that Ngarrindjeri elders described the algal bloom impacts on Sea Country as ‘unprecedented’ and that there is ‘trauma that Ngarrindjeri people are feeling regarding the environmental condition of their lands and waters’.¹⁸

South Australian Government engagement with First Nations communities

- 7.24 The SA Government stated that it is working closely with First Nations’ communities to understand the algal bloom’s impact, with advice ‘sought from Aboriginal representative groups to help identify specific effects and inform recovery efforts’. It also outlined that it is leveraging existing programs within state government departments to ‘support ongoing engagement with Aboriginal networks’.¹⁹

- 7.25 However, many First Nations groups reported being disregarded or excluded from the Government’s response to the algal bloom. Some submitters criticised the lack of information and the timeliness of information provided, as well as the absence of direct engagement with First Nations communities by government agencies.

- 7.26 The FNSAAC set out that:

The bloom presents serious risks to those who rely on coastal resources. FNSAAC urges culturally appropriate guidance, clear warnings and safe alternatives for families – particularly our children and Elders. Public health responses must respect Aboriginal ways of life, not ignore them.²⁰

Concerns about delays and lack of direct engagement

- 7.27 Several First Nations groups emphasised that First Nations communities were often disregarded or consulted too late in the process, resulting in delayed access to critical health and environmental information.
- 7.28 Narungga Nation representatives observed that they were not treated as key stakeholders despite having long-standing agreements with the SA Government, such as the Buthera Agreement, committing the government to

¹⁷ Mr Karl Telfer, Traditional owner, Kanyanyapilla Pty Ltd, *Proof Committee Hansard*, 9 September 2025, p. 63.

¹⁸ Goyder Institute for Water Research, *Submission 45*, p. 3.

¹⁹ SA Government, *Submission 71*, p. 5.

²⁰ FNSAAC, *Submission 58*, p. 1.

work in partnership with the Narungga People.²¹ Mr Goldsmith, a Narungga man from Yorke Peninsula, stated:

We try to hold the state government to account, but it becomes tiring after a while to continue to try to validate your case when you've got an agreement. It seems that they sign them just as something that ticks a checkbox or for some reason, but, to us, it means a lot more. It means a partnership—a respectful partnership, at that. At the moment, we don't feel like we're getting that. We're getting the blunt end of the stick.

But we're not here to try to throw mud at the state government. What we're trying to do is say, 'Our position needs to be recognised and acknowledged—to be a seat at the table, to be a voice to be heard and for solutions to be put forward—not for somebody that needs to be told about when it's happening, what's happening and who it's happening for long after the decisions have been made.' I think that's an oppressive system, and we feel that that shouldn't be in this day and age.

...We've got traditional fishing rights, but we are still part of the total allowable catch under the Fisheries Management Act, yet we haven't been consulted about that, even with a traditional fishing agreement. Are we, because of our numbers and our minority, not being considered? We're the most vulnerable people in this country, as I said, and at the moment we're being treated that way.²²

7.29 The Narungga Nation Aboriginal Corporation put forward a strong request to 'be included at the table not at the end but at the start'.²³

7.30 Commercial enterprises, such as Kuti Co, described the direct impacts to its business due to the time lag between brevetoxin testing and closure announcements by the Department of Primary Industries and Regions South Australia (PIRSA):

One of the things that was also really concerning for us was that the information coming out of the state, from the government, really lagged in time. We were making economic decisions around purchasing equipment for our harvesting crew. If we had known some of the issues that were coming our way prior to that date—and we were making those decisions at the end of June, early July because we were going into a new season. We weren't aware of what was happening. It was only because I'm involved [as a shareholder] with Goolwa Pipi Co [Australia's largest pipi processing and marketing company] that there was information. We were talking to the state. There was more information coming our way. But we'd already made

²¹ The [Buthera Agreement](#) between the Narungga Nation Aboriginal Corporation and the South Australian Government, commits the South Australian government to work in partnership with the Narungga people and involved in decision-making in areas including economic development and social services.

²² Mr Goldsmith, Narungga Nation Aboriginal Corporation, *Proof Committee Hansard*, 11 September 2025, p. 39.

²³ Narungga Nation Aboriginal Corporation, *Submission 47*, p. 1.

those economic decisions around the development of Kuti Co, which caused us great concern.

But the biggest bother was, we believe, the fact that there was information out there that wasn't transferring to the industry and to us. That was incredibly disappointing. Where do we go around that? We understand there is support available, but we find that jumping through the hoops to enable us to get the support has been a little bit difficult, so we haven't received any support to date. The understanding is that that will come in the not-too-distant future.²⁴

- 7.31 Concerns were also raised that perspectives on the cultural impacts of the algal bloom, including on traditional fishing, was largely disregarded in favour of commercial and industry viewpoints. Mr Garry Goldsmith, a Narungga man from Yorke Peninsula emphasised the need for consultation with First Nations groups at the beginning of the process:

We would like to be included at the table not at the end but at the start it seems that the perspectives of scientist and government officials are at the forefront, commercial fishers have seen the benefit to sit at the table and even recreational fishers get a mention however the traditional fishing seems to be forgotten.²⁵

- 7.32 Kuti Co similarly stated that it considered its involvement in discussions with the SA Government was due to it holding a 'significant stake' as a shareholder of Goolwa Pipi Co, an Australian processing and marketing company:

It seems to me it's the same old story: Indigenous mob are left out of the discussion. The only reason that we were in the discussion was that we are 30 per cent owners of Goolwa Pipi Co.

That gives us a significant stake as a significant shareholder. We're engaged in that way. So that's disappointing. We believe we should have had an opportunity to speak into this from the very beginning, but that whole cultural effect has been quite significant. And the fact that it isn't in our oral history and it isn't in any of our understanding that we were disconnected, except now, and yet we're not fully engaged is probably the most disappointing part about it.²⁶

- 7.33 While the SA Government had established an algal bloom reference group that included two Indigenous advisers with 'expertise in marine science and ecological restoration'²⁷, some witnesses said that they were unaware of who

²⁴ Mr Walker, Ngarrindjeri Regional Authority; and Managing Director, Kuti Co, *Proof Committee Hansard*, 12 September 2025, p. 48.

²⁵ Narungga Nation Aboriginal Corporation, *Submission 47*, p. 1.

²⁶ Mr Walker, Ngarrindjeri Regional Authority; and Managing Director, Kuti Co, *Proof Committee Hansard*, 12 September 2025, p. 48.

²⁷ Isabella Carbone, '[SA's ongoing harmful algal bloom labelled 'cultural emergency' by First Nations groups](#)', *ABC News*, 17 September 2025.

had been appointed or questioned their authority to speak for specific communities.

- 7.34 Ngarrindjeri Elder, Mr Mark Koolmatrie, stated that he was unaware of who had been appointed on the reference group and expressed concern that consultation often involved individuals lacking the cultural authority:

Quite often what happens is that people are chosen, but they've not actually got cultural expertise... they haven't got cultural authority. So you're getting a response from people, but often they're not the right people to be talking about some of this stuff. That becomes a concern. So, when this is happening, our community, in my case, doesn't get any feedback. So, by consulting with Ngarrindjeri people—are you consulting with the community?²⁸

- 7.35 Mr Garry Goldsmith, Director of the Narungga Nation Aboriginal Corporation, similarly questioned whether the appointed advisers represented his community's perspectives stating:

I know those advisers quite well, but are they putting our perspectives, priorities and issues on the table? No. They only speak for themselves, because they are not a part of our community. They're not part of that intrinsic, internal, spiritual connection to our country with our land and our sea country. I can't see how that advice reflects what our priorities are.²⁹

Partnering with First Nations communities

- 7.36 There was widespread acknowledgement of the need for genuine partnerships with First Nations groups in responding to the algal bloom, including calls for First Nation's leadership in decision-making.
- 7.37 The Kurna Yerta Aboriginal Corporation recommended genuine partnership and leadership roles for Kurna people in the response and long-term planning for coastal and marine care.³⁰
- 7.38 The SANTS advocated for the establishment of a process that 'collaborates with and include First Nations, and respects the cultural authority of traditional owners who speak for country'.³¹
- 7.39 Other submitters, including the Conservation Council of South Australia (Conservation Council SA), Doctors for the Environment, and Surfers for

²⁸ Mr Koolmatrie, Ngarrindjeri Elder, Private Capacity, *Proof Committee Hansard*, 9 September 2025, p. 65.

²⁹ Mr Goldsmith, Narungga Nation Aboriginal Corporation, *Proof Committee Hansard*, 11 September 2025, p. 35.

³⁰ Kurna Yerta Aboriginal Corporation, *Submission 61*, [p. 4].

³¹ SANTS, *Submission 55*, p. 1.

Climate, similarly stressed the importance of meaningful engagement with First Nations communities as part of any response.³²

Incorporation of First Nations knowledge into scientific monitoring and data collection

- 7.40 Several organisations recommended integrating First Nations' cultural knowledge into scientific monitoring and data collection programs.
- 7.41 The FNSAAC called for Aboriginal-led monitoring programs that combine traditional knowledge with science.³³
- 7.42 The Great Southern Reef Foundation (GSRF) suggested that its proposed Great Southern Reef Integrated Monitoring Program, a long-term biodiversity monitoring program, be co-designed with a range of partners including First Nations organisations.³⁴ It also recommended that Indigenous knowledge and co-governance be embedded in biodiversity monitoring and decision-making.³⁵
- 7.43 Mr Garry Goldsmith, from the Narungga Nation Aboriginal Corporation, emphasised the important role of Indigenous Sea rangers as a 'really good mechanism and tool to support some of this monitoring and management of sea country' and to provide sustainable income:

This is people's long-term investment for sustainable income for them to develop their own capabilities and capacities not only to work on projects in phenomena like this but also to develop where they have choices. We definitely see the range of programs. There's also the Point Pearce Indigenous Protected Area program that's happening. That has a few rangers. We're currently in talks with them. We're getting ahead of the game to put forward solutions to government about how we can be resourceful and how we can provide some solutions around working with local organisations, state government and experts to really manage the sea country and the response to it.³⁶

³² See, for example: Conservation Council of South Australia (Conservation Council SA), *Submission 24*, [p. 3]; Doctors for the Environment Australia, *Submission 38*, p. 2 and p. 9, Surfers for Climate, *Submission 10*, [p. 5].

³³ FNSAAC, *Submission 58*, p. 1.

³⁴ Great Southern Reef Foundation (GSRF), *Submission 46*, p. 10.

³⁵ GSRF, *Submission 46*, p. 9.

³⁶ Mr Goldsmith, Narungga Nation Aboriginal Corporation, *Proof Committee Hansard*, 11 September 2025, p. 35.

Direct financial support and the provision of culturally appropriate health advice

7.44 The committee also heard calls for direct financial assistance and structural support to be provided to Indigenous tourism operators, marine businesses and cultural guides affected by the algal bloom.³⁷

7.45 The FNSAAC also recommended the provision of ‘culturally safe public health advice and support for families’ affected by the algal bloom.³⁸

Next chapter

7.46 The final chapter of the report sets out the committee’s views and recommendations.

³⁷ See, for example: FNSAAC, *Submission 58*, p. 1; Kurna Yerta Aboriginal Corporation, *Submission 61*, [p. 4].

³⁸ FNSAAC, *Submission 58*, p. 1.

Chapter 8

Committee's view and recommendations

Overview

- 8.1 South Australia is currently experiencing one of the largest-scale algal bloom events ever recorded in Australian waters. Throughout the inquiry, the committee heard that the harmful algal bloom (HAB), which was first detected in March 2025, is a marine disaster, similar to 'an underwater bushfire'¹, with an extensive marine mortality rate.
- 8.2 The committee received a significant volume of evidence from members of the public, academics, ecologists, citizen scientists, international experts, marine industry participants, fishers, environmental organisations and Commonwealth and state government agencies. The committee expresses its gratitude to all who put forward this evidence, which included advance copies of academic papers, data analysis, photographs of marine losses, personal experiences and more.
- 8.3 Throughout the inquiry, there was an outpouring of grief at the scale of the HAB and its severe impact on the marine environment, and the fear and uncertainty of the HAB's duration and time to recovery. The significance of the South Australian coastline and waters to South Australians for work and livelihood, recreation time, mental health and connection to Sea Country was reinforced through evidence to the committee. As one fisher told the committee:
- ...my life has changed. I'm now at a desk. No-one's paying me... Sometimes you just can't switch off at night-time. It's a lot of pressure, trying to help protect our gulf...²
- 8.4 This chapter brings together the committee's views on key themes raised during the inquiry, and provides recommendations, including:
- coordination and communication between the Commonwealth and South Australian Governments, including the involvement of local government;
 - preparedness for harmful algal blooms;
 - the significant impact of the bloom on community;
 - financial support for marine industries; and
 - ecological restoration and recovery efforts.

¹ Australian Academy of Science, *Submission 69*, p. 1.

² Mr Paul Dee, Owner-Operator, Paul Dee Oysters, *Proof Committee Hansard*, 11 September 2025, p. 40.

National leadership and coordination

- 8.5 As set out previously, responsibility for coastal management is shared between all tiers of government (federal, state and local), with management of coastal waters up to 3 nautical miles (nm) undertaken by the relevant state government.
- 8.6 This meant that the South Australian Government (SA Government) had primary responsibility for the management of coastal waters affected by the HAB, first detected in March 2025.³
- 8.7 The SA Government initially reported the detection of the HAB in March 2025, and has taken steps to address and respond to the bloom, involving a range of state agencies and departments.
- 8.8 A gradual evolution of the SA Government's governance structures has seen more coordination between the agencies responding to the HAB, including the establishment of the Harmful Algal Bloom Taskforce in late July 2025, and the Algal Bloom Cabinet Taskforce as a sub-committee of cabinet, and Algal Bloom Response Coordination Unit which sits within the Department of the Premier and Cabinet (DPC) in late August 2025.
- 8.9 The work undertaken to coordinate the SA Government's response is welcome, however, the time taken between the initial detection and the move to coordinate a potentially fragmented response was too long. The limited long-term data and monitoring of similar events contributed to a delay in response.
- 8.10 Inquiry participants told the committee that they had observed uncertainty at the outset of the bloom over who was responsible for its management.
- 8.11 The committee is concerned at the length of time it took the SA Government to commence discussions about the HAB with the Commonwealth. For example:
- major discussions about the HAB between the SA and Commonwealth governments only began in May 2025, and SA Deputy Premier Susan Close discussed the HAB with the Commonwealth Minister for the Environment and Water, Senator the Hon Murray Watt MP, on 13 May 2025;
 - informal discussions between the SA Department of the Environment and Water (DEW) and Department of Climate Change, Energy, the Environment and Water (DCCEEW) began at the beginning of June 2025; and
 - the SA Government began engaging with the Commonwealth National Emergency Management Agency (NEMA) in July 2025.

³ The South Australian (SA) Government and Commonwealth Government work in partnership to protect the Coorong Ramsar Wetland, and the SA Government is responsible for managing the Coorong.

Recommendation 1

8.12 The committee recommends the Australian Government show leadership by developing a fit for purpose framework for research, monitoring and responses to climate induced, slow-onset and significant ecological events such as harmful algal blooms.

Application for Disaster Recovery Funding Arrangements (DFRA)

8.13 In July 2025, the SA Government wrote to the National Emergency Management Agency (NEMA), setting out the grounds on which it believed the HAB qualified as an eligible natural disaster under the DFRA, and requesting that the funding arrangement be activated.⁴

8.14 The SA Government stated in the application that 'the scale and persistence of the event continue to exceed our capacity', despite the measures already put in place by the SA Government.⁵ The SA Government put forward the argument that the HAB aligned with Category D assistance measures, which is 'Assistance for exceptional circumstances beyond the other categories'. This type of assistance must be requested by a state/territory and requires Prime Ministerial approval.⁶

8.15 In August 2025, however, the SA Government received NEMA's assessment that the HAB is not an eligible natural disaster under the DFRA, and that it did not consider the HAB to be a secondary event to the SA flooding in 2022, and explained that the DFRA is limited to rapid onset events.⁷

8.16 The committee notes that the operation of the DFRA as 'a financial safety-net' when severe disasters occur could extend to climate induced, slow-onset and significant ecological events such as the HAB. The committee agrees with the University of Adelaide's Environment Institute that the difficulties in declaring the HAB as an eligible natural disaster under the DFRA warrants consideration of a review of the policy and legal frameworks for nationally significant emergencies and disasters.⁸

8.17 The committee considers that the slow response by the SA Government, and delayed period before it began serious discussions with the Commonwealth, has

⁴ SA Government, answers to questions on notice, 25 September 2025, [pp. 7–8].

⁵ SA Government, answers to questions on notice, 25 September 2025, [p. 8].

⁶ National Emergency Management Agency (NEMA), [Disaster Recovery Funding Arrangements](#), 24 August 2024 (accessed 10 October 2025).

⁷ Department of Home Affairs, *Disaster Recovery Funding Arrangements 2018*, p. 7. Natural disasters included in the DFRA include: bushfire, earthquake, flood, storm, cyclone, storm surge, landslide, tsunami, meteorite strike, or tornado.

⁸ The Environment Institute, The University of Adelaide, *Submission 40*, [pp. 6–7].

caused uncertainty and anxiety for South Australian individuals and business owners.

- 8.18 The committee heard that there was a perception that the SA Government's initial response was fragmented and slow, with coordination work undertaken months after the detection of the bloom. As an example, the committee considers that the establishment of an algal bloom hotline by the SA Government in October 2025 should have happened months earlier, at the outset of the HAB, in order to provide community members and business owners with advice and support.

Recommendation 2

- 8.19 The committee recommends the Australian Government consider reviewing and expanding arrangements for a new definition for declaring how climate induced, slow-onset and significant ecological events could be incorporated into a broader national framework.**

Recommendation 3

- 8.20 The committee recommends the Australian Government defines the roles of the Commonwealth, states and territories and local governments throughout the management and response of climate induced, slow-onset and significant ecological events such as harmful algal blooms.**

Preparedness for harmful algal blooms

- 8.21 The committee heard that the SA Government was unprepared for the HAB due to a lack of long-term ecological and HAB monitoring along the SA coastline and waters which created barriers to determining the exact causes of the HAB and assessing its impacts.
- 8.22 The committee received evidence that existing oceanographic monitoring programs such as the Integrated Marine Observing System (IMOS) are limited in their spatial coverage and lack the ability to fully and accurately detect HABs. There was also evidence that current testing for HABs through the South Australian Shellfish Quality Assurance Program (SASQAP) is limited to sites that are linked with the shellfish industries.
- 8.23 A range of submitters and witnesses called for both oceanographic and algal bloom-specific monitoring to be expanded. Various monitoring strategies were suggested, including water sampling and microscopic, molecular and biotoxin detection methods. The committee was made aware that there are long-standing monitoring, research and management programs in a number of other countries which have experienced similar HAB events.
- 8.24 There were strong calls for monitoring data to feed into early warning systems and effective response strategies for future HABs. Early warning systems would

allow for prompt interventions to alleviate potential negative impacts. Some inquiry participants suggested that certain mitigation strategies may also be available when HABs are at a small scale, highlighting the importance of early detection.

- 8.25 Inquiry participants told the committee that research on marine HABs requires a very specific set of skills and knowledge, and that there is a very small number of scientists in Australia who currently have the relevant expertise. Many inquiry participants recommended the establishment of a national HAB research centre and/or coordinating body to consolidate and expand HAB expertise and capability in Australia.
- 8.26 The committee is of the view that the HAB has highlighted the limitations of existing research and monitoring programs and emphasised the importance of investing in stable, ongoing HAB research and management capability at the national level. This long-term investment would enable the early detection of future HABs and equip the country to more quickly and effectively respond.
- 8.27 The Commonwealth and SA governments' joint investments in the coastal monitoring network, a new national testing laboratory for brevetoxins, and an Office for the Algal Bloom Research are welcome. However, the committee urges governments to commit further funding and work closely with other countries to share HAB-related knowledge.

Recommendation 4

- 8.28 The committee recommends that the Australian Government consider sustained funding for long-term oceanographic and algal bloom-specific research and monitoring programs at the national level, including through the utilisation of the Office for Algal Bloom Research in South Australia.**

Ecological restoration and recovery

- 8.29 The committee heard that restoration and recovery of the marine environment will be a significant undertaking. The committee welcomes the initiatives discussed in the report, such as oyster and artificial reefs, restoration of seagrass, breeding programs and other measures, and strongly encourages this to be undertaken as soon as possible and given continued funding to ensure success.
- 8.30 The willingness and enthusiasm of members of the public in engaging with reef construction and ecological restoration is acknowledged, and the committee notes that many ecological projects would not be viable without the work of citizen scientists and volunteers.
- 8.31 The committee welcomes the \$20.6m investment in the marine environment as part of the Algal Bloom Summer Plan, and considers that this investment is a good starting point, but that further and continued funding is vital to ensure that ecological work is able to restore the environment.

- 8.32 The committee acknowledges the severe impact the harmful algal bloom has had on the marine environment in South Australia's coastal waters. The committee is pleased that threatened and endangered species and ecological communities will receive priority assessment for inclusion on the 2025 Priority Assessment List by the Commonwealth Threatened Species Scientific Committee.
- 8.33 The committee acknowledges that the South Australian Government has estimated that large-scale reef restoration for South Australia will cost more than \$500 million to support longer term marine ecosystem resilience.

Recommendation 5

- 8.34 The committee recommends that the Australian Government consider options for substantial funding to be directed to projects that deliver large-scale, long-term marine ecosystem restoration and resilience including meaningful reef restoration along the South Australian coastline.**
- 8.35 The committee supports the proposal to construct the Southern Ocean Discovery Centre in SA, which aims to build on the work of the Marine Discovery Centre and help protect and promote the Great Southern Reef. The committee notes that the new Centre would not only provide educational opportunities, by increasing public understanding of ocean systems, coastal safety, and climate impacts, but also provide economic benefits to SA through sustainable marine tourism. The committee were told that it would cost \$25 million to design and construct this centre.⁹

Recommendation 6

- 8.36 The committee recommends that the Australian Government considers investing funds towards the Southern Ocean Discovery Centre for the establishment of a world-class marine education, research, and tourism hub in South Australia.**

Impact on community

- 8.37 The committee heard that the impact of the HAB on the South Australian community had been significant, affecting mental and physical health, access to recreation and community events, and removing a significant amenity from people's daily lives. The Australian Red Cross described the psychosocial impacts of the bloom, and noted that recreational and social activities are well known for supporting mental wellbeing, and that the uncertainty of access to these activities and beach locations was 'being felt deeply'. The Australian Red

⁹ Southern Ocean Discovery Centre, *Submission 123*, p. 3.

Cross also told the committee that they had observed a rise in harmful coping behaviours, including increased alcohol and drug use.¹⁰

- 8.38 The Australian Red Cross called for mental health supports to meet the level provided after other major crises such as bushfires and other disasters, to provide in-person supports.
- 8.39 The committee heard from individuals and businesses directly, and indirectly, impacted by the HAB that the fragmented and slow response from the SA and Commonwealth governments had exacerbated feelings of anxiety and uncertainty.
- 8.40 The committee also heard that small business owners had found the application process for grants to be difficult, and lengthy wait times to establish eligibility had put severe stress on businesses to pay staff and bills. Further, the amounts of money granted were insufficient to cover the substantial costs of running a business including mounting utility bills, staff payments, and maintenance.
- 8.41 The committee is concerned that the health effects experienced by individuals who have been in affected water or breathed in aerosolised algae was slow to be acknowledged by the SA Government, leading to anxiety and misinformation to spread.
- 8.42 The advice for people with asthma was updated in September 2025, and was publicised through a media conference and published online. Media -circulated this information widely after the public hearing in Seacliff. The committee heard evidence that many were unaware of the updated advice for people with asthma leading to community concern about its health impact.
- 8.43 While the committee welcomes the investment by the Commonwealth and state governments of \$690,000 as part of the Algal Bloom Summer Plan for mental health support, the committee is calling for a significantly larger investment in this critical undertaking. The committee is very concerned at the adverse impacts the bloom has had on mental health, and that this will continue as the bloom continues and long after the bloom has dissipated and the marine environment is recovering.
- 8.44 The committee acknowledges the significant impact that the HAB has had on the lives of community members', noting the distress of losing access to the beach for swimming, walking and gathering, as well as sports and recreational activities. Without this, many people are experiencing negative impacts on their mental health.

¹⁰ Ms Sarah Strathearn, Director, South Australia & National Community Mobilisation, Australian Red Cross, *Proof Committee Hansard*, 12 September 2025, p. 37.

- 8.45 The committee echoes calls for increased funding for mental health support, and agrees that funding arrangements should be modelled on those provided after major events such as bushfires.
- 8.46 The Commonwealth and SA Government should increase funding for in person psychosocial support for South Australians affected by the bloom, in recognition of the significant negative impacts it has had, and will continue to have, on mental health.

Recommendation 7

- 8.47 The committee recommends that the Australian Government and South Australian Government evaluate the current investment towards community resilience programs and mental health support services and explore continued or further investment as required for communities impacted by the toxic algal bloom.**

Recommendation 8

- 8.48 The committee recommends that the South Australian Government provides timely, clear and scientifically informed public health advice.**

Recommendation 9

- 8.49 The committee notes the current investment to supporting coastal communities and recommends that the Australian Government consider allocation of joint funding for community financial support, which could be delivered through local governments as untied grants.**

Financial support for industry

- 8.50 The committee received extensive evidence about the significant economic and social impacts of the HAB on South Australia's commercial fishing, aquaculture and tourism industries. These industries underpin employment and community wellbeing across many regional communities.
- 8.51 The committee welcomes the recent announcement of a further \$16 million to support South Australia's fishing and marine sector, including extending industry support grants and providing up to \$25 000 for hardest hit fisheries and aquaculture licence holders to support their workers, extending licensing fee relief, and grants of up to \$150 000 for licence holders to invest in projects that build longer-term business resilience.¹¹
- 8.52 While the measures announced recently to support South Australia's fishing and marine sector are welcome, the committee remains concerned that these are

¹¹ South Australian Government, [Backing our fishing industry key focus of \\$100 million Summer Plan](#), 14 October 2025.

insufficient to sustain businesses, employees and their communities through an environmental crisis of unknown duration.

- 8.53 The committee considers that more can and should be done to support the longer-term viability of affected industries. The committee heard calls for measures to support the retention of employees in these industries, such as a JobKeeper-style income subsidy program, similar to what was introduced as part of the Australian Government's response to the COVID-19 pandemic.
- 8.54 The committee also heard that proposals such as a voluntary buy-back scheme for fishing licenses, could provide a mechanism for fishers wishing to exit the industry as well as aid in the recovery of fish stock. Several commercial fishers also called for the immediate cessation of fishing within affected areas to allow surviving fish stocks to recover and repopulate. The South Australian Government announced on 23 October a fish recovery program which included temporary restrictions on commercial fishing in the Gulf St Vincent to allow ecosystem and fish stock recovery from 1 November 2025 until 30 June 2026.¹²
- 8.55 Some industry representatives, local councils and businesses also reported difficulties in accessing financial grants due to restrictive eligibility criteria and the complexity of navigating the application process.
- 8.56 The committee also heard about limitations with the Regional Investment Corporation (RIC) Fund and the ineligibility of wild catch fisheries to apply for RIC loans. Given the impact of the HAB on wild catch fisheries, the committee considers that amendments to the RIC should be fast-tracked to enable wild catch fisheries and affected marine businesses to access concessional loans.

Recommendation 10

- 8.57 **The committee recommends that the Australian Government consider how it can support work with the South Australian Government on long-term resilience and recovery programs for marine-related industries and sectors affected by the harmful algal bloom including fishing and tourism, in concert with industry. This could include exploring:**
- **a targeted income support program, akin to Job Keeper, for impacted businesses;**
 - **a voluntary lease or buyback scheme for fishing licences, to provide individuals and businesses the opportunity to remain in or exit the industry; and**
 - **a tourism recovery fund to support public information campaigns and promotional efforts to rebuild SA's tourism reputation, drive visitation, and support nature-based and marine businesses as they recover.**

¹² South Australian Government, [Algal Bloom Fish Recovery Program](#), Algal Bloom Updates, 23 October 2025 (accessed 9 November 2025).

Recommendation 11

8.58 The committee recommends the Australian Government finalises and brings forward the legislative instruments (or amendments, if required) necessary to ensure eligibility for wild catch fisheries and affected marine businesses under the Regional Investment Corporation Fund. These need to be tabled for consideration without further delay.

Recommendation 12

8.59 The committee recommends the Australian Government, through the Fisheries Research and Development Corporation, support the South Australian Government in conducting research and monitoring of fish stocks during and following fishing restrictions, and undertake a comprehensive impact analysis of fishing in the Gulf St Vincent. This analysis should assess the ecological, social, and economic implications to inform appropriate financial support for affected communities and guide the recovery of local ecosystems and fish stocks.

The role of local government

8.60 The committee heard that local government has been at the frontline of the HAB response, including through beach clean-ups, and channelling information and updates to coastal communities. Local councils gave evidence that their resources were being diverted from other important work in order to respond to the HAB. Across local government, there were calls for more funding and an emphasis on being given 'a seat at the table' as part of the HAB response.

8.61 It is evident that local government is an active and key contributor to the HAB response. The committee is of the view that greater support from the state and federal governments is needed to enable local government to continue providing essential services to the communities affected by the HAB. Coordination between all levels of government is crucial to achieving an effective, unified response to cross-jurisdictional crises such as the HAB.

8.62 The committee heard directly from local governments about the inadequacy of current funding and the long-term financial strain faced by local councils. The committee considers there is a clear need to address gaps in short-term and ad hoc funding to support local governments to plan, respond and recover from events such as the HAB.

Recommendation 13

8.63 The committee recommends that the Australian Government consider establishing a dedicated Local Government Resilience Fund to provide ongoing and flexible financial assistance to support local councils in responding to climate induced and slow-onset and significant ecological events.

First Nations

- 8.64 The committee thanks all First Nations witnesses and submitters for their evidence about the impacts of the algal bloom on their communities, cultural connection to Sea Country and its disruption to traditional food sources and income.
- 8.65 First Nations witnesses told the committee of being excluded or consulted too late as part of the SA Government's response to the algal bloom. Concerns were also raised that First Nations' perspectives on the significant cultural impact of the algal bloom, including on traditional fishing, was largely disregarded in favour of commercial and industry viewpoints. Traditional Owner and First Nations-led organisations are the appropriate mechanism for this consultation.
- 8.66 The committee recognises that the HAB has had a disproportionate impact on First Nations communities, particularly those whose livelihoods and cultural ties are deeply tied to the health of South Australia's coastal and marine environments.
- 8.67 The committee considers that First Nations leadership and decision-making must be embedded within the SA Government's recovery response, including the incorporation of First Nations' traditional knowledge in coastal monitoring and research.
- 8.68 The committee is of the view that First Nations' scientific knowledge should be included in the recently-announced Office for Algal Bloom Research, announced as part of the Algal Bloom Summer Plan. The establishment of this new office should include roles for First Nations, in order to include and embed First Nations knowledge and management of Sea Country in research on algal blooms. The committee would welcome action taken by the SA Government to meaningfully increase engagement with First Nations in South Australia.

Recommendation 14

- 8.69 **The committee recommends that the Australian Government consider First Nation leadership and cultural knowledge in all aspects of recovery and management, including:**
- **integrating first nation scientific knowledge into marine monitoring and restoration programs;**
 - **providing dedicated funding for recovery and business support for impacted First Nation enterprises;**
 - **ensuring that First Nation expertise in land and sea management is sought where these issues affect cultural knowledge and practice; and**
 - **expanding and resourcing Indigenous ranger and sea country programs in affected coastal regions, with roles for First Nation representatives in the new Office for Algal Bloom Research.**

Senator Sarah Hanson-Young
Chair

Australian Greens senators' additional comments

- 1.1 The toxic algal bloom that has devastated the South Australian coastline is a consequence of the marine heatwaves and warming oceans caused by climate change.
- 1.2 It has been an environmental, economic and community disaster. More than 34 000 marine animals have washed up dead on our beaches. It has decimated the fishing, tourism and other coastal industries and the South Australian community is feeling the impacts of the bloom deeply. Notably the impacts are not just economic, many South Australians have had their emotional wellbeing and health impacted, unlike any other environmental disaster. Many witnesses told the inquiry that the constant scenes of dead fish and marine life have caused a deep sense of grief and loss of place. The prospect of a summer where we will not be able to use our usually pristine beaches is a source of anguish for many.
- 1.3 Both the state and federal governments were far too slow to respond to the unfolding crisis. It was months between when the bloom was first detected and when governments took it seriously and took any kind of meaningful action.
- 1.4 For months, local communities were left to go it alone as thousands of marine animals washed up dead on our beaches. Without proper funding for research, hundreds of citizen scientists had to step in to collect data and locals had to clear away dead animals and debris.
- 1.5 If the damage caused by the algal bloom had come from a flood or a bushfire, it would have been declared a national emergency. The definition of emergency is too narrow to capture disasters caused by a changing climate.
- 1.6 Given that an algal bloom of this size is unprecedented in Australia, there is no clear legislative framework or disaster definition to cover such an event. We need updated legislative frameworks for dealing with natural disasters that are caused by climate change.
- 1.7 We need governments at all levels that will act to take climate change mitigation and adaptation seriously. This is not a far off future problem, the crisis is here and now. This should include new legislative definitions under the National Emergency Declaration Act, and swift and automatic access to disaster funding to allow governments of all levels to respond as quickly as possible to climate driven natural disasters.
- 1.8 There is an urgent need for clear, honest and science-driven public health information. Despite the current public health messaging, it is clear that the extent of the health impacts on humans from this toxic algal bloom are not yet fully known by authorities.

- 1.9 As recently as last week, it was determined that the dominant species of algae is *Karenia cristata*, an algae known to release brevetoxins. This toxin poses proven risks to human health through seafood consumption and inhalation, with effects including gastrointestinal and respiratory symptoms. This finding underscores the importance of ensuring that public health guidance is consistently reviewed, updated and clearly communicated.
- 1.10 The toxic algal bloom was not caused by the people of South Australia but it is South Australians who bear the brunt of its effects. We do not know how long this bloom will persist, or what the long term implications will be and it cannot be left to South Australians to go it alone in the clean up and recovery phase. The Australian Government must stand ready to assist, particularly with funding, for as long as this bloom is present.
- 1.11 While the Greens acknowledge that both the South Australian Government and the Australian Government have put funding into support packages, this is just a drop in the ocean of what is required to ensure the recovery of the environment, industry and community.
- 1.12 In addition to the recommendations made in the main report, we believe there are a number of further urgent actions needed.

Recommendations

- 1.13 **That the Australian Government declare the toxic algal bloom a national disaster.**
- 1.14 **That the Australian Government invest \$500 million to the Marine Environment Restoration Fund to enable urgent, large-scale recovery and resilience projects in South Australian waters, prioritising meaningful reef restoration and seagrass regeneration.**
- 1.15 **That the Australian Government accelerate investment in a national harmful algal bloom research centre, to lead early warning, rapid response, and long-term research initiatives.**
- 1.16 **That the Australian Government establish a dedicated Local Government Climate Resilience Fund to allow quick access to funds for communities experiencing climate related disasters.**
- 1.17 **That the South Australian Government review their health advice in light of updated information on the dominant algal species in the bloom and the**

presence of brevetoxins being detected in water sampling. Health authorities should ensure advice is regularly assessed, accessible and transparent.

**Senator Sarah Hanson-Young
Chair
Australian Greens Senator for South Australia**

Coalition senators' additional comments

1.1 The Coalition thanks stakeholders for their submissions and supports the recommendations outlined in the inquiry report, which shows that South Australians have been badly let down by federal and state governments. Local communities have operated for months with no clear indication of support, scientists were not listened to when they contacted the then Minister for Environment & Water in 2023 requesting support for monitoring of algal blooms,¹ and the affected fishing industry still to this day are unable to access any of the announced federal support through the Regional Investment Corporation.² As such, there are many areas of the report that warrant repeating and expanding on.

Refusal of federal government to act

1.2 The federal Minister for the Environment and Water was first briefed on 11 July 2025, two months after being sworn in.³ The committee repeatedly heard two conflicting testimonies – first, from the federal government that the algal bloom was the responsibility of the state and that they were available in a supporting capacity,⁴ and secondly from numerous scientists that the scale and nature of the algal bloom was undoubtedly an issue of national significance that required a coordinated, national response.⁵ The Minister for the Environment and Water also visited Adelaide for a 10-minute beach inspection which was heavily criticised,⁶ and later admitted the federal government had been slow to address South Australians concerns.⁷ The report does not adequately present the failings of the federal government to accept responsibility for management of the algal

¹ Department of Climate Change, Energy, the Environment and Water (2024) *Australia's emissions projections 2024*, Australian Government, <https://www.dcceew.gov.au/sites/default/files/documents/80748.pdf> (accessed 9 November 2025).

² Rural and Regional Affairs and Transport Legislation Committee, Supplementary Budget Estimates, 8 October 2025, *Official Committee Hansard*, pp. 122–123.

³ Ms Katrina Maguire, Division Head, International Environment Reef and Ocean Division, DCCEEW, *Proof Committee Hansard*, 24 September 2025, p. 35.

⁴ Environment and Communications References Committee, *Final report: Algal Blooms in South Australia*, paragraph 3.73.

⁵ Dr Dominic McAfee, Marine Ecologist and Future Making Fellow, University of Adelaide, *Proof Committee Hansard*, 9 September 2025, p. 11.

⁶ Thomas Kelsall, 'Persistent algae bloom causing political headaches as scientists are copping the flak', *ABC News*, 27 September 2025.

⁷ Minister for the Environment and Water the Hon Murray Watt, Interview with James Glenday, *ABC News Breakfast*, 11 August 2025.

bloom, which has led to a perception in South Australia that the federal government is disinterested in their needs.

- 1.3 If the federal government had acted rather than deferring responsibility, South Australians would perhaps have more faith that the algal bloom was being taken seriously and there may have been more resources made available earlier to combat the effects of the algal bloom.

Mismanagement of timely and well marketed public health advice

- 1.4 The report acknowledges the haphazard response by SA Health, and the Coalition strongly supports recommendation 8. What the report does not acknowledge is that the ineptitude of SA Health has exacerbated the severity of the bloom's impacts on coastal communities and fishing industries.⁸
- 1.5 From the moment the algal bloom appeared in South Australia, surfers and swimmers were reporting negative health impacts.⁹ Local councils were not formally notified and had to seek out advice from SA Health.¹⁰ Local communities were concerned and confused, and advice was not tailored to effectively inform the public.
- 1.6 In April 2025 SA Health was advising those who experienced symptoms in coastal communities to stay home with the windows closed.¹¹ This was stated in press conferences, but not readily accessible on algal bloom health advice. These inconsistencies and failure to provide timely updates has greatly affected the reputation of SA Health.
- 1.7 It was not until September 2025 that SA Health advice was formally updated to reflect the reality for people with asthma.¹² This update was not effectively communicated to the public, which has led to a breakdown in public trust for health advice provided. The committee heard that this advice was only for asthmatics and not for those with other respiratory conditions.¹³ It was later

⁸ Environment and Communications References Committee, *Final report: Algal Blooms in South Australia*, Chapter 6 (see paragraphs 6.12, 6.14, 6.15, 6.31, 6.38, 6.39, 6.40).

⁹ Environment and Communications References Committee, *Final report: Algal Blooms in South Australia*, paragraph 6.12.

¹⁰ Environment and Communications References Committee, *Final report: Algal Blooms in South Australia*, paragraph 3.128.

¹¹ Environment and Communications References Committee, *Final report: Algal Blooms in South Australia*, paragraph 6.5.

¹² Environment and Communications References Committee, *Final report: Algal Blooms in South Australia*, paragraph 6.33.

¹³ Dr David Cunliffe, SA Health Principal Water Quality Adviser, *Proof Committee Hansard*, 9 September 2025, p. 32.

confirmed that people with chronic lung disease are at risk,¹⁴ which heightened concern about the algal bloom and safety of the South Australian coastline. When asked about separate advice for those with chronic lung conditions, the committee was told by Dr David Cunliffe (SA Health Principal Water Quality Adviser) that ‘the only impact has been on the asthmatics’.¹⁵ Now SA Health is telling South Australians this is not the case.¹⁶ With the advice shifting so wantonly, many South Australians have resorted to trusting their instincts more than their own public health body.

- 1.8 The committee heard from the Royal Australian College of General Practitioners Ltd (RACGP) that conflicting health advice has adversely impacted the mental health of coastal communities,¹⁷ who are avoiding the beach which has well-known benefits to wellbeing and health. Dr Sian Goodson (RACGP SA Chair) noted an increase in patients presenting with respiratory symptoms and mental health conditions stemming from the algal bloom,¹⁸ data that is not published and may not even be captured or measured by SA Health.¹⁹
- 1.9 The lack of timely, updated information, particularly following the large amounts of foam that continues to wash up on metropolitan beaches, has exacerbated communities’ anxiety. Many residents’ report frustration at inconsistent advice and a lack of clarity on the risks they are facing.
- 1.10 It is still not known whether there are long-term physical health impacts from the algal bloom, but we do know that SA Health provided and then retracted advice that there are no long-term physical health impacts.
- 1.11 It is also unclear on what scientific basis SA Health are providing their advice.

Timeliness of state government response

- 1.12 It is clear that the Malinauskas state government failed in its duties to provide support for South Australia. The report indicated this, however the Coalition believes it does not provide the same level of detail that was heard by the committee through submissions and by witnesses.

¹⁴ South Australian Government (SA Government), [Algal Bloom Update: Health Advice](#).

¹⁵ Dr David Cunliffe, SA Health Principal Water Quality Adviser, *Proof Committee Hansard*, 9 September 2025, p. 32.

¹⁶ South Australian Government (SA Government), [Algal Bloom Update: Health Advice](#).

¹⁷ Dr Sian Goodson, Chair, Royal Australian College of General Practitioners South Australia, and Chair, Royal Australian College of General Practitioners Board of Directors, Royal Australian College of General Practitioners Ltd, *Proof Committee Hansard*, 24 September 2025, p. 45.

¹⁸ Dr Sian Goodson, Chair, Royal Australian College of General Practitioners South Australia, and Chair, Royal Australian College of General Practitioners Board of Directors, Royal Australian College of General Practitioners Ltd, *Proof Committee Hansard*, 24 September 2025, p. 45.

¹⁹ *Senator Blyth FOI Application 22168415 to SA Health* is seeking documents to this effect.

1.13 The federal government was not formally advised by the state government about the impact of the algal bloom until the end of May, almost three months after it was first noticed.²⁰ Additionally, the state government did not apply for National Disaster Recovery Funding Arrangements until 18 July 2025,²¹ three weeks after the algal bloom was confirmed in Adelaide. This lack of communication demonstrates a state government that was sluggish and reactive. These are just two examples that showcase the state government cannot escape criticism for its handling of the algal bloom.

Effectiveness of South Australian Research and Development Institute (SARDI) and Primary Industries and Regions South Australia (PIRSA)

1.14 The operation of SARDI and PIRSA during the algal bloom has come into question throughout the inquiry, notably through the aforementioned promptness and accuracy of advice from Professor Steer. The Rapid Fish Stock Review announced in July is mentioned but not scrutinised in the report,²² while evidence from fisheries continues to question whether sufficient urgency has been employed.²³ Furthermore, decisions to move oyster stock from algal bloom affected waters into unaffected communities in the Eyre Peninsula came as a complete shock with no prior consultation and has completely eroded public trust.²⁴ The Coalition stresses the importance of holding responsible government agencies to account to improve transparency and restore positive public sentiment.

1.15 It was noted during the inquiry that despite experiencing similar algal blooms in the United States, Dr Donald Anderson, Director of the US National Office for Harmful Algal Blooms was not contacted by PIRSA until August 2025.²⁵

Support for industries and communities

1.16 The provision of financial support is acknowledged, however the report does not sufficiently detail the laggard pace at which this support filtered into South Australian communities. Local governments were forced to bear the brunt of

²⁰ Ms Katrina Maguire, Division Head, International Environment Reef and Ocean Division, DCCEEW, *Proof Committee Hansard*, 24 September 2025, p. 35.

²¹ Environment and Communications References Committee, *Final report: Algal Blooms in South Australia*, paragraph 3.71.

²² Environment and Communications References Committee, *Final report: Algal Blooms in South Australia*, paragraph 1.18.

²³ Sarah Herrmann, 'Experts dive into fish stock studies', [Yorke Peninsula Country Times](#), 8 October 2025.

²⁴ Arj Ganesan, 'Oyster farmers blockade trucks carrying oysters from algal bloom waters', [ABC News](#), 30 October 2025.

²⁵ Dr Donald Anderson, Senior Scientist, Woods Hole Oceanographic Institution, *Proof Committee Hansard*, 24 September 2025, p. 3.

clean-ups at a significant financial cost and which impacted their ability to continue their core functions.²⁶ Likewise, fisheries and oyster hatcheries saw a drop in catches and forced closures well before any government support was offered.²⁷

Publishing misleading advice against scientific consensus

- 1.17 The state government advised the public in March 2025 that the dominant species of the algal bloom was *Karenia mikimotoi*.²⁸ This was never known with confidence and was questioned during the inquiry by eminent scientific experts on 24 September 2025. Dr Heil stated ‘I suspect it's not *Karenia mikimotoi*’,²⁹ Professor Murray stated ‘we don't actually know which *Karenia* species we have in this bloom’,³⁰ and Dr Bolch stated ‘it is not *Karenia mikimotoi*’.³¹ Despite this, public messaging from SARDI and the state government continued to insist the bloom was *Karenia mikimotoi*. In November 2025 it was reported that the primary algae was *Karenia cristata*,³² further diminishing trust from a weary public.
- 1.18 The state government advised the bloom was formed out of three events: flooding, marine heatwave, and upwelling.³³ This again was challenged by eminent subject matter experts during the inquiry. Professor Murray expressly informed the committee that it was too soon to ‘make inferences about the role of marine heat waves or nutrients’.³⁴ Additionally, the Murray-Darling Basin Authority, Associate Professor Luke Mosley, and Emeritus Professor Gustaaf Hallegraeff all concluded there was no causal link between the 2022–23 floods and the algal bloom, and it may not have even been a contributing factor.³⁵

²⁶ Mayor Amanda Wilson, City of Holdfast Bay, *Proof Committee Hansard*, 9 September 2025, p. 38.

²⁷ David Simmons and Josh Wilson, ‘SA oyster industry in the algal bloom lurch’, *InDaily*, 28 May 2025.

²⁸ Environment and Communications References Committee, *Final report: Algal Blooms in South Australia*, paragraph 6.4.

²⁹ Dr Cynthia Heil, Director, Red Tide Institute, *Proof Committee Hansard*, 24 September 2025, p. 9.

³⁰ Professor Shauna Murray, Committee member, Australian and New Zealand Marine Harmful Algal Bloom Network, *Proof Committee Hansard*, 24 September 2025, p. 13.

³¹ Dr Christopher John S Bolch, Private capacity, *Proof Committee Hansard*, 24 September 2025, p. 14.

³² Caroline Horn, ‘*Karenia cristata* species source of toxins in SA's algal bloom, scientists believe’, [ABC News](#), 5 November 2025.

³³ Environment and Communications References Committee, *Final report: Algal Blooms in South Australia*, paragraph 1.34.

³⁴ Professor Shauna Murray, Committee Member, ANZMHAB Network, *Proof Committee Hansard*, 24 September 2025, p. 13.

³⁵ Environment and Communications References Committee, *Final report: Algal Blooms in South Australia*, paragraphs 2.31–2.33.

- 1.19 The state government continues to tell the public through flyer mailouts and advertisements that the algal bloom was caused by these three events despite evidence to the contrary. The report does not adequately outline this breach of governance and community expectations.

Closing comments

- 1.20 The inquiry into algal blooms in South Australia provided a clear and damning picture of failures by public servants and the South Australian and federal governments. It is evident from the inquiry that the ecological and public impact of the algal bloom could have been at least partially mitigated had the state government and its departments acted earlier and more decisively, and had the federal government been more open and receptive to the needs of South Australians.

Senator Leah Blyth
Substitute member
Liberal Senator for South Australia

Appendix 1

Timeline of the Harmful Algal Bloom

Timeline of the 2025 South Australian Harmful Algal Bloom (HAB)

September – October 2024

- 1.1 A marine heatwave affected the south coast of Australia from September 2024, which led to marine temperatures being on average 2.5 degrees higher than normal.¹
- 1.2 As discussed in Chapter 3, a group of concerned academics wrote to the former federal Minister for the Environment and Water, the Hon Tanya Plibersek MP, in October 2024 following the detection of the marine heatwave to draw attention to the issue and request federal funding be allocated over the next decade to mitigate any of the effects of the marine heatwave. This group more recently wrote to the current Minister for the Environment and Water, Senator the Hon Murray Watt, to draw attention to the current HAB in South Australia (SA).²

March 2025

- 1.3 On 18 March 2025, the SA Environment Protection Authority (SA EPA) stated that it had received 'multiple reports that dead fish and seahorses could be found on shore' at Waitpinga and Parsons beaches, and that it was working with Department of Primary Industries and Regions South Australia (PIRSA) Fisheries and SA Health to take water samples.³
- 1.4 On 25 March 2025, the EPA confirmed that *Karenia mikimotoi* (*K. mikimotoi*) was the cause of the HAB on the Fleurieu Peninsula.⁴
- 1.5 The SA Government confirmed reports of illnesses from surfers and swimmers and the presence of foam and dead marine life on beaches from March 2025.⁵ Local visitors to a Waitpinga Beach on the Fleurieu Peninsula reported having

¹ Details on marine heatwaves and their contribution to harmful algal blooms (HABs) are outlined in Chapter 2 of this report.

² Dylan Hogath, '[Anger over algae warning, Claim that scientists were ignored sparks outrage on the airwaves](#)' *Adelaide Advertiser*, 5 July 2025.

³ Environment Protection Authority, Government of South Australia, (SA EPA), '[Media statement on dead fish being found at Waitpinga and Parsons beaches](#)', 18 March 2025 (accessed 19 August 2025).

⁴ SA EPA, '[Microalgae bloom on the Fleurieu Peninsula identified](#)', 25 March 2025 (accessed 19 August 2025).

⁵ South Australian Government (SA Government), *Submission 71*, p. 3.

sore eyes, a sore throat and coughing, in some cases without even entering the water.⁶

- 1.6 PIRSA and the South Australian Research and Development Institute (SARDI) began monitoring the HAB and providing regular updates to the public.⁷

April 2025

- 1.7 In early April 2025, the SA EPA reported that the SA Government met with 'relevant state and federal agencies and affected councils' to discuss the HAB, and noted at the time that the Fleurieu Peninsula, Yorke Peninsula and Kangaroo Island were affected.⁸

May 2025

- 1.8 In early May 2025, the SA EPA reported that the HAB 'continues to affect beaches on the Fleurieu Peninsula, and Kangaroo Island and is increasingly prevalent along the southern coast of the Yorke Peninsula'.⁹
- 1.9 It was reported that PIRSA had tested the waters at Oyster Bay in Stansbury and had detected brevetoxins. This result caused PIRSA to direct oyster harvesters in the area to temporarily stop the harvesting of their product pending further advice.¹⁰

June 2025

- 1.10 On 3 June 2025, the SA Government held the Harmful Algal Bloom Science Forum which 'brought together leading scientists from State and Federal government agencies, national research institutes and universities, and the private sector' to discuss the impacts of the current HAB and options for HAB control and monitoring.¹¹ Experts from the Cawthron Institute, a New Zealand

⁶ Thomas Kelsall, Caroline Horn, '[Mysterious foam washes up on Waitpinga Beach with reports of fish deaths and surfers falling ill](#)' *ABC News*, 17 March 2025.

⁷ South Australian Department of Primary Industries and Regions (PIRSA), '[Harmful algal bloom \(HAB\) situation update, 25 July 2025](#)' (accessed on 28 July 2025).

⁸ Environment Protection Authority, Government of South Australia (SA EPA), '[SA *Karenia mikimotoi* algal bloom update](#)', 10 April 2025 (accessed 19 August 2025).

⁹ SA EPA, '[SA *Karenia mikimotoi* algal bloom update](#)', 2 May 2025 (accessed 19 August 2025); SA EPA, '[Microalgae bloom on SA shores](#)' 8 May 2025, (accessed 19 August 2025).

¹⁰ George Yankovich, Narelle Graham, '[Toxin caused by algae forces quarantine of Yorke Peninsula oysters](#)', *ABC News*, 8 May 2025 (accessed on 27 August 2025). See also, Australian Shellfish Quality Assurance Advisory Committee, *Submission 146*, [p. 7]; SA Government, answers to questions on notice, 25 September 2025, p. 2.

¹¹ Participants included representatives from PIRSA; South Australian Department of Environment and Water (DEW); SA EPA; SA Health; South Australian Research and Development Institute (SARDI); South Australian Shellfish Quality Assurance Program (SASQAP); NSW Department of Primary Industries; WA Department of Biodiversity, Conservation and Attractions; Commonwealth Scientific and Industrial Research Organisation (CSIRO); University of South

(NZ) independent science organisation, also presented on the NZ perspective of dealing with fish-killing HABs and the *Karenia* strain of algae.¹²

- 1.11 In early June 2025, the SA Department for Environment and Water (DEW) and PIRSA announced that water testing revealed the *Karenia* strain of algae was present in the Coorong North lagoon between Seven Mile Basin and Long Point, with experts believing the algae 'flowed through the Murray Mouth and into the lagoon' during the 26 May 2025 storm and 27 May 2025 high tide.¹³

July 2025

- 1.12 In early July 2025, DEW reported that *K. mikimotoi* had been detected in the West Lakes and the Port River, and that the HAB was at that stage:

... also affecting the eastern and western coastlines of Spencer Gulf, Investigator Strait near North Cape on Kangaroo Island, Troubridge Point on Yorke Peninsula, the Coorong's North Lagoon and along the coastline from Victor Harbor to Robe.¹⁴

- 1.13 DEW also noted that there had been 'multiple reports of fish deaths along the metropolitan coastline', including a dolphin carcass at Tennyson Beach and the carcass of a great white shark at Port Broughton, Yorke Peninsula, following a storm on 24 June. DEW said that 'while it is not uncommon for marine mammal carcasses to wash ashore after winter storms, both the dolphin and shark [were] being tested to determine if the algal bloom contributed to their deaths'.¹⁵
- 1.14 On 8 July 2025, the SA Government announced that fishing licensing fees would be waived for the June quarter, in recognition of the ongoing disruption to commercial fisheries and aquaculture operations.¹⁶
- 1.15 In mid-July 2025, underwater footage captured at the Zanoni shipwreck in the Upper Gulf St Vincent Marine Park 'show[ed] many of the sponges, cold water

Australia; The University of Adelaide; Flinders University; University of Technology, Sydney; University of Tasmania; University of Western Australia; SmartSat CRC; Southern Fishery and Ecosystem Solutions; Microalgal services; Fisheries Research and Development Corporation; and Oz Fish. See, PIRSA, [Summary: Harmful Algal Bloom Science Forum](#), June 2025, p. 1.

¹² PIRSA, [Summary: Harmful Algal Bloom Science Forum](#), June 2025, pp. 1–2 and 6.

¹³ DEW, [Test results confirm Coorong algal bloom](#), 6 June 2025 (accessed 19 August 2025).

¹⁴ DEW, [Tests to reveal extent of harmful algal bloom](#), 1 July 2025 (accessed 19 August 2025). See also, South Australian Department for Environment and Water, [Harmful algal bloom detected in Port River](#), 8 July 2025 (accessed 19 August 2025).

¹⁵ DEW, [Tests to reveal extent of harmful algal bloom](#), 1 July 2025 (accessed 19 August 2025).

¹⁶ Eligible fees for relief consideration included: PIRSA Fisheries and Aquaculture annual licence fees; Biosecurity SA Food Safety Scheme and audit fees; and Aquaculture lease and licence fees. See, PIRSA, [Fee relief for commercial fishers impacted by algal bloom](#), 8 July 2025 (accessed 20 August 2025).

corals and other filter-feeding organisms [were] clearly impacted' by the HAB (see figure below).¹⁷

Figure 1.1 Underwater footage of the algal bloom in the Upper Gulf St Vincent Marine Park



Source: South Australian Department for Environment and Water, [Fisheries vessel inspects harmful algal bloom](#), 22 July 2025 (accessed 19 August 2025).

Underwater footage captured by the patrol vessel Southern Ranger in the morning of 16 July 2025, at the Zanoni shipwreck in the Upper Gulf St Vincent Marine Park.

- 1.16 On 17 July 2025, the SA Minister for Primary Industries and Regional Development, the Hon Clare Scriven MLC, wrote to the federal Minister for Agriculture, Fisheries and Forestry, the Hon Julie Collins MP, seeking changes to the eligibility criteria for the Commonwealth Government's Farm Household Allowance program and Rural Investment Corporation low interest loans, to provide financial support for SA's wild catch fishers.¹⁸
- 1.17 On 21 July 2025, the federal Minister for the Environment and Water, Senator the Hon Murray Watt, travelled to SA to inspect the impacts of the HAB. The Commonwealth Government announced a \$14 million investment to support

¹⁷ DEW, [Fisheries vessel inspects harmful algal bloom](#), 22 July 2025 (accessed 19 August 2025).

¹⁸ SA Government, answers to questions on notice, 25 September 2025, [pp. 20–21]; Erin Jones, '[At last a trip for minister](#)', *Adelaide Advertiser*, 21 July 2025 (accessed 28 July 2025); Thomas Kelsall, 'South Australian government calls for Commonwealth to support fishers as algal bloom continues', [ABC News](#), 18 July 2025 (accessed 19 August 2025).

the SA Government's efforts to respond to the effects of the HAB on the environment, as well as providing assistance to affected communities and industries.¹⁹ SA Premier, the Hon Peter Malinauskas MP, welcomed the federal funding, however he reiterated calls for the HAB to be declared a national disaster.²⁰

1.18 On 22 July 2025, the SA Government's Emergency Management Committee of Cabinet agreed to a HAB support package, contributing \$14 million to match the Commonwealth Government's contribution.²¹ The support package included the following key measures:

- **Science and research**

- **Coastal Monitoring Network**—expanded early detection and monitoring of HAB species through real time sensors (buoys), satellite imagery and oceanographic modelling, with rapid detection of HABs and early warning systems for industry. (\$8.5m)
- **New national testing laboratory in SA** for HAB and brevetoxin/biotoxin testing, to increase the speed at which samples can be analysed. (\$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**

- **Harmful Algal Bloom Taskforce** to meet 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.

¹⁹ Senator the Hon Murray Watt, Minister for the Environment and Water, and the Hon Julie Collins MP, Minister for Agriculture, Fisheries and Forestry, '[Albanese Government commits \\$14 million to help South Australia combat devastating algal bloom](#)', *Media Release*, 21 July 2025 (accessed 28 July 2025).

²⁰ Sara Garcia, Jessica Warriner, '[State matches federal algal bloom funding, but where will the money be spent?](#)', *ABC News*, 22 July 2025 (accessed on 29 July 2025).

²¹ Further details about the support offered by both the State and Commonwealth governments are outlined in Chapter 3 of this report.

- **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)
 - **Industry support**
 - **\$10,000 Small Business Support Grants** for eligible small businesses.²²
 - **Financial counselling, mental health support and workforce advice** to assist affected small businesses to develop recovery and continuity plans, understand the short and long-term implications, and help manage financial and mental wellbeing.²³
- 1.19 Also on 22 July 2025, DEW announced that the SA Government had established the Harmful Algal Bloom Reference Group, comprising 'representatives from Seafood Industry South Australia, RecFish SA, Conservation Council, Tourism Industry Council and First Nations groups'. The Reference Group would report to the Harmful Algal Bloom Taskforce, and:
- Represent sectors to identify key issues for government to consider in managing and recovering from the algal bloom.
 - Identify opportunities to further engage with and provide more information to industry sectors, stakeholders and the community.
 - Provide ideas for government consideration to support an expanded scientific monitoring program.²⁴
- 1.20 On 28 July 2025, the SA Government announced that in addition to the \$10,000 Small Business Support Grants, grants of up to \$100,000 would be available for

²² Eligible businesses included: marine or coastal tourism operators; charter boat and fishing charter operators; marine-based sport and/or schools (e.g. surf school); commercial fisheries and aquaculture licence holders; seafood processors; marine/fishing supply chain manufacturers/retailers (e.g. tackle shops, suppliers); coastal caravan parks and camping grounds and accommodation; and beachfront kiosks/cafés. Eligible businesses would also need to demonstrate a 30 per cent decline in business turnover. See, The Hon Peter Malinauskas MP, Premier of South Australia, 'Up to \$100,000 for hardest hit by algal bloom', [Media Release](#), 28 July 2025.

²³ The Hon Peter Malinauskas MP, Premier of South Australia, '[State Government reveals next stage of algal bloom support package](#)', [Media Release](#), 22 July 2025.

²⁴ DEW, '[Fisheries vessel inspects harmful algal bloom](#)', 22 July 2025 (accessed 19 August 2025).

significantly impacted fisheries and aquaculture businesses. This would include:

- Immediate payment of \$25,000 for fisheries or aquaculture licence holders forced to close by authorities for more than one month or a 50 per cent reduction in catch/harvest for a three-month period since April.
- An additional payment of up to \$75,000 where a 50 per cent reduction in turnover can also be demonstrated. Payments will be tiered based on turnover.²⁵

1.21 The SA Government also announced the fishing licensing fees would be waived for the September quarter.²⁶

August 2025

1.22 On 3 August 2025, the SA Government announced new measures to support fishing activity during the HAB and to support the recovery of fish stocks following the event. These measures included:

- \$300,000 to install a strategically placed recreational fishing reef in an impacted Gulf region to support the survival and reproduction of key recreational species and allow real-time monitoring for citizen scientists, schools, and researchers;
- Boosting regional tourism by supporting RecFish SA to deliver a series of four fishing events and competitions in regional areas in conjunction with local tackle stores and businesses;
- Providing RecFish SA a grant of \$200,000 to further support more than a hundred community fishing clinics and programs across South Australia, fishing events and competitions, and engagement with recreational fishing clubs to boost participation²⁷

1.23 Starting on 5 August 2025, and continuing throughout the month, the SA Government held a series of community forums across a range of regional and metropolitan locations, to 'provide updates on the response and recovery efforts, including the latest science, public health advice, and support measures for affected communities and industries'.²⁸ The forums enabled communities to ask questions and:

²⁵ The Hon Peter Malinauskas MP, Premier of South Australia, 'Up to \$100,000 for hardest hit by algal bloom', [Media Release](#), 28 July 2025.

²⁶ The Hon Peter Malinauskas MP, Premier of South Australia, 'Up to \$100,000 for hardest hit by algal bloom', [Media Release](#), 28 July 2025.

²⁷ The Hon Peter Malinauskas MP, Premier of South Australia, 'Backing SA's recreational fishers and supporting fish stocks', [Media Release](#), 3 August 2025.

²⁸ Community forum locations included: Brighton, Semaphore, Victor Harbor, Minlaton, Port Lincoln, Hallett Cove, Henley Beach, and Kangaroo Island. See, Government of South Australia, [South Australian algal bloom community forums](#) (accessed 20 August 2025).

... hear directly from Premier Peter Malinauskas, Deputy Premier Susan Close and other ministers, as well as scientific and public health experts including Chief Public Health Officer Professor Nicola Spurrier and [SARDI's] Professor Mike Steer...²⁹

- 1.24 On 12 August 2025, federal Environment Minister, Senator the Hon Murray Watt, met with marine scientists 'to explain the government's funding package and plans for further ocean protection'. On the request of the marine scientists, Minister Watt subsequently wrote to the Chair of the Threatened Species Scientific Committee to 'urgently consider' whether any local SA flora and fauna species should be added to the 2025 Priority Assessment List due to the HAB.³⁰
- 1.25 The Environment Minister also wrote to the Threatened Species Scientific Committee (TSSC) on 12 August to highlight the algal bloom impacting the coast, and its link to the mass mortality of marine species. The Minister requested that the TSSC 'consider as a matter of urgency any species and ecological communities that should be assessed as a priority for possible inclusion on the national threatened species list'. Department of Climate Change, Energy, the Environment and Water (DCCEEW) officials met with the TSSC Chair on 13 August 2025 to initiate this process, and again on 22 August 2025. The TSSC met to discuss this issue on 28 August 2025, and were set to discuss this again between 1–4 September 2025.³¹
- 1.26 On 13 August 2025, Minister Watt visited Adelaide to 'meet with impacted businesses, industry and the community',³² and joined SA Ministers, the Hon Susan Close MP and the Hon Clare Scriven MLC, to undertake offshore water sampling with PIRSA. It was announced that SA's water testing regime for the HAB had been 'significantly expanded to 76 sites as part of the \$28 million support package', including 'the addition of 18 new regional testing sites',³³ and that the use of drones for water sampling at remote locations was to be trialled in the coming weeks.³⁴

²⁹ The Hon Peter Malinauskas MP, Premier of South Australia, 'Algal bloom community forums start tonight', [Media Release](#), 5 August 2025.

³⁰ Senator the Hon Murray Watt, Minister for the Environment and Water, 'Minister fast-tracks marine life assessments after algal bloom', [Media Release](#), 13 August 2025.

³¹ Department of Climate Change, Energy, the Environment and Water (DCCEEW), *Submission 67*, p. 13.

³² Senator the Hon Murray Watt, Minister for the Environment and Water, 'Minister fast-tracks marine life assessments after algal bloom', [Media Release](#), 13 August 2025.

³³ The eighteen new regional testing sites comprised six on Yorke Peninsula, five on the Eyre Peninsula, four on the Fleurieu Peninsula and three in the South-East.

³⁴ Senator the Hon Murray Watt, Minister for the Environment and Water, and The Hon Susan Close MP, SA Minister for Climate Environment and Water, 'Joint media release: Expanded algae testing regime to better inform the public', [Media Release](#), 13 August 2025.

- 1.27 On 19 August 2025, the SA Government announced changes to the grant criteria for business support grants, to expand eligibility. The application closing date for the grants was also extended from 12 September 2025 to 30 November 2025.³⁵
- 1.28 On 20 August 2025, Prime Minister, the Hon Anthony Albanese MP, visited Adelaide and Kangaroo Island, and announced \$6.25 million of federal funding:
- \$4 million of direct funding to local government for grants to assist local communities;
 - \$2.25 million in targeted scientific research support; and
 - \$2 million to enhance the monitoring and data collection of marine heatwaves through the CSIRO's water quality system, AquaWatch.³⁶
- 1.29 In addition, the Prime Minister mentioned that the Commonwealth would contribute \$250,000 for algal bloom related research informed by the South Australian Algal Bloom Science Panel through the National Environmental Science Programme.³⁷
- 1.30 The Prime Minister also announced that a new stream of Regional Investment Corporation funding would be established to provide long-term support certain aquaculture sectors to deal with significant ecological events such as HABs.³⁸
- 1.31 In a joint media release between the Prime Minister and Premier Malinauskas, it was announced that as part of the \$28 million support package, the company Agilex Biolabs has been engaged to develop methods to test for brevetoxins in Australia. Currently, any testing undertaken by SASQAP includes having to send samples to New Zealand for analysis, which can delay results by up to a week.³⁹
- 1.32 In a joint media release from Minister Watt, Premier Malinauskas, and Deputy Premier Susan Close MP on 28 August 2025, it was announced that a trial of 'air bubble curtain' technology would be installed on the Cuttlefish Coast in the Upper Spencer Gulf to attempt to protect cuttlefish eggs and hatchlings. The

³⁵ SA Government, [More businesses eligible for algal bloom financial support](#), 19 August 2025 (accessed 20 August 2025); South Australian Office for Small and Family Business, [Algal Bloom financial support programs expanded](#), 20 August 2025 (accessed 20 August 2025). For further discussion of industry grants, see Chapter 3 of this report.

³⁶ The Hon Anthony Albanese MP, Prime Minister of Australia, and the Hon Peter Malinauskas MP, Premier of South Australia, [Press conference—Adelaide](#), 20 August 2025.

³⁷ The Hon Anthony Albanese MP, Prime Minister of Australia, and the Hon Peter Malinauskas MP, Premier of South Australia, [Press conference—Adelaide](#), 20 August 2025.

³⁸ The Hon Anthony Albanese MP, Prime Minister of Australia, and the Hon Peter Malinauskas MP, Premier of South Australia, [Press conference—Adelaide](#), 20 August 2025.

³⁹ The Hon Anthony Albanese MP, Prime Minister of Australia, and the Hon Peter Malinauskas MP, Premier of South Australia 'Adelaide set to house new national algae testing laboratory' [Media Release](#), 20 August 2025.

technology works by creating an underwater barrier that can disrupt the movement of the HAB, preventing it from passing through this barrier. This prevention method is new to SA and can only be used to prevent the HAB from spreading to the area and cannot be used in areas where the HAB is already present.⁴⁰

September 2025

- 1.33 In early September 2025, the SA Government's Algal Bloom Coordination Unit accelerated beach clean up patrols drawing on staff from Disaster Relief Australia, IPA Rangers from the Point Pearce Aboriginal Corporation, and the Goolwa Pipi Company. Access to facilities was provided by Surf Life Saving South Australia.⁴¹
- 1.34 Campaigns to encourage public support for the South Australian seafood industry and coastal locations were launched in September, including the '*Buy SA Seafood*' campaign and '*Coast is Calling*' voucher program.⁴²
- 1.35 Community forums continued to be held by the SA Government in a variety of locations across the South Australian coast.
- 1.36 Health advice was updated in September 2025, and people with asthma were advised to carry reliever medication with them while on beaches, take preventive medication as prescribed, and update asthma management plans.

October 2025

- 1.37 On 2 October 2025, it was announced that there would be a phone hotline established to provide up to date information to the public as well as having options for reporting fish kills or other marine mortalities. The hotline went into operation on 3 October 2025.⁴³
- 1.38 On 14 October 2025, the SA Government released the Algal Bloom Summer Plan, which set out funding from the Commonwealth and State governments to address the effects of the algal bloom, and funding for research and marine restoration. The Summer Plan also provides for the expansion of both the *Buy*

⁴⁰ Senator the Hon Murray Watt, Minister for the Environment and Water, Premier Peter Malinauskas MP, and Deputy Premier Susan Close MP, Minister for Climate, Environment and Water, 'Innovative investment aims to protect giant cuttlefish' [Joint media release](#), 28 August 2025.

⁴¹ SA Government, [Clean up patrols hit beaches](#), 4 September 2025 (accessed 7 October 2025).

⁴² SA Government, [Buy the Best. Buy SA Seafood](#). (accessed 7 October 2025); SA Government, [Coast is Calling Voucher ballot now open](#), 18 September 2025 (accessed 7 October 2025); SA Government, [Coastal tourism businesses welcome thousands of voucher bookings](#), 27 September 2025 (accessed 7 October 2025)..

⁴³ Senator the Hon Murray Watt, Minister for the Environment and Water, Premier Peter Malinauskas MP, and Lucy Hood MP, SA Minister for Climate, Environment and Water, 'Innovative investment aims to protect giant cuttlefish' [Joint media release](#), 2 October 2025.

SA Seafood and *Coast is Calling* campaigns. The Algal Bloom Summer Plan is discussed in further detail in Chapter 3 of the report.

Appendix 2

Submissions and Additional Information

- 1 Kangaroo Island Council
- 2 City of Victor Harbor
- 3 Brave the Waves
- 4 Associate Professor Jochen Kaempf
- 5 Professor Caitlin Byrt and Dr Ben Long
- 6 Human.Kind Studios and Salty Sips
- 7 Chilly Pits
- 8 Associate Professor Luke Mosley
- 9 Yumbah Mussels Holdings
- 10 Surfers for Climate
- 11 Professor Ivan Nagelkerken
- 12 Kangaroo Island Tourism Alliance
- 13 Save West Beach Sand
- 14 Coorong District Council
- 15 Professor Sarah Wheeler
- 16 Clean Ocean Foundation
- 17 Animal Justice Party Limited
- 18 City of Onkaparinga
- 19 The Royal Australian College of General Practitioners Ltd
- 20 Australian Youth Climate Coalition
- 21 Greenpeace Australia Pacific
- 22 Seafood Industry Australia
- 23 Lifeblood Alliance
- 24 Conservation Council of SA
- 25 LGA South Australia
- 26 Surfrider Foundation Australia
- 27 Victorian National Parks Association
- 28 Yumbah Aquaculture Ltd
- 29 Dr Christopher Keneally
- 30 Australian Red Cross Society
- 31 CSIRO
- 32 Australian Marine Sciences Association
- 33 Faith Coleman
- 34 Regional Development Australia Yorke and Mid North
- 35 Yorke Peninsula Council
- 36 Murray-Darling Basin Authority
- 37 The Nature Conservancy Australia
- 38 Doctors for the Environment Australia
- 39 Seafood Industry South Australia

- 40 Environment Institute, The University of Adelaide
- 41 Pristine Group
- 42 The Environment Institute of Australia, New Zealand, South Australian Division
- 43 NHMRC HEAL Network SA Regional Hub
- 44 Eyre Peninsula Local Government Association
- 45 Goyder Institute for Water Research
- 46 Great Southern Reef Foundation
- 47 Narungga Nation Aboriginal Corporation
- 48 Divers for Climate
- 49 Fisheries Research and Development Corporation (FRDC)
- 50 The Society for Ecological Restoration Australasia
- 51 SA Opposition
- 52 Emeritus Professor Gustaaf Hallegraef, Institute for Marine and Antarctic Studies
- 53 Australian Southern Bluefin Tuna Industry Association
- 54 Tourism Industry Council South Australia
- 55 SA Native Title Services
- 56 Australian Marine Conservation Society
- 57 Southern Fishermen's Association
- 58 First Nations of South Australia Aboriginal Corporations
- 59 Department of Agriculture, Fisheries and Forestry
- 60 Dr Alison Turnbull
- 61 Kurna Yerta Aboriginal Corporation RNTBC
- 62 Invasive Species Council
- 63 Safcol Australia
- 64 City of Port Lincoln
- 65 BirdLife Australia
- 66 Biodiversity Council
- 67 Department of Climate Change, Energy, the Environment and Water
- 68 Applied Futures
- 69 Australian Academy of Science
- 70 Birds SA
- 71 South Australian Government
- 72 Professor Shauna Murray, University of Technology Sydney, Australia
- 73 Australian and New Zealand Marine Harmful Algal Bloom Network
- 74 Stretton Institute/School of Social Science, University of Adelaide
- 75 Mr Grant Warner
- 76 Miss Michelle Harris
- 77 Ms Johanna Williams
- 78 Mr Peter Day
- 79 Mr Daniel Zapata Rincon
- 80 Mr Bart Butson

-
- 81 Ms Catherine Cox
 - 82 Mr Mark Cramond
 - 83 Dr Chris West
 - 84 Ms Debbie Saegenschnitter
 - 85 Mr Justin Cicoella
 - 86 Miss Ceri Roscoe
 - 87 Dr Susan Belperio
 - 88 Mr Victor Vorel
 - 89 Mr John Sheffield
 - 90 Ms Gemma Weedall
 - 91 Julie White
 - 92 Irene Salagaras
 - 93 Emeritus Professor Chris Vonderborch
 - 94 Ms Jane Edwards
 - 95 Mr Tim Forbes
 - 96 Mr Ian Andrew
 - 97 Mr Chris Warren-Smith
 - 98 Ms Victoria Kinsey-West
 - 99 Ms Monina Gilbey
 - 100 Ms Lianne Francis
 - 101 Mr Vic Neverauskas
 - 102 Mrs Maria Eyers
 - 103 Dr Anne E Jensen
 - 104 Melanie Carter
 - 105 Ms Bernadette Cranwell
 - 106 Ms Corinna Hueben
 - 107 Miss Rosie Byrt
 - 108 Dr Kathie Muir
 - 109 Leon Hancock
 - 110 Ms Georgina Legoe
 - 111 Rebecca Dunn
 - 112 Mike Bossley
 - 113 Glen Morris
 - 114 David Hall
 - 115 Name Withheld
 - 116 Name Withheld
 - 117 Name Withheld
 - 118 Name Withheld
 - 119 Confidential
 - 120 Confidential
 - 121 UniSA STEM
 - 122 Jacinta Carmichael-Parissi
 - 123 Southern Ocean Discovery Centre

- 124 Confidential
- 125 Name Withheld
- 126 Mr Geoff Ferguson
- 127 Dr Freya Higgins-Desbiolles PhD
- 128 Samantha Sea
- 129 A/Prof Rob Thomas
- 130 ARI Water Solutions
- 131 Citizens' Inquiry into the South Australian Coastal Crisis
- 132 Ocean Combat Academy
- 133 Angela Swan
- 134 Mara Blazic
- 135 Mr Ashley Perkins
- 136 Kirsty Whitehead
- 137 Milton Banfield
- 138 Arthur Mangos
- 139 Lachlan McEwen
- 140 Brett Gage
- 141 Claudia Tregoning
- 142 Dr Scott Robertson
- 143 Blue Carbon
- 144 DM and KL Holder Pty Ltd
- 145 Ms Emma Sandery
- 146 Australian Shellfish Quality Assurance Advisory Committee
- 147 Vincent Lyne
- 148 Peter Harrison
- 149 SA Unions
- 150 Donald Anderson
- 151 Ms Lara Bickford
- 152 Dr Ib Svane
- 153 Sevenseas Creative Australia
- 154 Mr Jeffrey Wait
- 155 RecFish SA

Additional Information

- 1 Algal bloom academic journal articles, provided by Mr Dominic McAfee (received 9 September 2025)
- 2 Fish catch data – July 2024 to June 2025, provided by Mr Bart Butson (received 9 September 2025)
- 3 Restoring Waterways, Protecting Gulfs: A catchment-to-coast approach to algal bloom prevention - Concept Note, provided by Environment Institute, University of Adelaide (received 16 September 2025)
- 4 Ngarrindjeri Regional Authority Public hearing statement regarding Algal Blooms Crisis, provided by Ngarrindjeri Regional Authority (received 16 September 2025)

- 5 Steve Hemming and Daryle Rigney, 'Ngarrindjeri futures: negotiating a future through Caring for Ruwe/Ruwar (lands, waters and all living things)', provided by Ngarrindjeri Regional Authority (received 16 September 2025)
- 6 Department of Environment, Water and Natural Resources and Ngarrindjeri Regional Authority, 'Kungun Ngarrindjeri Yunnan Agreement (KNYA): Listening to Ngarrindjeri People Talking - Annual Report 2012 and 2013', provided by Ngarrindjeri Regional Authority (received 16 September 2025)
- 7 Goyder Institute for Water Research, Technical Report Series No. 20/09, 'Translating Ngarrindjeri Yannarumi into water resource risk assessments' (2020), provided by Ngarrindjeri Regional Authority (received 16 September 2025)
- 8 Steve Hemming et al., 'Indigenous nation building for environmental futures: Murrundi flows through Ngarrindjeri country' (2019), Australasian Journal of Environmental Management, provided by Ngarrindjeri Regional Authority (received 16 September 2025)
- 9 Surfers for Climate, Opening statement and other information (received 24 September 2025)
- 10 SA Health, Fish-killing marine HABs in Australia with a focus on Karenia species, provided by Professor Shauna Murray (received 26 September 2025)

Answers to Questions on Notice

- 1 Alexandrina Council, Response to questions on notice from Senator Hanson-Young, public hearing Seacliff SA, 9 September 2025 (received 10 September 2025)
- 2 South Australian Sardine Industry Association, answers to questions on notice from a public hearing, 9 September 2025 (received 23 September 2025)
- 3 South Australian Government, answers to questions on notice from a public hearing, 9 September 2025 (received 26 September 2025)
- 4 Professor Shauna Murray, answers to questions on notice, 24 September 2025 (received 26 September 2025)
- 5 Integrated Marine Observing System (IMOS), answers to questions on notice, 24 September 2025 (received 29 September 2025)
- 6 SA Government, answers to questions on notice, 24 September 2025 (received 2 October 2025)
- 7 DCCEEW, answers to questions on notice, 24 September 2025 (received 8 October 2025)
- 8 CSIRO, answer to question on notice, 24 September 2025 (received 8 October)
- 9 Australian Marine Conservation Society, answers to questions on notice, 24 September 2025 (Received 8 October 2025)
- 10 SA Government, answers to questions on notice, sent 26 September 2025 (received 14 October 2025)
- 11 Department of Agriculture, Fisheries and Forestry, answers to questions on notice, 24 September 2025 (received 21 October 2025)

Tabled Documents

- 1 Before and after photos of marine environment, tabled by Ms Anita Thomas, Society for Ecological Restoration Australia (tabled 12 September 2025)
- 2 The Nature Conservancy, 'Restoration Guidelines for Shellfish Reefs' (2019), tabled by Anita Thomas, Society for Ecological Restoration Australia (tabled 12 September 2025)
- 3 Remote underwater camera and diver biodiversity surveys SA, tabled by Stefan Andrews, Great Southern Reef Foundation (tabled 9 September 2025)
- 4 Letter to the Hon Tanya Plibersek MP and the Hon Chris Bowen MP dated 20 October 2023 from Great Southern Reef Research Partnership, tabled by Stefan Andrews, Great Southern Reef Foundation (tabled 12 September 2025)
- 5 Letter to the Hon Murray Watt MP dated 27 May 2025 from Great Southern Reef Research Partnership, tabled by Stefan Andrews, Great Southern Reef Foundation (tabled 12 September 2025)
- 6 Australian Climate Service, Ocean warming and acidification, (tabled 24 September 2025)

Appendix 3

Public Hearings and Witnesses

Tuesday 9 September 2025

Brighton and Seacliff Yacht Club
246 Esplanade
Seacliff

Flinders University

- Dr Charlie Huveneers, Professor

University of Adelaide

- Dr Dominic McAfee, Marine ecologist and Future Making Fellow

Great Southern Reef Foundation

- Mr Stefan Andrews, Cofounder

Australian Marine Sciences Association

- Dr Craig Styan, President, SA Branch
- Dr Georgina Wood, Vice President, SA Branch

SA Department of Premier and Cabinet

- Mr Chris Beattie, Coordinator Algal Bloom Response

Department for Environment and Water and SA National Parks and Wildlife Service

- Ms Sandy Carruthers, Executive Director, Biodiversity and Nature Economy

South Australian Research and Development Institute (SARDI)

- Prof Michael (Mike) Steer, Executive Director
- Dr Gretchen Grammer, Acting Research Director, Aquatic and Livestock Sciences
- Dr Mark John Doubell, Research Scientist (Oceanographer), Oceanography Subprogram Leader
- Prof Simon Goldsworthy, Marine Ecosystems Program Leader

SA Health

- Dr David Cunliffe, Principal Water Quality Adviser

SA Water

- Mr David Ryan, Chief Executive
- Mr Peter Seltsikas, General Manager Sustainable Infrastructure
- Mr James Crocker, Senior Manager Environment and Energy

SA Chief Scientist

- Prof Craig Simmons, Chief Scientist

SA Coastal Councils Alliance

- Mayor Keith Parkes, Chairperson
- Mr Adam Gray, Executive Officer

Holdfast Bay Council

- Mayor Amanda Wilson, Mayor

LGA South Australia

- Ms Heather Holmes-Ross, President

City of Onkaparinga

- Mr Phu Nguyen, Chief Executive Officer
- Mayor Lauren Jew, Acting Mayor

Conservation Council of SA

- Ms Kirsty Bevan, Chief Executive Officer

Tourism Industry Council South Australia

- Ms Siggi Frede, Chair
- Ms Linda Lacey, Head of Programs and Strategy

SA Tourism Commission

- Ms Emma Terry, Chief Executive Officer

Seafood Industry South Australia

- Ms Alison Lloyd-Wright, Chair

South Australian Northern Zone Rock Lobster Fisherman's Association

- Mr Kyriakos (Kyri) Toumazos, Executive

Ozfish Unlimited

- Mr Brad Martin, SA Project Manager

Safcol Australia

- Mr Ebrahim Bidhendi, Company Director and head of Fish Market Operations
- Mr Ian Mitchell, Fish Market Manager

Australian Southern Bluefin Tuna Industry Association

- Mr Daniel Casement, Chief Executive Officer

Marine Fishers Association South Australia

- Mr Pat Tripodi, Executive Officer

Mr Mark Koolmatrie, Private capacity

Kanyanyapilla Pty Ltd

- Mr Karl Telfer, Traditional Owner – Burka Senior Man Mullawirra Meyunna (Dry Forest Country – Kurna Meyunna)

Wednesday 10 September 2025

Port Lincoln Yacht Club
1 Eyre St
Port Lincoln

City of Port Lincoln

- Ms Diana Mislov, Mayor
- Mr David Levey, Acting Chief Executive Officer

Eyre Peninsula Local Government Association

- Mayor Geoff Churchett, Board member

South Australian Sardine Industry Association

- Ms Claire Webber, Executive Officer
- Mr John Isle, Operations Manager, Sarin Group Pty Ltd

Yumbah Aquaculture Ltd

- Mr David Wood, CEO

Abalone Industry Association of South Australia Inc

- Mr Thomas McNab, President

South Australian Oyster Growers Association

- Mr Peter Treloar, Chair (by teleconference)
- Mr Andrew Wright
- Mr Victor Vorel
- Mr Peter Meadows
- Ms Kirsten Rough
- Dr Lb Svane

Thursday 11 September 2025

Ardrossan Community Club
Maitland Road
Ardrossan

South Australian Professional Fishers Association

- Mr Ben Barnes

Butson Fisheries

- Mr Bart Butson, Owner

Yorke Peninsula Council

- Mr Richard Carruthers, Acting Mayor
- Mr Andrew Cameron, Chief Executive Officer
- Mr Nick Perry, Manager of Economic Development and Business Sustainability

Regional Development Australia Yorke and Mid North

- Mr Daniel Wilson, Chief Executive Officer
- Ms Muriel Scholz, Economic Development Officer

Neptune's Surf Coaching

- Mr Max Tooze, Owner and Head Instructor

*Faith Coleman, Private capacity**Samantha Carter, Private capacity**David Hall, Private capacity**Narungga Nation Aboriginal Corporation*

- Ms Ann Newchurch, Chairperson
- Mr Garry Goldsmith, Director
- Mr Ashley Perkins, Fisherman
- Mr Michael Pennington, Fisherman
- Mr Paul Germein, Stansbury Fisherman
- Mr Jeff Wait, Port Parham Fisherman
- Mr Paul Dee, Owner Operator
- Mrs Pam Hickman, President
- Mr Greg Mills, Vice President

*Friday 12 September 2025**Victor Harbor Bowling Club**Flinders Parade**Victor Harbor*

- Mr Nathan Eatts
- Mr Keith Rowling, Executive Officer
- Mr Thomas Consentino, Executive Officer

Spirit of the Coorong & The Big Duck Boat Tours

- Mr Joel Hirsch, General Manager

Goyder Institute for Water Research and Coorong, Lower Lakes and Murray Mouth (CLLMM) Research Centre

- Dr Alec Rolston, Director

Hills and Fleurieu Landscape Board

- Professor Andrew Lowe, Board Member

Adelaide Coastal Councils Network (ACCN)

- Cr Gretel Wilkes, Chair

Coorong District Council

- Mrs Sharon Bland, Councillor
- Ms Bridget Mather, Chief Executive Officer

Alexandrina Council

- Mr Keith Parkes, Mayor
- Mr Adam Gray, Executive Officer

Kangaroo Island Council

- Mayor Michael Pengilly, Mayor

City of Victor Harbor

- Dr Moira Jenkins, Mayor

Kangaroo Island Tourism Alliance

- Ms Megan Harvie, Regional Tourism Manager

Fleurieu Peninsula Tourism

- Mr Matthew Hurley, Chair

Australian Red Cross Society

- Ms Sarah Strathearn, Director - South Australia & National Community Mobilisation
- Ms Emily English, Senior Manager - External Engagement

Local community representatives

- Mr Anthony Rowland, Surfer

Ngarrindjeri Regional Authority

- Mr Derek Walker, Board member, Ngarrindjeri Regional Authority, and Managing Director, Kuti Co
- Mr Steve Hemming, Associate Professor
- Mr Luke Trevorrow, Vice Chair of the Ngarrindjeri Regional Authority & Executive Officer of Kuti Co

Academic panel

- Ms Anita Thomas, Chair
- Dr Luke Mosley, Associate Professor
- Dr Freya Higgins-Desbiolles, Adjunct Senior Lecturer

Wednesday 24 September 2025

Parliament House - Room 2S3

Canberra

Dr Donald Anderson, Private capacity

- Mr Stephen McIntyre, Chief Executive Officer (via videoconference)
- Dr Cynthia Heil, Director, Red Tide Institute, Mote Marine Laboratory & Aquarium (via videoconference)
- Dr Judith O'Neil, Research Professor (via videoconference)
- Professor Shauna Murray, Committee member (via videoconference)
- Associate Professor Dr Christopher Bolch (via videoconference)
- Emeritus Professor Gustaaf Hallegraeff (via videoconference)
- Dr Kirsty Smith, Science Manager - Molecular and Algal Ecology, Cawthron Institute New Zealand (via videoconference)
- Professor Michele Burford, Australian representative, UNESCO/FAO Intergovernmental Panel on Harmful Algal Blooms (via videoconference)
- Mr Clinton Wilkinson, Program Leader, Department of Primary Industries and Regions SA (PIRSA) (via videoconference)
- Professor Mike Steer, Executive Director, South Australian Research & Development Institute (SARDI) (via videoconference)
- Mr Chris Beattie, Coordinator, Algal Bloom Response, Department of the Premier and Cabinet SA (via videoconference)
- Ms Katrina Maguire, Division Head, International Environment Reef and Ocean
- Ms Belinda Jago, Branch Head, Ocean and Wildlife Branch
- Dr Simon Banks, Commonwealth Environmental Water Holder
- Mr Hilary Johnson, Branch Head, Environmental Water Holdings and Southern Basin
- Mr Jason Mundy, Division Head, Climate Change Policy, Adaptation and Risk Division (via videoconference)
- Ms Sarah-Jane McCormack, First Assistant Secretary, Agvet Chemicals, Fisheries, Forestry and Strategy Division
- Ms Mel Brown, First Assistant Secretary, Farm Resilience Division
- Ms Laura Smith, Assistant Secretary, Farm Resilience Division
- Mr Joffrid Mackett, Assistant Secretary, Exports and Veterinary Services Division

CSIRO

- Dr Mark Baird, Research Program Director, Environment Research Unit
- Janet Anstee, Head of Aquawatch Australia, Space and Astronomy Research Unit

Bureau of Meteorology (BOM)

- Dr Andrew Jones, Acting Group Executive, Business Solutions (via videoconference)

Australian Climate Service

- Ms Vicki Manson, Head of the Australian Climate Service
- Dr Judith Landsberg, General Manager, National Climate Risk Assessment (via videoconference)

Integrated Marine Observing System - Coastal Research Infrastructure Program

- Professor Daniel Ierodicanou, Coastal Lead Scientist
- Dr Sian Goodson, Chair, RACGP South Australia and Chair, RACGP Board of Directors
- Professor Craig Williams, University of South Australia

Fisheries Research and Development Corporation (FRDC)

- Mr Sean Sloan, Managing Director
- Mr Crispian Ashby, General Manager Research and Development Investment
- Dr Alison Turnbull, Principle Investigator, SafeFish, (FRDC seafood safety and market access platform) plus personal submission as long-term researcher of HAB (via videoconference)

Regional Investment Corporation

- Mr John Howard, Chief Executive Officer
- Professor Patrick O'Connor AM, Councillor (via videoconference)
- Mrs Jaana Dielenberg, Biodiversity Council Science Communication Director (via videoconference)
- Ms Alexia Wellbelove, Acting Co-Campaigns Director (via videoconference)
- Dr Michaela Dommissie, Oceans Director
- Mr Andrew Bossie, Conservation Officer
- Ms Veronica Papacosta, Chief Executive Officer
- Mr Asher Dezser, Chief Executive Officer (via videoconference)
- Mr Joshua Kirkman, Chief Executive Officer
- Dr Yolanda Waters, Chief Executive Officer
- Ms Sarah Franke, Industry Engagement Lead