



LEGISLATIVE COUNCIL

SELECT COMMITTEE ON PFAS CONTAMINATION IN WATERWAYS AND DRINKING
WATER SUPPLIES THROUGHOUT NEW SOUTH WALES

PFAS contamination in waterways and drinking water supplies throughout New South Wales



Report 1

September 2025

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Select Committee on PFAS Contamination in Waterways and
Drinking Water Supplies Throughout New South Wales

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PFAS contamination in waterways and drinking water supplies throughout New South Wales

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Chair: Ms Cate Fachrmann MLC



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Table of contents

	Terms of reference	vii
	Committee details	ix
	Chair’s foreword	x
	Findings	xii
	Recommendations	xiv
	Conduct of inquiry	xix
Chapter 1	Background: PFAS contamination in New South Wales	1
	What are PFAS?	1
	Where are PFAS found?	2
	The ecological impact of PFAS	3
	Possible health impacts of PFAS exposure in humans	5
	Exposure pathways	5
	Possible health impacts of PFAS and debate as to the level of risk	6
	Management and regulation of PFAS in New South Wales	8
	Management framework	8
	Managing environmental contamination – prevention, investigation and incident management	11
	Managing risks to human health	17
	Water and managing risks to human health	18
	Monitoring international developments	28
	Community engagement	29
Chapter 2	PFAS affecting the Blue Mountains New South Wales	31
	The Blue Mountains Local Government Area	31
	Elevated PFAS levels in Blue Mountains Drinking Water	32
	Discovery of elevated PFAS levels	32
	Regulatory response	35
	Concerns arising from the Blue Mountains case	39
	Committee comment – monitoring, testing and reporting	46
	Committee comment – transparency and accountability and water quality standards	50
	Health concerns	50
	Evidence from the United States	57
	Committee comment – health concerns	61

Chapter 3	PFAS affecting The Hunter, Central Coast and North Coast of New South Wales	65
	Williamtown	65
	Discovery of PFAS contamination in Williamtown	65
	Management of PFAS contamination at Williamtown	66
	Ongoing concerns raised by local residents – Dr Michael Walton and Mr Paul Rooms	75
	Committee comment	82
	Opportunities for improved management of PFAS – Williamtown	84
	Committee comment	86
	Liaison with the Australian Government	88
	Committee comment	90
	Central Coast Waterways	91
	Discovery of PFAS contamination in Ourimbah Creek	91
	Committee comment	94
	EPA evidence concerning PFAS contamination in Central Coast waterways	94
	Committee comment	95
	Hunter River	96
	Committee comment	98
	Mid North Coast – Nambucca Heads	99
	Committee comment	101
Chapter 4	PFAS affecting further areas of New South Wales	103
	Central West New South Wales – PFAS contamination in the Belubula River	103
	Discovery of the contamination	103
	Possible implications of the contamination	104
	Investigations into the possible causes of the contamination	106
	Questions surrounding the adequacy of the EPA's regulatory response to the PFAS contamination	108
	Committee comment	110
	Elevated PFAS concentrations in drinking water – Warialda, Tarcutta, Narrabri and Dubbo	112
	Detection of elevated PFAS concentrations	112
	Warialda	114
	Tarcutta	116
	Dubbo	116
	Action being taken in response to PFAS detections	117
	Committee comment	119
	The need for greater federal and state coordination and funding for water quality and security in regional New South Wales	120
	Committee comment	124
	Wagga Wagga – PFAS contamination from Defence bases	126

	Defence related PFAS contamination in Wagga Wagga	126
	Army Recruit Training Centre, Blamey Barracks, Kapooka	126
	RAAF Base Wagga	127
	Concerns about the Defence response to PFAS contamination in Wagga Wagga	128
	Defence response to a request for further information	131
	Committee comment	132
	Issues arising under private irrigation scheme – Gumly Gumly	134
Chapter 5	Firefighting and PFAS	137
	Fire and Rescue NSW PFAS Investigation Program	137
	The program	137
	Funding for the program	140
	Committee comment	142
	Management of Fire and Rescue NSW sites to deal with legacy PFAS contamination issues and possible emerging issues	143
	Processes to manage Fire and Rescue NSW sites	143
	The importance of record-keeping	144
	Committee comment	147
	Training, operational guidelines and resourcing to manage environmental contamination into the future	148
	Committee comment	149
	Work health and safety	150
	Committee comment	153
Chapter 6	Other matters surrounding the management of PFAS in New South Wales	157
	The debate surrounding limits set by the Australian Water Quality Guidelines	157
	The debate	157
	Recent changes to the Australian Drinking Water Guidelines	157
	Should Australian water quality guidelines be stricter?	159
	The response of Sydney Water and NSW Health	164
	Committee comment	166
	Source control	168
	Calls for source control	168
	Source control and wastewater	169
	Source control and waste management	171
	Achieving source control	171
	Committee comment	174
	Biosolids	177
	Committee comment	179
	Treatment methods for PFAS	181

	Expert evidence	181
	The experience in Minnesota, USA	184
	Committee comment	185
	Better identification of PFAS contaminated sites	186
	Committee comment	188
Appendix 1	Submissions	189
Appendix 2	Witnesses at hearings	192
Appendix 3	Minutes	196

Terms of reference

1. That a select committee be established to inquire into and report on PFAS (per and polyfluoroalkyl substances) contamination in waterways and drinking water supplies throughout New South Wales, and in particular:
 - (a) the adequacy and extent of monitoring and data collection on PFAS levels in waterways and drinking water sources
 - (b) the adequacy of the reporting and disclosure requirements to the public of monitoring and findings on PFAS contamination of water
 - (c) the identification of communities at risk from PFAS contamination
 - (d) the adequacy and effectiveness of government engagement with and support for communities disproportionately affected by PFAS contamination, including First Nations communities
 - (e) sources of exposure to PFAS, including through historic and current firefighting practices
 - (f) the health, environmental, social, cultural and economic impacts of PFAS
 - (g) the impacts, monitoring and mitigation of contamination on livestock, domestic animals and wildlife, including water birds, fish and other aquatic life
 - (h) the structure, capacity, capability and resourcing of New South Wales Government agencies and water utilities to detect, monitor, report on, respond to and mitigate against PFAS contamination of water supplies, including the adequacy of infrastructure and resources
 - (i) the adequacy and effectiveness of New South Wales's legislative and regulatory framework in testing for, monitoring, mitigating and responding to PFAS contamination, including the adequacy of health-based guidance values, as compared to the standards and practices of other Australian and international jurisdictions
 - (j) public sector resourcing and coordination amongst relevant agencies in preventing controlling and managing the risks of PFAS to human health and the environment
 - (k) international best practices for water treatment and filtration, and the environmentally sound management and safe disposal of PFAS
 - (l) the effectiveness of remediation works on specific sites and international best practices for remediation and management of contaminated sites
 - (m) areas for reform, including legislative, regulatory, public health and other policy measures to prevent, control and manage the risks of PFAS in water supplies

- (n) the impact of taking contaminated water sources offline on water security, including the effects of diverting water between communities; the social, economic and logistical implications of such diversions, and the challenges posed by PFAS contamination to water availability, drought management and emergency supply planning, and
- (o) any other related matters.

2. That the committee report by 18 September 2025.¹

The terms of reference were referred to the committee by the Legislative Council on 25 September 2024.²

¹ The original reporting date was 20 June 2025 (*Minutes*, NSW Legislative Council, 25 September 2024, item 36). The reporting date was later extended to 20 August 2025 (*Minutes*, NSW Legislative Council, 12 February 2025, item 7). The reporting date was later extended to 18 September 2025 (*Minutes*, NSW Legislative Council, 7 August 2025, item 9).

² *Minutes*, NSW Legislative Council, 25 September 2024, item 36.

Committee details

Committee members

Ms Cate Faehrmann MLC	The Greens	<i>Chair</i>
Hon Taylor Martin MLC	Independent	<i>Deputy Chair</i>
Hon Scott Barrett MLC	The Nationals	
Hon Greg Donnelly MLC	Australian Labor Party	
Hon Stephen Lawrence MLC	Australian Labor Party	
Hon Aileen MacDonald MLC	Liberal Party	
Hon Cameron Murphy MLC	Australian Labor Party	

Contact details

Website	www.parliament.nsw.gov.au
Email	pfas@parliament.nsw.gov.au
Telephone	(02) 9230 2214

Secretariat

Elspeth Dyer, Principal Council Officer
Gerard Rajakariar, Senior Council Officer
Tina Mrozowska, Council Officer
Alex Stedman, Director

Chair's foreword

This inquiry was established after *Sydney Morning Herald* investigative reporter Carrie Fellner, working with Professor Ian Wright from the University of Western Sydney, revealed that elevated levels of PFAS 'forever chemicals' had been detected in parts of Sydney's drinking water. Around the same time, alarmingly high levels of PFAS had been detected in foam in the Belubula River in the state's Central West and in the bodies of dead platypus. Each of these only came to light because of the work of independent scientists, journalists and impacted communities.

The public should have the utmost faith that the relevant government bodies are keeping our drinking water and waterways safe. However, as the committee undertook its work it soon became apparent that government agencies tasked with protecting public health and water quality had been unable to keep pace with the spread of PFAS chemicals throughout the environment.

One of the challenges the committee experienced was the paucity of data in the New South Wales context about where and how PFAS chemicals might be entering the state's waterways. Another was the rapidly evolving nature of the science. For example, during the course of the inquiry, the Australian Drinking Water Guidelines were revised to reduce the levels of the most prominent PFAS chemicals and the International Agency for Research on Cancer released its 745-page monograph supporting its finding that PFOA was carcinogenic.

Our inquiry received invaluable evidence from a range of stakeholders including scientists and academics, local councils, industry stakeholders, NSW Government authorities and the State Member for Wagga Wagga, Dr Joe McGirr MP. They also included members of local communities directly affected by PFAS contamination: the Blue Mountains, Williamtown, the Central West of New South Wales and Wagga Wagga. In addition, the committee had the privilege of hearing from international witnesses including Minnesota State Senator, Judy Seeberger, Avonna Starck from Clean Water Action, Minnesota and academics from the University of Southern California, and we are very grateful to them for making themselves available.

One message we heard consistently from witnesses, particularly water utilities and local councils, was about the urgent need to stop PFAS chemicals at the source. Indeed, the scale of what is required to clean up PFAS chemicals in wastewater is already herculean and will only become more so if nothing is done to prevent PFAS chemicals entering drains and waterways. That is because PFAS is used in countless everyday products from non-stick cookware to make-up and sunscreen, to pizza boxes, plastic packaging and dental floss.

It is patently clear that no single jurisdiction can tackle this problem alone. That is why the committee recommended the government work with state and federal governments to support the phase-out of all non-essential uses of PFAS by 2030. Importantly, moves are also afoot internationally to do just this.

The report contains 16 findings and 32 recommendations, aimed at better addressing PFAS contamination in New South Wales and the associated risks to human health and the environment. These span a range of areas and include recommendations for regular, risk-based PFAS testing of water across the state and timely public disclosure of the results; more regular reviews of the Australian Drinking Water Guidelines to ensure they align with international best practice; and supporting the blood testing of impacted communities.

On behalf of the committee, I would like to thank everyone who participated in the inquiry. These contributions greatly assisted the committee to understand a rapidly evolving and highly technical area that is of immense importance to everyone across the state. I would also like to thank my fellow committee members for the constructive and collegiate way in which they participated in this important inquiry. I also extend my deepest appreciation to the committee secretariat and Hansard for, once again, providing such professional support.

Cate Fachrmann MLC
Committee Chair

Findings

- Finding 1** 46
Sydney Water did not perform an appropriate level of due diligence before claiming, in June 2024, that there were no known PFAS hotspots within its drinking water catchments.
- Finding 2** 63
The advice provided by NSW Health on PFAS, including on potential associations with certain types of cancer and other diseases and whether individuals exposed to higher levels of PFAS should get their blood tested, requires further scrutiny given conflicting evidence, the unsettled state of the science, and the need to proceed consistent with the precautionary principle.
- Finding 3** 63
Blood testing and medical monitoring of willing individuals within communities that have been affected by elevated levels of PFAS should be supported by government to:
- aid in early detection of adverse health impacts
 - inform health care plans to prevent disease progression, and
 - inform further, much needed research about the potential health effects of PFAS exposure.
- Finding 4** 87
The provision of up-to-date information for PFAS impacted communities by relevant government authorities, both online and via one-on-one interactions, is essential to equip them with the tools to mitigate any potential risks from PFAS wherever possible.
- Finding 5** 88
The identification of PFAS bioaccumulation in wildlife, including fish, in the vicinity of Williamtown in 2016 should have triggered relevant government agencies to coordinate proactive testing for PFAS in waterways and drinking water across New South Wales.
- Finding 6** 90
There is a lack of effective collaboration between the Australian Government—particularly the Department of Defence—and New South Wales authorities in managing PFAS contamination, which hampers timely remediation efforts and undermines the provision of consistent and accurate information to affected communities. The NSW Government has consistently said that the Department of Defence needs to take more responsibility for the contamination it has caused.
- Finding 7** 111
In failing to erect signs along the Belubula River, immediately following the PFAS contamination discovery, warning against swimming and fishing until testing of the water and fish had been undertaken, the NSW Environment Protection Authority failed to act consistently with the precautionary principle.
- Finding 8** 111
The delay by the NSW Environment Protection Authority of more than eight months to test fish in the Belubula River for PFAS contamination, after tests on carp caught in the river found high levels of PFAS, was unacceptable.

- Finding 9** 112
Community members are spending a significant amount of their own money and resources to test for PFAS in local waterways.
- Finding 10** 155
Fire and Rescue NSW took too long to completely remove PFAS-containing firefighting foam that was stored at its fire stations, with evidence that such foam was still being located as late as 2023 or 2024.
- Finding 11** 166
The revised Australian Drinking Water Guidelines continue to permit higher levels of key PFAS chemicals—PFOS, PFHxS and PFOA—than comparable international standards, despite evidence of their adverse health effects, particularly for PFOA, which is 50 times higher than the US standard, despite PFOA being classified as carcinogenic to humans.
- Finding 12** 167
There is no requirement for water utilities to report testing data for PFAS chemicals not currently covered by Australian Drinking Water Guideline limits, despite evidence that spikes in these chemicals can and do occur. This limits the ability of public health agencies to evaluate whether additional PFAS chemicals should be subject to regulatory standards.
- Finding 13** 175
Preventing PFAS chemicals from entering the environment in the first place is essential to averting harm and, as far as possible, avoiding the need for expensive remediation and treatment of PFAS in New South Wales.
- Finding 14** 176
International jurisdictions, such as Minnesota in the United States, have implemented comprehensive PFAS bans and consumer disclosure laws, demonstrating that phasing out non-essential PFAS in everyday products is both feasible and effective. New South Wales, in partnership with the Australian Government, has now banned three PFAS chemicals: PFOA, PFOS and PFHxS for use or import into New South Wales, under the Industrial Chemicals Environmental Management Standard (IChEMS), which came into force on 1 July 2025.
- Finding 15** 180
There is a lack of transparency and adequate regulation around the historical application of biosolids in New South Wales. This includes insufficient monitoring of downstream impacts on soil and water quality, despite evidence linking biosolid use to PFAS contamination in waterways such as the Belubula River.
- Finding 16** 180
The revised standards under the PFAS National Environmental Management Plan Version 3.0 could render a significant proportion of biosolids produced by New South Wales water utilities unsuitable for agricultural reuse. This highlights the urgent need for phasing out PFAS chemicals, investment in treatment technologies and improved monitoring and compliance systems.

Recommendations

Recommendation 1

47

That the NSW Government ensure regular PFAS testing of water across New South Wales and that this require:

- risk-based testing of source water, water at treatment plants before and after treatment, and water in the distribution system
- testing to a set of pre-determined standards, consistent with current best practice with requirements for periodic review, and
- timely, accessible public disclosure of the results.

Recommendation 2

47

That in publishing data concerning PFAS, government agencies do so in a format that:

- is easily searchable and accessible, and
- makes extracting and understanding the data as easy as possible

in order to aid research and better inform the public around PFAS.

Recommendation 3

50

That the NSW Government formally adopt standards for the levels of PFAS chemicals in drinking water and designate the Australian Drinking Water Guidelines as minimum standards in New South Wales.

Recommendation 4

64

That the NSW Government support blood testing for any willing Blue Mountains residents to:

- determine whether PFAS concentrations are higher in the blood of Blue Mountains community members when compared against the general population
- determine whether higher PFAS concentrations, if any, are associated with a higher incidence of adverse health effects e.g. high cholesterol and cancer
- help inform any clinical interventions on an individual level, if relevant, to prevent the progression of disease.

Recommendation 5

83

That relevant government authorities liaise directly with local community members who have raised concerns about elevated PFAS levels, and who have corroborated this with privately obtained test results, to ensure clinicians and community members are supported in interpreting and communicating information related to PFAS.

Recommendation 6

87

That, as a matter of priority, the NSW Environment Protection Authority:

- write to the Federal Department of Defence, calling on them to invest to clean up the Williamstown Management Area, and communicate health and dietary advice to the community
- call on the Federal Department of Defence to undertake ongoing community consultation and information.

Recommendation 7

87

That the Federal Department of Defence undertake regular monitoring of PFAS levels and potential health effects in Williamtown residents along with a follow-up study to complement the Australian National University's PFAS Health Study, which reported in 2021.

Recommendation 8

96

That the NSW Government undertake an audit of the state's 'high conservation value' and 'slightly to moderately disturbed' freshwater ecosystems to determine which do not meet the 99 per cent ecological water quality guideline for PFAS, and take action to identify source pollution and prevent and remediate contamination wherever possible.

Recommendation 9

96

That, in investigating the cause of elevated PFAS levels within waterways, it be standard procedure for government investigators to consult with Fire and Rescue NSW about whether historically there have been any significant traffic accidents on nearby roadways at which large amounts of PFAS-containing foam has been used and, if so, there be follow-on investigations as to where that foam flowed.

Recommendation 10

99

That the NSW Government include load limits within environmental protection licences issued under the *Protection of the Environment Operations Act 1997* as to the amount of PFAS chemicals industry and treatment plants can discharge into waterways in New South Wales, with the aim of meeting ecological guidelines.

Recommendation 11

111

That the NSW Environment Protection Authority inform the community about the possible PFAS contamination in the Belubula River including to avoid any contact with the foam.

Recommendation 12

124

That the NSW Government commission an independent person or panel of persons to conduct a review to determine the financial impact of PFAS contamination on local water utilities in regional New South Wales, including the costs of:

- increased PFAS testing and monitoring of water
- PFAS treatment of water, and
- the provision of alternative water supplies where previous sources do not meet required water quality standards

having regard to water quality standards under the new Australian Drinking Water Guidelines, published in June 2025.

Recommendation 13

125

That, drawing on the results of the NSW Productivity and Equality Commission's review of local water utility funding models and any independent review to determine the financial impact of PFAS contamination on local water utilities in regional New South Wales, the NSW Government urgently allocate sufficient funding to local water utilities for:

- ongoing PFAS testing and monitoring of water
- PFAS treatment of water, and
- provision of alternative water supplies where previous sources do not meet required water quality standards.

- Recommendation 14** 125
- That in commissioning an independent person or panel of persons to conduct a review to determine the financial impact of PFAS contamination on local water utilities in regional New South Wales, the NSW Government request the reviewer/s to specifically factor in the cost of PFAS testing for private water tanks and bores.
- Recommendation 15** 134
- That the NSW Government support PFAS blood testing for willing participants in:
- Tarcutta, Wialda, Narrabri and Dubbo, and in any Local Government Areas where elevated PFAS levels are found in drinking water supply systems
 - Wagga Wagga more broadly, having regard to the PFAS contamination emanating from Wagga Wagga's Defence bases
 - areas exposed to contaminated sections of the Belubula River
- in close collaboration with local councils.
- Recommendation 16** 143
- That the NSW Government establish a dedicated fund or program to train environmental contamination consultants, providing them with the high level skills in PFAS remediation that are increasingly in demand across the state.
- Recommendation 17** 143
- That the NSW Government increase funding for the Fire Rescue NSW PFAS investigation program to speed up its work, including funding to attract environmental contamination consultants who currently have the required high level skills to steer PFAS remediation works under the program.
- Recommendation 18** 147
- That the NSW Government establish a central register of any issues relating to land contamination for each parcel of land in New South Wales, including when land is within a PFAS management area, when a contaminated property has been remediated, and, if so, the standard to which any such remediation has been undertaken.
- Recommendation 19** 148
- That the NSW Government establish a register, to be kept by Fire and Rescue NSW of:
- the firefighting foam and hazardous chemicals purchased and stored, by location, at each Fire and Rescue NSW site across the state
 - any such materials having been used including the location of use, the circumstances (e.g. at a training exercise or firefighting incident), the amounts used, and the names of the personnel involved, and
- the register be made available to relevant government agencies.
- Recommendation 20** 150
- That the NSW Government undertake a review to determine workforce, resourcing and training requirements that are needed across New South Wales to optimise the handling of firefighting incidents and to minimise contamination of waterways by firefighting foam and other chemicals.

- Recommendation 21** 154
That the NSW Government consider amending the *Workers Compensation Act 1987* to expand the list of cancers presumed to be work-related, where they occur in firefighters with qualifying periods of service.
- Recommendation 22** 154
That the NSW Government commission independent, specialised research on the potential health impacts of historical PFAS use on firefighters in New South Wales; and that such research inform the government's consideration as to whether specific guidelines need to be created to manage the possible health effects for firefighters who have worked with PFAS-containing firefighting foam.
- Recommendation 23** 155
That the NSW Government consider additional funding to upgrade FRNSW fire stations across New South Wales where necessary to bring them into line with safe working practices and to facilitate appropriate storage of chemicals and other hazardous materials.
- Recommendation 24** 167
That the NSW Government call on the Australian Government to regularly review the available evidence on PFAS and incorporate other relevant chemicals in the Australian Drinking Water Guidelines when appropriate.
- Recommendation 25** 168
That the NSW Government call on the National Health and Medical Research Council to conduct more regular reviews of the Australian Drinking Water Guidelines, for PFAS, ensuring these align more closely with international best practice and are informed by the latest toxicological evidence.
- Recommendation 26** 168
That the NSW Government require all water utilities in New South Wales to provide complete PFAS testing data to NSW Health and the National Health and Medical Research Council, and to notify those bodies of any spikes or emerging trends and continue to keep the community up to date.
- Recommendation 27** 176
That the NSW Government advocate for and support the introduction of mandatory labelling of PFAS in consumer products at the national level, and push for the establishment of a comprehensive national PFAS product register to improve transparency and traceability across supply chains.
- Recommendation 28** 176
That the NSW Government work via National Cabinet on a plan to phase out all non-essential uses of PFAS in consumer, commercial, and industrial products by 2030, in line with emerging international best practice, and work with other jurisdictions to establish clear criteria for defining essential uses.
- Recommendation 29** 181
That the NSW Government urgently undertake a comprehensive, state-wide audit of past and current sites where biosolids have been applied, including agricultural land, forests, mine remediation sites and composting facilities, to identify and monitor potential PFAS contamination.

Recommendation 30**181**

That the NSW Government expand the PFAS Investigation Program to specifically include biosolids as a focus area, and ensure monitoring occurs downstream from biosolid application sites, including testing of soil, groundwater, and adjacent waterways.

Recommendation 31**185**

That in keeping with the 'polluter pays' principle in New South Wales, the NSW Government investigate the imposition of a specific levy on polluting industries to fund:

- PFAS treatment research
- PFAS water treatment, especially in regional areas of New South Wales where PFAS contamination has been identified.

Recommendation 32**188**

That the NSW Government consider opening a tender calling for experts to provide advice about:

- how many potentially contaminated sites there are in New South Wales
- the number of potentially contaminated sites in New South Wales that may be PFAS contaminated
- how many of the potentially PFAS contaminated sites are known to the NSW Environment Protection Authority
- which of the potentially PFAS contaminated sites should be prioritised for testing.

Conduct of inquiry

The terms of reference for the inquiry were referred to the committee by the Legislative Council on 25 September 2024.

The committee received 70 submissions and three supplementary submissions.

The committee held six public hearings: three at Parliament House in Sydney, one in Katoomba, one in Newcastle, and one in Wagga Wagga.

The committee also conducted two site visits, one to Cascade Water Filtration Plant, Katoomba on 3 February 2025; and one to the Cooperative Research Centre for Contamination, Assessment and Remediation of the Environment (crcCARE), Newcastle on 4 February 2025.

Inquiry related documents are available on the committee's website, including submissions, hearing transcripts, tabled documents and answers to questions on notice.

Chapter 1 **Background: PFAS contamination in New South Wales**

This chapter explores background information relevant to PFAS contamination in New South Wales: what PFAS are, the ecological impact of PFAS and the possible health impacts of PFAS exposure in humans. It also explores the management and regulation of PFAS in New South Wales including the management framework for PFAS; steps being taken to manage environmental contamination; the management of risks to human health of PFAS including in the areas of water, food, and work health and safety; monitoring international developments; and government engagement with communities around PFAS.

What are PFAS?

- 1.1** PFAS (per-and poly-fluoroalkyl substances) are a group of human-made chemicals and currently there are more than 14,000 PFAS compounds identified. PFAS have unique physical and chemical properties, including heat and chemical resistance, and thousands of PFAS have been widely used in industrial, commercial and consumer products since the mid-1900s, both in Australia and internationally.³
- 1.2** According to the NSW Environment Protection Authority (EPA), PFAS have been used in the following products:
- textiles and leather products
 - metal plating
 - food packaging
 - firefighting foams
 - floor polishes
 - denture cleanser
 - shampoos
 - coatings and coating additives
 - photographic and photolithographic processes
 - medical devices
 - hydraulic fluids.⁴

³ See NSW Environment Protection Authority, *PFAS investigation program FAQs*, <https://www.epa.nsw.gov.au/Your-environment/Chemicals/PFAS-in-NSW/nsw-government-pfas-investigation-program/pfas-investigation-faqs>; and Evidence, Dr Brett Molony, Science Director, Environment, CSIRO, 5 February 2025, p 7.

⁴ NSW Environment Protection Authority, *PFAS investigation program FAQs*, <https://www.epa.nsw.gov.au/Your-environment/Chemicals/PFAS-in-NSW/nsw-government-pfas-investigation-program/pfas-investigation-faqs>.

- 1.3 With regard to firefighting foams, historically three types of PFAS chemicals: Perfluorooctane Sulfonate (PFOS), Perfluorooctanoic Acid (PFOA) and Perfluorohexane Sulfonate (PFHxS) were included in these. The foams were used at airports and several defence bases in New South Wales as well as by Fire and Rescue NSW (FRNSW) and Rural Fire Services across the state.⁵
- 1.4 Dr Brett Molony, Science Director, Environment, CSIRO stated that PFAS are contaminants of critical concern given their persistence and ubiquity in the environment and their potential to cause adverse impacts:

...PFAS and the compounds they break into are considered contaminants of critical concern due to their persistence, widespread distribution in the environment and the potential for adverse impacts on human health, animal health and the environment.⁶

Where are PFAS found?

- 1.5 The EPA advises that given their widespread use in consumer products and their persistence in the environment, traces of PFAS are likely to be found in groundwater, surface water and soils across many urban areas. Elevated PFAS levels can also be found in groundwater, surface water and soils in locations where larger amounts of these chemicals have been released into the environment.⁷
- 1.6 High risk areas for elevated PFAS levels include defence bases, airports, and Fire and Rescue NSW and Rural Fire Service training sites and stations because of the historic use of firefighting foam containing PFAS.⁸ PFAS has also been found in Lake Munmorah as a result of firefighting foam being used at Lake Munmorah power station, as well as many other locations.⁹ PFAS can occur in the environment where there is no known source.¹⁰
- 1.7 Biosolids – a by-product of the wastewater treatment process – are also a source of PFAS, often applied to land as a fertiliser.¹¹
- 1.8 The CSIRO stated that as a result of PFAS being contained in countless everyday products, as these products reach the end of their life, these chemicals make their way into the environment:

⁵ NSW Environment Protection Authority, *PFAS investigation program FAQs*, <https://www.epa.nsw.gov.au/Your-environment/Chemicals/PFAS-in-NSW/nsw-government-pfas-investigation-program/pfas-investigation-faqs>.

⁶ Evidence, Dr Brett Molony, Science Director, Environment, CSIRO, 5 February 2025, p 7.

⁷ NSW Environment Protection Authority, *PFAS investigation program FAQs*, <https://www.epa.nsw.gov.au/Your-environment/Chemicals/PFAS-in-NSW/nsw-government-pfas-investigation-program/pfas-investigation-faqs>.

⁸ Submission 19, NSW Government, p 5.

⁹ NSW Environment Protection Authority, *PFAS investigation program Munmorah and Colongra Power Stations*, <https://www.epa.nsw.gov.au/Your-environment/Chemicals/PFAS-in-NSW/nsw-government-pfas-investigation-program/Munmorah-and-Colongra-Power-Stations>.

¹⁰ Evidence, Professor Denis O'Carroll, Deputy Head of School (Research), Water Research Laboratory, School of Civil Engineering, University of New South Wales, 6 December 2024, p 10.

¹¹ See Evidence, Dr Ian Wright, Associate Professor, Environmental Science, Western Sydney University, 6 December 2024, p 7; and Evidence Professor O'Carroll, 6 December 2024, p 14.

In landfills, PFAS can leach into groundwater, contaminating drinking and irrigation water. In wastewater treatment plants, PFAS (e.g., PFOS, PFOA, PFHxS) do not break down and are disposed of in biosolids or discharged in wastewaters. Land application of biosolids and irrigation with wastewater can lead to the contamination of agricultural topsoils. This can result in PFAS entering food crops and livestock. Discharges from wastewater treatment plants, may impact groundwater and surface waters an important source of drinking and irrigation water. Contaminated drinking water and food are major sources of PFAS exposure in humans.¹²

- 1.9 In emphasising the ubiquity of PFAS in the environment, Mr Tony Chappel, Chief Executive Officer, EPA also noted their presence across land uses – not confined to urban environments. He pointed to a recent study conducted by the Environment Protection Authority Victoria:

I'd like to point the Committee to an interesting piece of work undertaken by the Victorian EPA titled *Summary of PFAS concentrations detected in the environment*. The Victorian EPA undertook soil, sediment and water sampling across a range of different land uses, and the work identified a 100 per cent detection rate of PFAS in urban environments, 75 per cent detection rate in agricultural environment, and 87 per cent detection rates in mixed catchments. Unfortunately, this work highlights the ubiquitous nature of these chemicals.¹³

The ecological impact of PFAS

- 1.10 Once in water and soils, PFAS can also spread, having far-reaching impacts on wildlife and agriculture. For example, with regard to wildlife, a recent study conducted by scientists at the University of Western Sydney discovered elevated levels of PFOS in the livers of eight dead platypuses collected from various New South Wales waterways stretching from Bellingen on the state's north coast to Jindabyne in the state's south-east. This gave rise to concerns that PFOS is more widespread in New South Wales than previously thought. According to the ABC, the locations from which the platypuses were sourced were not known PFOS hotspots, nor had the researchers chosen these locations – the platypuses were sent in by members of the public.¹⁴
- 1.11 As at August 2024, the ABC reported that draft guidelines from the Australian Government suggested that platypus exposure to PFOS directly from their diet should not exceed 3,100 nanograms per kilogram of their wet weight. However, the concentration of PFOS in all eight platypuses studied was above this, ranging from 4,000 nanograms per kilogram to 1,200,000 nanograms per kilogram, some of the highest concentrations of any species in the world. The study indicated the platypuses were absorbing the PFOS through their diet and from sediment on the bottom of creeks and rivers. The ABC also noted the study illustrates that PFOS

¹² Submission 45, CSIRO, p 8.

¹³ Evidence, Mr Tony Chappel, Chief Executive Officer, NSW Environment Protection Authority, 5 February 2025, p 51.

¹⁴ Xanthe Gregory, *PFAS 'forever chemicals' found in water filtration plants and platypus livers in NSW* (20 August 2024) ABC News website, <https://www.abc.net.au/news/2024-08-20/australia-forever-chemicals-pfas-drinking-water-platypus/104244072>.

bioaccumulates, that is, organisms absorb more PFOS than they excrete, leading to a build-up within them.¹⁵

- 1.12** In another study conducted by the CSIRO and Queensland's Department of Environment, Tourism, Science and Innovation, biochemical changes, population decline and major health impacts were found in turtles at sites where PFAS contamination had occurred through the use of aqueous film-forming firefighting foam. PFAS was detected at up to 30 times higher in turtles from the PFAS contaminated area, compared with control sites where there were low levels of PFAS in the water.¹⁶
- 1.13** In a further case, this time in the area of aquaculture, there were reports that a fish hatchery at Wagga Wagga was impacted by PFAS 'with thousands of fish growing with twisted spines and deformed skulls'.¹⁷
- 1.14** Similarly, Dr Ian Wright, Associate Professor, Environmental Science, Western Sydney University noted the potential impact of PFAS on grazing livestock with reports that if PFAS levels in their drinking water exceeds 3 nanograms per litre, their meat is susceptible to PFAS contamination.¹⁸
- 1.15** Still on the potential impact of PFAS on agriculture, Professor Ravi Naidu, Managing Director, Cooperative Research Centre for Contamination, Assessment and Remediation of the Environment (crcCARE) indicated crops can be affected. Professor Naidu conducted a study during which he tested vegetables of unknown origin from the Sydney Markets and various supermarkets, identifying PFAS in a number of them. In some cases the vegetables had bioaccumulated PFAS above threshold values, putting certain groups that might have eaten them, like children and vegetarians (who tend to consume more vegetables than non-vegetarians), at particular risk.¹⁹
- 1.16** Professor Naidu further explained that these kinds of results can be linked to the application of secondary treated water to crops (i.e. wastewater that has gone through certain treatment processes so it can be put to certain re-uses²⁰) as well as biosolids, stressing that this can be a problem in the context of bioaccumulation:

¹⁵ Xanthe Gregory, *PFAS 'forever chemicals' found in water filtration plants and platypus livers in NSW* (20 August 2024) ABC News website, <https://www.abc.net.au/news/2024-08-20/australia-forever-chemicals-pfas-drinking-water-platypus/104244072>. See also ScienceDirect, *Bioaccumulation* (2025), <https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/bioaccumulation>.

¹⁶ See evidence, Dr Jason Kirby, Group Leader, Contaminants and Mitigation, Environment, CSIRO, pp 12-13; and Media release, CSIRO, 'CSIRO and DETSI uncover health impacts of 'forever chemicals' on freshwater turtles', 12 November 2024.

¹⁷ Submission 14, Mr Anthony Amis, p 24.

¹⁸ Submission 10, Dr Ian A. Wright, p 6.

¹⁹ Evidence, Professor Ravi Naidu, Managing Director, Cooperative Research Centre for Contamination, Assessment and Remediation of the Environment (crcCARE), 4 February 2025, pp 9-11.

²⁰ AQUACYCL, *Secondary Treatment of Wastewater: How Does it Work?* (1 December 2023), <https://aquacycl.com/blog/secondary-treatment-of-wastewater-how-does-it-work/>.

That's the kind of approach we need to take here...to see which farms have been receiving, for example, biosolids, and where we have also been using secondary treated water. Even that would have low doses of PFAS. The challenge is that plants bioaccumulate, so even if the concentrations are very low, plants bioaccumulate, and the concentration could exceed the threshold parameters.²¹

- 1.17** Finally, Mr Anthony Amis of Friends of the Earth Australia raised concerns that PFAS could even be in the rain and that he has observed a connection between PFBA spikes in reservoirs around Sydney and rainfall events²² (PFBA – or perfluorobutanoic acid – is a member of the PFAS family of chemicals²³). Mr Amis expressed disquiet about the possible widespread impacts if this is the case:

It seems to be happening when there are high rainfall events. I'm worried that there could be PFAS coming down in the rain ending up in reservoirs, waterways. It seems to be at higher levels around the urban environments, which makes sense because that's where the majority of the PFAS is being used. But if we've got it coming down in rainfall, well, you can imagine the ecological impact of that across wide areas of New South Wales, particularly that urban area around Sydney. We've got PFBA happening in these reservoirs which have got largely closed catchments upstream, so how the hell is this stuff getting into the reservoirs?²⁴

Possible health impacts of PFAS exposure in humans

Exposure pathways

- 1.18** According to the EPA, most people come into contact with PFAS through eating food and drinking water that contain PFAS and through using consumer products that contain PFAS as discussed above, including cosmetics, shaving cream, water repellent sprays and non-stick cookware.²⁵ The Australian Government Environmental Health Standing Committee's (enHealth) latest advice from its *Factsheet on PFAS*, published on 11 February, 2024 states that for most people exposure levels are likely to be small.²⁶
- 1.19** Notwithstanding this, enHealth further advised that where PFAS have been used as an active ingredient in aqueous film-forming foam in a particular location (for example, in firefighting incidents) there may be higher PFAS levels in the local environment, and thus increased exposure of local communities to PFAS. People in these communities may have elevated concentrations of PFAS in their blood, compared to the general population, with possible

²¹ Evidence, Professor Naidu, 4 February 2025, p 10.

²² Evidence, Mr Anthony Amis, Land Use Researcher, Friends of the Earth Australia, 5 February 2025, p 4.

²³ Minnesota Department of Health, *Perfluorobutanoic acid (PFBA) and Water* (April 2022), <https://www.health.state.mn.us/communities/environment/risk/docs/guidance/gw/pfbainfo.pdf>.

²⁴ Evidence, Mr Amis, 5 February 2025, p 4.

²⁵ NSW Environment Protection Authority, *PFAS investigation program FAQs*, <https://www.epa.nsw.gov.au/Your-environment/Chemicals/PFAS-in-NSW/nsw-government-pfas-investigation-program/pfas-investigation-faqs>.

²⁶ Tabled document, Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, *enHealth Factsheet on PFAS*, 11 December 2024, p 1.

exposure pathways including regular consumption of contaminated groundwater from drinking water bores and the consumption of locally grown food or seafood from local waterways.²⁷

- 1.20 Some people also have an increased risk of exposure to PFAS because of their work, for example, firefighters, which is discussed in more detail in Chapter five.²⁸

Possible health impacts of PFAS and debate as to the level of risk

- 1.21 In managing the risks posed to human health by PFAS, the government is guided by the PFAS National Environmental Management Plan (NEMP) and the advice of enHealth regarding PFAS.²⁹ The enHealth advice emphasises that to date no causative link has been established between PFAS and negative health outcomes but it encourages a precautionary approach, limiting exposure to PFAS wherever possible.³⁰
- 1.22 According to enHealth, PFAS exposure has been associated with the following health effects in humans:
- increased levels of cholesterol in the blood
 - increased levels of uric acid in the blood
 - reduced kidney function
 - alterations in some indicators of immune function
 - altered levels of thyroid hormones and sex hormones
 - later age for starting menstruation in girls, and earlier menopause
 - lower birth weight in babies.³¹
- 1.23 However, enHealth stated that these differences have generally been small and that they are unlikely to cause significant adverse health effects.³²
- 1.24 enHealth further stated that there are reported potential associations between PFAS and the increased risk of two uncommon cancers, testicular and kidney cancer.³³ In November 2023, the International Agency for Research on Cancer (IARC) classified PFOA as 'carcinogenic to humans' and PFOS as 'possibly carcinogenic to humans'.³⁴
- 1.25 However, enHealth noted that much of the evidence surrounding the potential cancer associations relates to PFOA, and not to PFOS or PFHxS which are more common in Australia. In addition, enHealth stated that studies on these cancers remain conflicting and associations

²⁷ Tabled document, *enHealth Factsheet on PFAS*, p 1.

²⁸ Submission 19, NSW Government, p 15.

²⁹ Submission 19, NSW Government, p 12.

³⁰ Tabled document, *enHealth Factsheet on PFAS*, p 2.

³¹ Tabled document, *enHealth Factsheet on PFAS*, p 2.

³² Tabled document, *enHealth Factsheet on PFAS*, p 2.

³³ Tabled document, *enHealth Factsheet on PFAS*, p 2.

³⁴ See Submission 47, Stop PFAS – Blue Mountains, p 11.

have only been observed in high exposure groups such as workers in international factories where PFOA is produced.³⁵

- 1.26** The enHealth advice also stressed the difference between associations and a causative effect. enHealth noted that an association means that there is a relationship between PFAS exposure and the above health effects but that this does not mean that the PFAS exposure caused the health effect.³⁶
- 1.27** Finally, the enHealth advice noted the finding of a PFAS health study conducted by the Australian National University, which released its overall summary report in 2021, that people living in PFAS affected communities are more likely to experience psychological distress, irrespective of the PFAS level in their blood.³⁷
- 1.28** Drawing on the enHealth advice that the science is evolving and that, as a precaution exposure to PFAS should be minimised where possible, the government advised that it too is taking a precautionary approach to PFAS.³⁸
- 1.29** In April 2025, Dr Kerry Chant AO PSM, Chief Health Officer and Deputy Secretary, Population and Public Health, also convened the NSW Health Expert Advisory Panel on PFAS to provide independent advice on the available evidence on PFAS, the potential health impacts and the guidance that should be provided to people concerning their exposure. Dr Chant advised that the panel included clinical experts in toxicology, primary care, public health, pathology, oncology, cardiology and endocrinology, and that it also included academic experts in risk communication and applied epidemiology.³⁹
- 1.30** The Panel released its final report on 12 August 2025 which found that research on the health effects of PFAS is extensive and growing and that, based on this large body of research, the health effects of PFAS appear to be small.⁴⁰ The report also contained further findings including on the role of epidemiological studies surrounding health outcomes for communities affected by PFAS, the utility of blood testing for communities affected by PFAS, and future priorities for research.⁴¹ The Panel's report is discussed further throughout the report.
- 1.31** However, there is debate as to the level of health risk posed to humans by PFAS with some stakeholders arguing that the government should be taking a stricter approach in its management. Some have even referred to PFAS as 'the next asbestos'.⁴² This debate is discussed further throughout the report, taking into account international evidence including a University

³⁵ Tabled document, *enHealth Factsheet on PFAS*, p 2.

³⁶ Tabled document, *enHealth Factsheet on PFAS*, p 2.

³⁷ Tabled document, *enHealth Factsheet on PFAS*, p 2; see also Australian National University, *PFAS Health Study Overall Summary* (The Australian National University, 2021), p 2.

³⁸ Submission 19, NSW Government, p 12.

³⁹ Correspondence from Dr Kerry Chant AO PSM, Chief Health Officer and Deputy Secretary, Population and Public Health to committee, 11 August 2025.

⁴⁰ NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, p 1.

⁴¹ NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, p 2.

⁴² See for example Submission 47, Stop PFAS – Blue Mountains, p 7.

of Southern California study suggesting that the detection of PFAS in drinking water supplies may increase the risk of cancer.⁴³

Management and regulation of PFAS in New South Wales

Management framework

- 1.32** The government stated that it uses an 'integrated whole of government approach' to manage and regulate PFAS.⁴⁴ A brief discussion of the features of the overarching management framework for PFAS in New South Wales follows, with these features discussed in further detail as required throughout the report.

Stockholm Convention on Persistent Organic Pollutants

- 1.33** Australia has ratified the Stockholm Convention on Persistent Organic Pollutants (POPs) – a global treaty to protect human health and the environment from POPs, that is, pesticide and industrial chemicals that are persistent in the environment, bioaccumulate in organisms and are toxic to human health. The convention requires parties to it to take measures to eliminate or reduce the release of POPs into the environment. The annexes to the convention contain the full list of chemicals that are subject to international trade controls. Australia does not automatically adopt controls for chemicals listed in the convention, however, and each chemical must be separately ratified by the Australian Parliament once it is included in the annexes.⁴⁵
- 1.34** PFHxS, PFOA and PFOS are the groups of PFAS chemicals currently listed under the Stockholm Convention⁴⁶ and Australia has set standards around these PFAS chemicals, and protocols for testing them, through the NEMP, discussed below.⁴⁷

PFAS National Environmental Management Plan (NEMP)

- 1.35** The NEMP is Australia's national guide for managing PFAS contamination in the environment. It has been jointly developed by the Australian, State, Territory, and New Zealand Governments through the Heads of EPA Australia and New Zealand (HEPA), to provide nationally consistent guidance. According to the Australian Government's Department of

⁴³ See Evidence, Dr Shiwen Li, Post-Doctoral Research Scholar, Department of Population and Public Health Sciences, Keck School of Medicine, University of Southern California, 20 May 2025, p 2; see also Tabled document, Shiwen Li et al 'Associations between per-and-polyfluoroalkyl substances (PFAS) and county-level cancer incidence between 2016 and 2021 and incident cancer burden attributable to PFAS in drinking water in the United States' (2025) *Journal of Exposure Science & Environmental Epidemiology*.

⁴⁴ Submission 19, NSW Government, p 7.

⁴⁵ Secretariat of the Stockholm Convention, *Stockholm Convention on Persistent Organic Pollutants (POPs)*, <https://chm.pops.int/Convention/ConventionText/tabid/2232/Default.aspx>.

⁴⁶ UN Environment Programme, *Per-and Polyfluoroalkyl Substances (PFASs)*, <https://www.unep.org/topics/chemicals-and-pollution-action/pollution-and-health/persistent-organic-pollutants-pops/and#:~:text=PFHxS%2C%20PFOA%20and%20PFOS%20are,Stockholm%20Convention%20as%20industrial%20POPs>.

⁴⁷ See Submission 58, Carole Stanford, p 7.

Climate Change, Energy, the Environment and Water, it is 'an adaptive document, that is updated to reflect new scientific evidence and guidance'.⁴⁸

- 1.36 The government advised that it supports and participates in the NEMP confirming that it 'provides nationally agreed guidance and standards on the investigation, assessment, management and remediation of PFAS wastes and contamination in the environment, including the prevention of the spread of contamination'.⁴⁹ NEMP Version 3.0 was released on 4 March 2025, and it introduces new and additional guidance and standards on priority areas including:
- new guideline values for investigation and risk assessment
 - guidance around remediation of contaminated land
 - guidance on re-use of resource recovery products
 - risk-based criteria for re-use of biosolids contaminated with PFAS.⁵⁰

enHealth advice and NSW Health Expert Advisory Panel on PFAS

- 1.37 As detailed above, in managing the risks posed to human health by PFAS, the government is guided by the enHealth advice – and the NEMP.⁵¹ Independent advice and guidance for individuals concerned about exposure is also set out in the final report of the NSW Health Expert Advisory Panel on PFAS referred to above.⁵²

PFAS Expert Panel

- 1.38 The PFAS Expert Panel is chaired by the NSW Office of the Chief Scientist and Engineer and consists of representatives from:
- the EPA
 - NSW Health
 - the Department of Primary Industries and Regional Development including NSW Fisheries, NSW Agriculture and Biosecurity and the NSW Food Authority and
 - the New South Wales Department of Climate Change, Energy, the Environment and Water.⁵³
- 1.39 The panel was established under the *Protection of the Environment Administration Act 1991* and its role is to provide strategic, informed advice to the EPA to assist the EPA in developing the government's response to PFAS issues.⁵⁴

⁴⁸ Department of Climate Change, Environment, Energy and Water, *PFAS National Environmental Management Plan 3.0* (4 March 2025), <https://www.dcceew.gov.au/environment/protection/publications/pfas-nemp-3>.

⁴⁹ Submission 19, NSW Government, p 11.

⁵⁰ Department of Climate Change, Environment, Energy and Water, *PFAS National Environmental Management Plan 3.0* (4 March 2025), <https://www.dcceew.gov.au/environment/protection/publications/pfas-nemp-3>.

⁵¹ Submission 19, NSW Government, p 12.

⁵² See Correspondence from Dr Kerry Chant AO PSM, Chief Health Officer and Deputy Secretary, Population and Public Health to committee, 11 August 2025; and NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025.

⁵³ See Submission 19, NSW Government, p 10.

⁵⁴ Submission 19, NSW Government, p 10.

NSW Technical Advisory Group (TAG)

- 1.40** The NSW Technical Advisory Group (TAG) was established to support the PFAS Expert Panel. It consists of technical experts from the same agencies as are represented on the panel, and these technical experts provide operational and technical support to manage PFAS contaminated sites within New South Wales. The TAG's role includes providing evidence-based advice, for example, precautionary dietary advice and assessing monitoring reports for contaminated sites.⁵⁵

Legislation and guidelines

- 1.41** There are also a number of pieces of legislation and guidelines relevant to the management and regulation of PFAS in New South Wales. Such legislation and guidelines are discussed in more detail later in the chapter. These include the following.

- State legislation to safeguard drinking water quality. This includes public health legislation and water management legislation.⁵⁶
- The Australian Drinking Water Drinking Water Guidelines (ADWG) managed by the National Health and Medical Research Council (NHMRC) which provide guidance to water regulators and suppliers on monitoring and managing drinking water quality.⁵⁷ They include health-based guideline values as to what is considered a safe level of PFOA, PFOS PFHxS and perfluorobutane sulfonic acid (PFBS) in drinking water.⁵⁸ These guideline values are based on tolerable daily intakes developed by the Department of Health, Food Standards Australia New Zealand (FSANZ), that is, the level of daily, oral exposure that it is considered can take place over a lifetime without a significant human health risk.⁵⁹ While the ADWG are not mandatory, all agencies involved in drinking water supply in Australia can use them to develop processes to ensure the safety and aesthetic value of drinking water.⁶⁰
- The Guidelines for Managing Risk in Recreational Water, also managed by the NHMRC, to cover exposure to PFAS from recreational water e.g. lakes, rivers and coastal waters, which may occur when undertaking activities such as swimming, diving, boating and fishing. This guidance includes guideline values which inform local health authorities about the concentrations at which PFAS chemicals PFOA, PFOS and PFHxS can safely exist in these recreational waterways having regard to the health and safety of local

⁵⁵ Submission 19, NSW Government, pp 10-11.

⁵⁶ Submission 19, NSW Government, pp 5-6 and 13.

⁵⁷ Submission 19, NSW Government, p6 and 13; see also National Health and Medical Research Council, *Australian Drinking Water Guidelines*, <https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines>.

⁵⁸ Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41; and Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines' 25 June 2025.

⁵⁹ Australian Government Department of Health and Aged Care, *Health Based Guidance Values for PFAS*, April 2017, p 1.

⁶⁰ Water Quality Australia, *Guidelines for water quality management*, <https://www.waterquality.gov.au/guidelines>.

communities.⁶¹ Again, these guideline values are based on tolerable daily intake levels developed by FSANZ.⁶² The guidance enables governments in Australia to develop legislation and standards appropriate to their area to ensure the safe management of recreational water.⁶³

- Ecological water quality guideline values contained within NEMP 3.0 for PFOS and PFOA, developed under the Australian and New Zealand Water Quality Guideline framework to ensure species protection in fresh and marine water ecosystems.⁶⁴
- State environmental legislation, for example, the *Protection of the Environment Operations Act 1997* which is the main piece of environmental protection legislation in New South Wales administered by the EPA, and which sets out a scheme for managing pollution.⁶⁵
- The Industrial Chemicals Environmental Management Standard (IChEMS), which sets out national standards for industrial chemical risk management including industrial chemical use, storage, handling and disposal.⁶⁶
- Workplace legislation and guidelines to protect workers who are at higher risk from PFAS.⁶⁷

Managing environmental contamination – prevention, investigation and incident management

- 1.42** Within the overarching framework outlined above, the government advised of action it is taking to manage environmental contamination from PFAS within New South Wales. This includes the establishment of the PFAS investigation program; and action in the areas of emergency incident management, industrial chemicals risk management, and the management of packaging, as detailed below.

⁶¹ National Health and Medical Research Council, *PFAS Guidance for Recreational Water FAQs*, <https://www.nhmrc.gov.au/about-us/publications/guidelines-managing-risks-recreational-water/pfas-guidance-recreational-water-faqs#:~:text=What%20are%20the%20recommended%20HBGVs,health%20officials%20here%20in%20Australia.>

⁶² Australian Government, Department of Health and Aged Care, *Health Based Guidance Values for PFAS*, April 2017, p 1.

⁶³ Water Quality Australia, *Guidelines for water quality management*, <https://www.waterquality.gov.au/guidelines>.

⁶⁴ Heads of EPA, Australia and New Zealand, *PFAS National Environmental Management Plan 3.0* (Department of Climate Change, Energy, the Environment and Water, 2025) pp 57-59.

⁶⁵ See NSW Environment Protection Authority, *About the Protection of the Environment Operations Act 1997* (28 June 2024), <https://www.epa.nsw.gov.au/Licensing-and-Regulation/Legislation-and-compliance/about-the-poeo-act>.

⁶⁶ Submission 19, NSW Government, p 8.

⁶⁷ Submission 19, NSW Government, pp 15-16.

PFAS investigation program

- 1.43** The government advised that since 2016 it has taken a 'whole of government' approach to investigating legacy PFAS contamination, identifying potential exposure of humans to PFAS and thereby also taking a precautionary approach.⁶⁸
- 1.44** Since that time, the EPA has led the PFAS investigation program in partnership with other agencies including NSW Health.⁶⁹ Under this program assessment and triage of sites that have been identified as being contaminated with PFAS takes place. Where sites are found to be contaminated, further investigations are undertaken to determine what management, monitoring and remediation is possible to reduce PFAS levels within the environment and to reduce exposure risks to the community.⁷⁰
- 1.45** More than 1,100 sites have been assessed under the program with 51 identified as having significant PFAS contamination. The EPA advised that, as a consequence, the 51 sites remain a high priority, and require continued investigation, remediation and/or monitoring.⁷¹
- 1.46** Mr Tony Chappel of the EPA explained that in identifying sites for investigation under the program the EPA is guided by the NEMP, which sets out a number of industrial and other legacy uses of PFAS chemicals. The EPA then works through these on a catchment basis.⁷² Mr Chappel stated '...we've used the agreed national approach that focuses on the areas of greatest risk, and the degree of potential harm being activities that have used large quantities of PFAS over long periods of time'.⁷³
- 1.47** Mr Stephen Beaman, Executive Director, Regulatory Practice and Services, EPA provided further detail about how the 1,100 sites were identified, including where sites had been notified to the EPA or were identified through consultation with local government. He too emphasised the importance of the NEMP and noted land uses that are of particular risk, indicating that knowledge about how to identify sites has evolved since 2016:

What we started with were the sites that had been notified to us... We looked at the sites that had been notified under the Contaminated Land Management Act more generally... We looked at appendix B of the NEMP. That has in it a whole range of activities, and that's grown over time—the national standards—about the types of land uses and activities that occurred on sites that warrant further investigation.

We wrote to every local council in 2016 and 2018... Local government, in particular, has a really good understanding of their areas. But the initial program really started with looking at the areas that had really high historical uses of PFAS foams, and they were

⁶⁸ Submission 19, NSW Government, p 9.

⁶⁹ See Submission 19, NSW Government, p 9 and Evidence, Mr Chappel, 5 February 2025, p 51.

⁷⁰ See Submission 19, NSW Government, pp 9-10.

⁷¹ Evidence, Mr Chappel, 6 December 2024, p 25; see also Submission 19, NSW Government, pp 9-10.

⁷² Evidence, Mr Chappel, 6 December 2024, p 26.

⁷³ Evidence, Mr Chappel, 5 February 2025, p 51.

places like the RAAF bases and major airports. Where people did a lot of that fire training were the areas that had the greatest contamination and risk.⁷⁴

- 1.48** FRNSW and the Rural Fire Service also conduct PFAS investigative programs noting that sites at which there has been legacy use of PFAS-containing fire-fighting foams carry a higher risk of PFAS contamination. The government confirmed that these programs are part of the broader PFAS investigation program led by the EPA and that the EPA oversees investigations under these programs too.⁷⁵
- 1.49** FRNSW stated that it was managing 35 sites out of a possible 600-plus sites that could be affected by PFAS under its program, and this is discussed in detail in chapter five which deals specifically with firefighting and PFAS.⁷⁶
- 1.50** The government also advised that the EPA works to ensure that sites owned by the Australian Government, like airports and defence bases are investigated, managed and remediated. However, the EPA has no power to compel the Australian Government to undertake remediation on such land and Mr Chappel stated that this has created issues for the EPA in exercising its regulatory functions.⁷⁷ The matter of Commonwealth cooperation is discussed in further detail throughout the report.
- 1.51** When questioned about the process followed in conducting a PFAS investigation under the program, Mr Beaman stated that the EPA follows the national standard, the Assessment of Site Contamination National Environment Protection Measure (NEPM). The NEPM provides for a staged, systematic process, moving from the preliminary stages through to more detailed investigations where necessary:

Some are assessed and they drop out of the process just at assessment, some are assessed and then tested, and then some are assessed, tested and then further risk assessments are done. So there's this gateway approach in the assessment framework, what we call the preliminary site investigation. If that determines that there's a risk there, then it moves to a detailed site investigation. If the detailed site investigation still identifies there's a risk, we move to doing the risk assessment process.⁷⁸

- 1.52** Where matters reach the detailed site investigation stage, Mr David Gathercole, Director, Operations, EPA stated the process can then take a number of years, involving sampling, reporting, review and advisory procedures:

It starts generally with a preliminary site investigation, which is like a desktop review, and then it moves into a detailed site investigation. These take a number of years because a number of samples have to be obtained—groundwater, surface water samples, historic use et cetera—and then reports are prepared by consultants and submitted to the EPA, which we then have oversight to review those and provide comment. We go to the New South Wales technical advisory group, who provide

⁷⁴ Evidence, Mr Stephen Beaman, Executive Director, Regulatory Practice and Services, NSW Environment Protection Authority, p 26.

⁷⁵ See Submission 19, NSW Government, p 10; and Evidence, Commissioner Jeremy Fewtrell, AFSM, Commissioner, Fire and Rescue NSW, 6 December 2024, p 36.

⁷⁶ Evidence, Commissioner Fewtrell, AFSM, 6 December 2024, p 36.

⁷⁷ Evidence, Mr Chappel, 5 February 2025, p 50.

⁷⁸ Evidence, Mr Beaman, 6 December 2024, p 28.

comments on those reports as well, and give feedback to the polluter in this stage...with our advice on that.⁷⁹

- 1.53** The government also explained the importance of the program for those in communities affected by PFAS contamination, stating that technical experts on the TAG review investigation results and provide tailored and general precautionary advice to communities on actions they can take to reduce their PFAS exposure. Examples of such advice include limiting the consumption of produce that has been affected by PFAS contaminated water, and not using PFAS contaminated water for domestic purposes.⁸⁰

Emergency incident management

- 1.54** Another action that the government has taken to manage environmental contamination from PFAS within New South Wales is in the area of emergency incident management, through the NSW Parliament's passage of the Protection of the Environment Operations (General) Amendment (PFAS Firefighting Foam) Regulation 2021. This Regulation severely restricts the use of long chain PFAS-containing firefighting foam. The government advised that the restrictions apply to reduce the impact on the environment but still allow 'relevant authorities' and 'exempt entities' the use of such foams to prevent or fight catastrophic fires. The 'relevant authorities' include fire brigades, rural fire brigades, community fire brigades, Transport for NSW and the Port Authority of NSW.⁸¹
- 1.55** Notwithstanding the possibility of such exemptions, Commissioner Jeremy Fewtrell AFSM Commissioner, Fire and Rescue NSW advised that FRNSW stopped using aqueous film-forming foam containing PFOS and PFOA in 2007 and does not use any firefighting foams that contain PFAS. The Commissioner further advised that all FRNSW foams had been independently certified to confirm this.⁸²
- 1.56** Similarly, when questioned as to whether any fire-fighting stations within the Blue Mountains had applied for any exemptions to use PFAS-containing fire-fighting foam, Assistant Commissioner Michael Morris JP, CF, Assistant Commissioner Metropolitan Operations, Fire and Rescue NSW stated that there were no such exemptions to his knowledge and that FRNSW certainly had not applied for any exemptions.⁸³
- 1.57** Mr Gathercole of the EPA also confirmed that where PFAS-containing foam is used for catastrophic incidents, there is a register administered by the EPA to record these incidents.⁸⁴ In addition, he provided an example of a catastrophic event for which such foam would be used:

When we talk catastrophic, we're talking about an 80-megalitre tank of fuel at Port Botany blowing up and potentially killing hundreds and thousands of people; that's a

⁷⁹ Evidence, Mr David Gathercole, Director, Operations, NSW Environment Protection Authority, 4 February 2025, p 43.

⁸⁰ Submission 19, NSW Government, p 10.

⁸¹ Submission 19, NSW Government, pp 7-8.

⁸² Evidence, Commissioner Fewtrell, 6 December 2024, p 36.

⁸³ Evidence, Assistant Commissioner Michael Morris, JP, CF, Assistant Commissioner Metropolitan Operations, Fire and Rescue NSW, 3 February 2025, p 23.

⁸⁴ Evidence, Mr Gathercole, 4 February 2025, p 40.

catastrophic event. Those PFAS foams are very good at putting out those very high-intensity fires. That's an example of a catastrophic event where lives and properties are severely at risk...⁸⁵

- 1.58** Commissioner Fewtrell also confirmed that the reason PFAS-containing foams were historically so popular was that they are very effective in fighting fires and he stated that it was a challenge to find alternative foams that were up to the job, particularly in cases of flammable liquid fires. After extensive testing over a number of years a balance was struck so that the foam used today is more environmentally friendly and quite effective, although the Commissioner conceded there may be some limitations at the 'most extreme firefighting end'.⁸⁶
- 1.59** The Commissioner also cautioned, however, that any foam that travels into the water, including the newer foams, will have adverse environmental effects and for that reason FRNSW operational practice is to contain any run-off where possible:

Any foam that enters a waterway, whether it's the newer foams that are fluorine-free, will absorb the oxygen out of the water. They have a high biological oxygen demand. They will take that biological oxygen out of the water. That's when you see, as a result, fish kills. It's important to remember that any firefighting run-off would probably do the same thing with the mix of chemicals that might be coming off a property that's on fire and the water runs down into a waterway. Part of our firefighting operations is always to try and contain that run-off, whether it's firefighting water or foam.⁸⁷

Industrial chemicals risk management

- 1.60** A further action that the government has taken to manage environmental contamination from PFAS within New South Wales is in the area of industrial chemical risk management.
- 1.61** As noted earlier, IChEMS sets out national standards for industrial chemicals risk management in Australia including industrial chemical use, storage, handling and disposal.⁸⁸ The government advised that in March 2024, the NSW Parliament passed the *Environmental Legislation Amendment (Hazardous Chemicals) Act 2024* which amended the *Protection of the Environment Operations Act 1997* to align New South Wales with IChEMS. These changes mean that national IChEMS scheduling decisions apply in New South Wales which has implications for PFAS chemicals.⁸⁹
- 1.62** Under IChEMS the Australian Government schedules industrial chemicals according to environmental risk, assigning risk management measures and other controls. Schedule 7 lists the following PFAS chemicals in the highest risk category:
- perfluorooctanoic acid (PFOA) and related substances
 - perfluorooctanesulfonic acid (PFOS) and related substances
 - perfluorohexanesulfonic acid (PFHxS) and related substances.⁹⁰

⁸⁵ Evidence, Mr Gathercole, 4 February 2025, pp 40-41.

⁸⁶ Evidence, Commissioner Fewtrell, 6 December 2024, p 44.

⁸⁷ Evidence, Commissioner Fewtrell, 6 December 2025, p 44.

⁸⁸ Submission 19, NSW Government, p 8.

⁸⁹ Submission 19, NSW Government, p 8.

⁹⁰ Submission 19, NSW Government, p 8.

- 1.63** The inclusion of these PFAS chemicals within Schedule 7, and the alignment of New South Wales law with IChEMS, means that these chemicals are banned from import, manufacture, export and use in New South Wales from 1 July 2025. In short, materials that contain these products cannot be imported, manufactured, exported or used from that date, with exemptions for articles in use on or before 1 July 2025.⁹¹ The government advises that 'The IChEMS framework will play an important role in phasing out PFAS in our everyday items to prevent future contamination in our environment'.⁹²

PFAS in packaging

- 1.64** As noted earlier, PFAS is often used in packaging and the government advised of actions it is taking to reduce the environmental impact in this area also. The government explained that PFAS can pose a problem when included in compostable packaging.⁹³ Compostable packaging is packaging made of materials that can break down naturally in a composting environment e.g. a commercial composting facility or a backyard compost bin.⁹⁴ When this packaging contains PFAS it can threaten organic waste streams – the component of the waste stream that is readily biodegradable, made up of things such as cardboard, food waste and green waste – causing environmental contamination.⁹⁵
- 1.65** Given these issues, the government stated that the EPA advises against the inclusion of fibre-based materials (e.g. bamboo, timber or cardboard packaging and cutlery) in food and green waste collections.⁹⁶ Further, the NSW Compost Recovery Order does not allow for compostable packaging to be included in compost in New South Wales.⁹⁷
- 1.66** In addition, the government advised that in 2018 it agreed to the *National PFAS Position Statement* and the achievement of the *2025 Packaging Targets*. This includes a target for 100 per cent of packaging to be reusable, recyclable or compostable, and an end to unnecessary and problematic single-use plastic packaging, by 2025. The government advised that an action plan was also

⁹¹ See Submission 19, NSW Government, p 8; and Karen Trainor, Claire Smith, Megan Duane and Will Golinelli, *Reminder: New PFAS ban commences on 1 July 2025* (9 April 2025), <https://www.claytonutz.com/insights/2025/april/reminder-new-pfas-ban-commences-on-1-july-2025#:~:text=Karen%20Trainor%2C%20Claire%20Smith%2C%20Megan,irreversible%20harm%20to%20the%20environment.>

⁹² Submission 19, NSW Government, p 8.

⁹³ Submission 19, NSW Government, p 9.

⁹⁴ Compost Connect, *What is Compostable Packaging?* <https://www.compostconnect.org/uk/what-is-compostable-packaging/#:~:text=What%20is%20Composting?,facility%20or%20your%20backyard%20compost.>

⁹⁵ See Submission 19, NSW Government, p 9; and Australian Government Department of Climate Change, Energy the Environment and Water, *National Organic Waste Profile* (3 October 2021), <https://www.dcceew.gov.au/environment/protection/waste/publications/national-waste-reports/2013/organic-waste.>

⁹⁶ See Submission 19, NSW Government, p 9; and NSW Environment Protection Authority, *FOGO information for households* (24 October 2024), <https://www.epa.nsw.gov.au/Your-environment/Recycling-and-reuse/household-recycling-overview/FOGO-information-for-households#:~:text=From%201%20November%202022%2C%20single,compostable%2C%20or%20bio%2Dplastics.>

⁹⁷ Submission 19, NSW Government, p 9.

created providing guidance on how to test for PFAS in fibre-based food contact packaging and on considerations in selecting alternative options.⁹⁸

1.67 In further efforts to reduce the environmental impacts of harmful chemicals, the EPA released a discussion paper 'NSW Plastics: The Way Forward' with public consultation closing on 4 November 2024. The paper proposed creating:

- a 'green list' of chemicals permitted in plastic and non-plastic food packaging if they are under specific 'tolerable risk thresholds'
- a 'red list' of chemicals to be phased out of plastic and non-plastic food packaging within New South Wales within specific timeframes

to decrease harmful chemicals within plastics and micro plastics and stop them leaching into the environment.⁹⁹ The EPA is currently reviewing the feedback received during the public consultation, after which a consultation report outlining this feedback will be finalised.¹⁰⁰

Managing risks to human health

1.68 Within the overarching framework outlined above, the government also advised of action it is taking to manage PFAS-related risks to human health within New South Wales.

General approach

1.69 As noted already, in managing PFAS-related risks to human health the NSW Government is guided by the NEMP and the advice of enHealth regarding PFAS.¹⁰¹ More recent advice and guidance on managing PFAS-related risks to human health is also set out in the final report of the NSW Health Expert Advisory Panel on PFAS, published at the concluding stages of the committee's inquiry.¹⁰²

1.70 The government has stated it takes a precautionary approach to PFAS, drawing on the enHealth advice that:

- PFAS has been associated with various health effects but no causative link has been established to date
- this is an evolving area of science
- PFAS exposure should, nonetheless, be minimised wherever possible.¹⁰³

⁹⁸ Submission 19, NSW Government, p 9.

⁹⁹ Submission 19, NSW Government, p 9.

¹⁰⁰ NSW Environment Protection Authority, *NSW Plastics: The Way Forward*, <https://yoursay.epa.nsw.gov.au/nsw-plastics-way-forward>.

¹⁰¹ Submission 19, NSW Government, p 12.

¹⁰² See Correspondence from Dr Kerry Chant AO PSM, Chief Health Officer and Deputy Secretary, Population and Public Health to committee, 11 August 2025; and NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025.

¹⁰³ Submission 19, NSW Government, p 12.

- 1.71 In addition, as already outlined, there is debate as to the level of health risk posed to humans by PFAS with some stakeholders arguing that the government should be taking a stricter approach in its management.¹⁰⁴ This debate is discussed further throughout the report.

Water and managing risks to human health

- 1.72 Further to the above discussion of the overarching framework for managing PFAS in New South Wales, this section contains a more detailed discussion of the regulatory and operational framework for managing PFAS in water.

Agency responsibilities

- 1.73 With regard to agency responsibilities, NSW Health is responsible for regulating water quality under the *Public Health Act 2010* and the Public Health Regulation 2022.¹⁰⁵ The government stated that NSW Health works with the NHMRC, enHealth and other national committees, developing guidance to manage PFAS in the environment as well as health-based guidance values for PFAS.¹⁰⁶
- 1.74 The New South Wales Department of Climate Change, Energy, the Environment and Water regulates the management and monitoring of New South Wales' raw water sources pursuant to the *Water Management Act 2000*.¹⁰⁷ Raw water is untreated water in the environment, with sources including rivers, lakes and groundwater.¹⁰⁸ The government also advised that the Department of Climate Change, Energy, the Environment and Water provides expert technical advice and scientific input regarding environmental contaminants like PFAS to ensure a risk-based approach to keep the state safe.¹⁰⁹
- 1.75 Further, consistent with the above discussion of the PFAS investigation program, the EPA becomes involved where there is a pollution event or contaminated site, overseeing site investigations and assessment.¹¹⁰

State-owned water corporations and local water utilities

- 1.76 Also crucial to understanding the management of water in New South Wales is the role of the state-owned water corporations – Water NSW, Sydney Water and Hunter Water – and of the local water utilities (LWUs).

¹⁰⁴ See for example Submission 47, Stop PFAS – Blue Mountains.

¹⁰⁵ Submission 19, NSW Government, pp 5-6.

¹⁰⁶ Submission 19, NSW Government, p 13.

¹⁰⁷ Submission 19, NSW Government, p 6.

¹⁰⁸ SAMCO, *Five Common Problems with Raw Water and How You Can Treat them*, [https://samcotech.com/common-raw-water-problems-how-to-treat-them/#:~:text=Raw%20water%20\(untreated%20water%20found%20naturally%20in,sources%2C%20including%20rivers%2C%20lakes%2C%20oceans%2C%20or%20groundwater.&text=Typicall y%20these%20solids%20are%20found%20in%20surface,or%20decayed%20vegetation%2C%20to%20name%20a%20few.](https://samcotech.com/common-raw-water-problems-how-to-treat-them/#:~:text=Raw%20water%20(untreated%20water%20found%20naturally%20in,sources%2C%20including%20rivers%2C%20lakes%2C%20oceans%2C%20or%20groundwater.&text=Typicall y%20these%20solids%20are%20found%20in%20surface,or%20decayed%20vegetation%2C%20to%20name%20a%20few.)

¹⁰⁹ Submission 19, NSW Government, p 6.

¹¹⁰ Submission 19, NSW Government, p 6; and Evidence, Mr Chappel, 6 December 2024, p 33.

- 1.77 WaterNSW, Hunter Water and Sydney Water are responsible under the *Water NSW Act 2014*, *Hunter Water Act 1991* and the *Sydney Water Act 1994* respectively for ensuring that declared catchment areas and the water management works in such areas are protected and managed to promote water quality, public health and safety and to protect the environment.¹¹¹
- 1.78 On an operational level, Water NSW supplies raw water, also called source water, to Sydney Water and some LWUs throughout the State and Sydney Water and the LWUs treat it for customers' consumption. The government advised that the one exception to the *raw* water role of WaterNSW is Duckmaloi Water Treatment Plant. This plant is owned and operated by WaterNSW, and supplies *treated* drinking water to customers of the Fish River Water Supply Scheme in Central West New South Wales.¹¹²
- 1.79 Further, the government advised that Hunter Water manages raw water *and* treated water supplies, and that some LWUs manage their own raw water supply.¹¹³
- 1.80 The other important role of Sydney Water, Hunter Water and the LWUs, besides providing treated drinking water to customers is managing wastewater.¹¹⁴ According to Sydney Water, wastewater is water that has been used in homes, schools, businesses and industries. It enters drains from sinks, baths, showers, laundries and toilets and other drains inside buildings. It is 99 per cent water and the remainder is made up of things added to the water as it has been used e.g. soap, detergents, human waste and food scraps.¹¹⁵
- 1.81 Sydney Water further advises that wastewater is treated so that clean water can be safely returned to the environment or re-used. Treated wastewater can be used:
- in homes and businesses to water gardens and flush toilets
 - in industry
 - to fight fires
 - to irrigate parks, farms and sports fields

and some treated wastewater is also returned to creeks, rivers and oceans.¹¹⁶

¹¹¹ Submission 19, NSW Government, p 6.

¹¹² Submission 19, NSW Government, p 14.

¹¹³ Submission 19, NSW Government, p 14.

¹¹⁴ See Evidence, Mr Roch Theroux, Managing Director, Sydney Water, 5 February 2025 p 43; Evidence, Mr Darren Cleary, Managing Director, Hunter Water, 4 February 2025, pp 24-25; and Department of Planning, Industry and Environment, *Utilities that carry out water supply and sewerage services*, <https://water.dpie.nsw.gov.au/our-work/local-water-utilities/entities-that-carry-out-water-supply-functions>.

¹¹⁵ Sydney Water, *Wastewater Treatment*, <https://www.sydneywater.com.au/education/wastewater-recycling/wastewater-treatment.html#:~:text=Wastewater%20is%20the%20water%20you,Where%20does%20wastewater%20come%20from?>

¹¹⁶ Sydney Water, *Wastewater Treatment*, <https://www.sydneywater.com.au/education/wastewater-recycling/wastewater-treatment.html#:~:text=Wastewater%20is%20the%20water%20you,Where%20does%20wastewater%20come%20from?>

- 1.82 Local water utilities are generally, but not always, owned and operated by local councils to provide the abovementioned services to the 1.8 million people in New South Wales who are outside the areas covered by Sydney Water and Hunter Water. There are 89 council-operated LWUs in New South Wales and three further LWUs that exercise water supply and sewerage functions.¹¹⁷

Framework to support safe drinking water in New South Wales

- 1.83 The government advised that there is a framework in place to ensure the safety of drinking water in New South Wales. Under the *Public Health Act 2010* and the Public Health Regulation 2022 drinking water suppliers must have in place, and comply with, a quality assurance program, or drinking water management system. The management system must address the elements of the *Framework for Management of Drinking Water Quality* set down within the ADWG, managed by the NHMRC (and touched upon earlier), that are relevant to the operations of the supplier.¹¹⁸
- 1.84 The government indicated that the ADWG values for PFAS are cautious being 'based on the conservative assumption that 10% of an individual's daily intake of PFAS comes from drinking water supply'.¹¹⁹
- 1.85 However, new guideline values were introduced on 25 June 2025.¹²⁰ In 2022, the Australian Government's Department of Health and Aged Care asked the NHMRC to conduct a review of the ADWG values for PFAS. As well as reviewing the guideline values for PFOA, PFOS and PFHxS, the NHMRC also considered PFBS and hexafluoropropylene oxide (HFPO) dimer acid and its ammonium salt, known as 'GenX chemicals'.¹²¹
- 1.86 The NHMRC released updated draft guidelines for public consultation from 21 October – 22 November 2024.¹²² The updated ADWG proposed a significant decrease as to what would be counted to be safe levels of PFAS in drinking water, and the NHMRC confirmed they were based on the level of PFAS chemicals people can ingest over a lifetime without an appreciable

¹¹⁷ See Local Government NSW, *Local Water Utilities*, <https://lgnsw.org.au/Public/Public/Policy/Local-Water-Utilities.aspx#:~:text=NSW%20councils%20are%20responsible%20for,voluntary%20regional%20alliances%20of%20LWUs;and%20Department%20of%20Planning%20Industry%20and%20Environment,Utilities%20that%20carry%20out%20water%20supply%20and%20sewerage%20services,https://water.dpie.nsw.gov.au/our-work/local-water-utilities/entities-that-carry-out-water-supply-functions.>

¹¹⁸ Submission 19, NSW Government, p 13.

¹¹⁹ Submission 19, NSW Government, p 13.

¹²⁰ Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines' 25 June 2025.

¹²¹ Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41.

¹²² National Health and Medical Research Council, *Australian Drinking Water Guidelines – Public Consultation on Draft Guidance for Per-and Polyfluoroalkyl Substances (PFAS)*, <https://consultations.nhmrc.gov.au/environmental-health/australian-drinking-water-guidelines-2024-pfas/>

risk to health.¹²³ The new guidelines following this consultation process include the changes outlined below:¹²⁴

Table 1 Australian Drinking Water Guidelines

Chemical	Guideline level until 25 June 2025	New Guideline level, published 25 June 2025
PFOS	The sum of PFOS and PFHxS in drinking water should not exceed 70 nanograms/litre	8 nanograms/litre
PFHxS	The sum of PFOS and PFHxS in drinking water should not exceed 70 nanograms/litre)	30 nanograms/litre
PFOA	560 nanograms/litre	200 nanograms/litre
PFBS	No guideline	1000 nanograms/litre
Gen X Chemicals	No guideline	No guideline

- 1.87** The NHMRC advised that the new guideline levels are the same as for those proposed at public consultation except for PFOS where the proposed guideline was 4 nanograms per litre, while the new guideline has revised this to 8 nanograms per litre. In noting that the guidelines are used by states and territories to regulate safe drinking water, the NHMRC further advised that jurisdictions would now determine the timelines with which water providers would have to comply to meet the new guidelines.¹²⁵
- 1.88** The Independent Pricing and Regulatory Tribunal (IPART) also plays an important part in supporting safe drinking water in significant parts of New South Wales. IPART has responsibilities pursuant to the *Water NSW Act 2014*, *Hunter Water Act 1991* and the *Sydney Water Act 1994* under which these water utilities' licences are issued to advise the Minister for Water with respect to suitable licence conditions.¹²⁶
- 1.89** IPART also monitors compliance with these licence conditions and has enforcement powers in relation to breaches. In particular, Water NSW, Hunter Water and Sydney Water must manage water quality by applying the ADWG, through the water quality management systems discussed above. WaterNSW and Hunter Water also have responsibilities in respect of raw water in drinking water catchments and IPART develops and audits these obligations using water

¹²³ Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41; and Media release, National Health and Medical Research Council, 'Australian Drinking Water Guidelines: Public Consultation now open', 21 October 2024.

¹²⁴ See Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41; and Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines', 25 June 2025.

¹²⁵ Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines', 25 June 2025.

¹²⁶ Evidence, Mr Andrew Nicholls PSM, Chief Executive Officer, Independent Pricing and Regulatory Tribunal, 5 February 2025, p 44.

experts, in consultation with NSW Health. In addition, IPART sets maximum prices that these three water utilities can charge customers for water and advises that these prices are to 'reflect the efficient cost of providing safe and efficient services'.¹²⁷

- 1.90** Mr Andrew Nicholls, Chief Executive Officer, IPART stated that water licences issued under the above legislation are flexible and outcomes-focused so that if guidelines and standards change, this can take place without the need for licences to be re-issued. Mr Nicholls also clarified that IPART does not regulate LWUs run by local councils and that these are generally regulated under the *Water Management Act 2000* by the Department of Climate Change, Energy, the Environment and Water. Similarly, IPART does not set prices for water supplied by local councils with the exception of Central Coast Council.¹²⁸

Framework to support safe recreational water in New South Wales

- 1.91** In addition, there is a framework in place to support safe recreational water in New South Wales. As identified earlier, like the ADWG, the guidelines for managing risks in recreational water are managed by the NHMRC. These guidelines cover the exposure to PFAS from recreational water that may occur through swimming, fishing and boating etc. However, consuming what is caught through fishing is not covered by the guidance, this requires a separate health assessment. 'Recreational water' includes any public coastal, estuarine or freshwater areas where a significant number of people use the water for recreational activities, like rivers, lakes and coastal waterways, but does not cover facilities such as swimming pools or spas.¹²⁹
- 1.92** According to the NHMRC, the most likely PFAS exposure path for people using recreational waterways is through accidentally swallowing water. Accordingly, the NHMRC's Water Quality Advisory Committee has developed health-based guidance values (HBGVs) outlining the concentrations at which PFAS chemicals PFOA, PFOS and PFHxS can exist in local recreational waterways whilst still ensuring the health and safety of communities.¹³⁰
- 1.93** The NHMRC advises that this guidance is set according to the most current estimates around the amount of water people swallow during swimming, and on the amount of the PFAS chemicals to which human bodies can safely be exposed on a regular basis over a lifetime without significant health risk. The recommended guideline values are set out in the table below:¹³¹

¹²⁷ Evidence, Mr Nicholls, 5 February 2025, p 44.

¹²⁸ Evidence, Mr Nicholls, 5 February 2025, p 44.

¹²⁹ National Health and Medical Research Council, *PFAS Guidance for Recreational Water FAQs*, <https://www.nhmrc.gov.au/about-us/publications/guidelines-managing-risks-recreational-water/pfas-guidance-recreational-water-faqs#:~:text=What%20are%20the%20recommended%20HBGVs,health%20officials%20here%20in%20Australia.>

¹³⁰ National Health and Medical Research Council, *PFAS Guidance for Recreational Water FAQs*, <https://www.nhmrc.gov.au/about-us/publications/guidelines-managing-risks-recreational-water/pfas-guidance-recreational-water-faqs#:~:text=What%20are%20the%20recommended%20HBGVs,health%20officials%20here%20in%20Australia.>

¹³¹ National Health and Medical Research Council, *PFAS Guidance for Recreational Water FAQs*, <https://www.nhmrc.gov.au/about-us/publications/guidelines-managing-risks-recreational-water/pfas-guidance-recreational-water-faqs#:~:text=What%20are%20the%20recommended%20HBGVs,health%20officials%20here%20in%20Australia.>

Table 2 Guidelines for managing risks in recreational water

PFAS Chemical	Recommended health-based guidance value
Total PFOS + PFHxS	2,000 nanograms/litre
PFOA	10,000 nanograms/litre

- 1.94** The NHMRC further advised that Australian experts and public health officials consider the guideline values and the methods used to arrive at them to be conservative and to sufficiently protect public health.¹³²
- 1.95** Local authorities are to use the guideline values to manage the safety of recreational waterways and in carrying out site assessments for water quality.¹³³ For example the EPA advised of preliminary investigations it undertook pursuant to the guideline values when PFAS was detected (in 2024) in foam that was accumulating in the Belubula River in Central West New South Wales.¹³⁴ This case is discussed in detail later in the report.
- 1.96** Where PFAS is detected at recreational water sites above the guideline values, local authorities are to follow their risk management procedures for managing contaminated recreational water including informing the community of any contaminated areas and closing recreational water sites.¹³⁵

Framework to support safe water for wildlife

- 1.97** Ecological water quality guideline values for PFAS in freshwater sources have been established and are intended to be protective of wildlife, based on the current scientific evidence. The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (WQG)

faqs#:~:text=What%20are%20the%20recommended%20HBGVs,health%20officials%20here%20in%20Australia.

¹³² National Health and Medical Research Council, *PFAS Guidance for Recreational Water FAQs*, <https://www.nhmrc.gov.au/about-us/publications/guidelines-managing-risks-recreational-water/pfas-guidance-recreational-water-faqs#:~:text=What%20are%20the%20recommended%20HBGVs,health%20officials%20here%20in%20Australia>.

¹³³ National Health and Medical Research Council, *PFAS Guidance for Recreational Water FAQs*, <https://www.nhmrc.gov.au/about-us/publications/guidelines-managing-risks-recreational-water/pfas-guidance-recreational-water-faqs#:~:text=What%20are%20the%20recommended%20HBGVs,health%20officials%20here%20in%20Australia>.

¹³⁴ Evidence, Mr Chappel and Mr Beaman, 6 December 2025, pp 31-32; see also Submission 10, Dr Ian A. Wright, p 4.

¹³⁵ National Health and Medical Research Council, *PFAS Guidance for Recreational Water FAQs*, <https://www.nhmrc.gov.au/about-us/publications/guidelines-managing-risks-recreational-water/pfas-guidance-recreational-water-faqs#:~:text=What%20are%20the%20recommended%20HBGVs,health%20officials%20here%20in%20Australia>.

framework provides species protection default guideline values that are protective of differing proportions of species, ranging from 80 per cent to 90 per cent of species.¹³⁶

- 1.98** The PFAS NEMP 3.0 states that these guideline values should be used to ‘inform an overall assessment of the environmental significance of PFAS concentrations for wildlife and trigger either appropriate management action or further investigation of risk’.¹³⁷
- 1.99** The below is reproduced from the PFAS NEMP 3.0 report and shows the ecological water quality guideline values.

Figure 1 Ecological water quality guideline values

¹³⁶ Department of Climate Change, Environment, Energy and Water, *PFAS National Environmental Management Plan 3.0* (4 March 2025), <https://www.dcceew.gov.au/environment/protection/publications/pfas-nemp-3>, p 57.

¹³⁷ Department of Climate Change, Environment, Energy and Water, *PFAS National Environmental Management Plan 3.0* (4 March 2025), <https://www.dcceew.gov.au/environment/protection/publications/pfas-nemp-3>, p 58.

Table 8 Ecological water quality guideline values

Exposure scenario	Guideline value	PFOS µg/L	PFOA µg/L
Freshwater ^a	99% species protection – high conservation value systems ^b	0.00023	19
	95% species protection – slightly to moderately disturbed systems ^c	0.13	220
	90% species protection – highly disturbed systems	2	632
	80% species protection – highly disturbed systems	31	1824
Interim marine ^d	99% species protection – high conservation value systems	0.00023	19
	95% species protection – slightly to moderately disturbed systems	0.13	220
	90% species protection – highly disturbed systems	2	632
	80% species protection – highly disturbed systems	31	1824

Data source: Australian and New Zealand Guidelines for Fresh and Marine Water Quality – interim default guideline values for PFOS and PFOA (ANZG 2023).

- a The interim guidelines do not account for effects which result from the bioaccumulation and biomagnification of toxicants in air-breathing animals or in animals which prey on aquatic organisms.
- b The 99% species protection level for PFOS is close to the commercially available ultra-trace level of detection. Agencies may wish to apply an 'ultra-trace detect' threshold in such circumstances rather than a quantified measurement.
- c The WQG advise that the 99% level of protection be used for slightly to moderately disturbed systems. This approach is generally adopted for chemicals that bioaccumulate and biomagnify in wildlife. Environmental regulators may specify, or environmental legislation may prescribe, the level of species protection required, rather than allowing for case-by-case assessments.
- d Freshwater values are to be used on an interim basis until final marine guideline values can be set using the nationally agreed process under the WQG. The WQG advise that in the case of estuaries, the most stringent of freshwater and marine criteria apply, taking account of any available salinity correction. Marine guideline values developed by CRC CARE are under consideration through the nationally agreed water quality guideline development process.

Guidelines for managing risks in recreational water Department of Climate Change, Environment, Energy and Water, PFAS National Environmental Management Plan 3.0 (4 March 2025), <https://www.dcceew.gov.au/environment/protection/publications/pfas-nemp-3>, p 59.

- 1.100 The PFAS NEMP 3.0 does state however, that as PFAS chemicals bioaccumulate and biomagnify in wildlife, the WQG framework recommends a different approach for these contaminants. Specifically, that the 99 per cent species protection value should be used in

‘assessing toxicity and bioaccumulation in high conservation value ecosystems’ and ‘assessing bioaccumulation in slightly to moderately disturbed ecosystems.’¹³⁸

Water contamination cases

1.101 Cases in which PFAS has affected water supplies in New South Wales are discussed in the following chapters with an exploration of the responses in each case, and where there could be improvement including in the areas of monitoring, testing, reporting, precautionary advice and remediation. Cases discussed include:

- The detection of elevated levels of PFAS at Cascade Filtration Plant in the Blue Mountains following sampling in June 2024.¹³⁹
- PFAS contamination in water leaving the RAAF Base, Williamtown, in the Lower Hunter, which sits on top of the Tomago Sandbeds groundwater source, about which the government first issued advice in 2015.¹⁴⁰
- PFAS detections in Ourimbah Creek on the Central Coast, notified to the EPA in January 2025¹⁴¹ and evidence that PFAS also affects the Tuggerah Lake into which Ourimbah Creek flows.¹⁴²
- The discovery in 2024 of PFAS contamination in foam tested by community members, that was accumulating in the Belubula River in Central West New South Wales (as above).¹⁴³
- 2024 PFAS screening of drinking water conducted by regional LWUs and supported by NSW Health, which discovered elevated PFAS levels in Tarcutta within the Wagga Wagga City Council local government area, Narrabri within the Narrabri Shire Council local government area and Wyallda within the Gwydir Shire Council local government area.¹⁴⁴
- Further PFAS contamination connected with the Defence bases in Wagga Wagga, with implications for local water supplies.¹⁴⁵

¹³⁸ Department of Climate Change, Environment, Energy and Water, *PFAS National Environmental Management Plan 3.0* (4 March 2025), <https://www.dcceew.gov.au/environment/protection/publications/pfas-nemp-3>, p 58.

¹³⁹ See Submission 10, Dr Ian A. Wright, p 3.

¹⁴⁰ See Submission 19, NSW Government p 15; and Evidence, Mr Cleary, 4 February 2025, p 20.

¹⁴¹ Evidence, Mr Gathercole, 4 February 2025, p 39.

¹⁴² Evidence, Mr Rob Manning, Managing Director, Sustainable Oil Recovery and Remediation, 4 February 2025, p 14.

¹⁴³ Submission 10, Dr Ian A. Wright, p 4.

¹⁴⁴ Evidence, Dr Jeremy McAnulty, Executive Director, Health Protection NSW, NSW Health, 5 February 2025, pp 52 and 56; see also Evidence, Councillor Tiffany Galvin, Mayor, Gwydir Shire Council and Country Mayors Association contaminated water member representative, 5 February 2025, pp 25-26.

¹⁴⁵ See for example Evidence, Mr Tim Koschel, Chairperson, Board, Riverina Water County Council, 8 April 2025, p 24.

Food and managing risks to human health

- 1.102** Another important aspect of managing PFAS-related risks to human health, relates to food. As noted earlier, the FSANZ has set down tolerable daily intakes for certain PFAS chemicals upon which the health-based guidance values for drinking and recreational water are based. The tolerable daily intakes are the level of daily, oral exposure that it is considered can take place over a lifetime without a significant human health risk. Therefore, in addition to their relevance for drinking and recreational water, they are also relevant to PFAS exposure from food. The tolerable daily intakes are set out in the table below:¹⁴⁶

Table 3 Tolerable daily intakes for PFAS

PFAS Chemical	Tolerable daily intake
PFOA	160 nanograms per kilogram body weight
Total PFOS + PFHxS	20 nanograms per kilogram body weight

- 1.103** The government advised that the level of PFAS in the general food supply in Australia is very low and that there have been no public health and safety issues identified around overall dietary exposure for the population at large. However, where PFAS contamination has been detected in a particular location the government confirmed that it takes a precautionary approach, and in these cases, as touched upon earlier, the TAG provides affected communities with specific and general dietary advice to reduce their exposure to PFAS.¹⁴⁷ This is also discussed further later in the report.

Work health and safety

- 1.104** Finally, a further important aspect of managing PFAS-related risks to human health is around work health and safety. As discussed earlier, some people have a higher risk of exposure to PFAS as a result of their employment, especially firefighters. The government advised that, in response to the risks linked to PFAS-containing fire-fighting foam, SafeWork NSW has released guidelines on working safely with PFAS-containing aqueous film-forming firefighting foams.¹⁴⁸
- 1.105** The government stated that it recognises that some workers, particularly firefighters, have an increased risk of certain diseases like cancer. The government noted 2018 amendments to the *Workers Compensation Act 1987* which allow eligible firefighters who meet qualifying periods of service, and who have been diagnosed with any of 12 specific primary cancers, to be automatically presumed to have contracted this cancer through their work or volunteer firefighting service – and thereby to claim compensation under the Act.¹⁴⁹
- 1.106** Work health and safety and PFAS, including how this is dealt with in terms of firefighting, is discussed in more detail in Chapter five.

¹⁴⁶ Australian Government Department of Health and Aged Care, *Health Based Guidance Values for PFAS*, April 2017, pp 1-2.

¹⁴⁷ Submission 19, NSW Government, p 15.

¹⁴⁸ Submission 19, NSW Government, p 15.

¹⁴⁹ Submission 19, NSW Government, p 16.

Monitoring international developments

- 1.107** In managing and regulating PFAS in New South Wales, the government also advised that it is monitoring international developments and research. In particular, the government noted the following:
- In April 2024, the United States Environmental Protection Agency (US EPA) announced the final National Primary Drinking Water Regulation for six PFAS (PFOA, PFOS, PFHxS, PFNA and HFPO-DA (commonly known as GenX Chemicals)). The government noted that this was the United States of America's (USA's) 'first ever national, legally enforceable drinking water standard to protect communities from exposure to PFAS'.
 - Also in April 2024, the US EPA designated PFOA and PFOS as hazardous substances under the Comprehensive Environmental Response, Compensation and Liability Act, also known as Superfund.
 - The European Commission introduced maximum levels for PFAS in certain foods (seafood, muscle meat and offal), set down in Regulation EU 2022/2388, which came into effect on 1 January 2023.¹⁵⁰
- 1.108** However, other stakeholders noted international developments and research surrounding the management of PFAS and indicated that governments within Australia should be taking more action to align with international standards.
- 1.109** The CSIRO noted increasing calls to regulate or phase out PFAS at an international level, citing a submission to the European Chemicals Agency by European Union countries (Germany, Denmark, the Netherlands, Norway, and Sweden) to restrict the 'manufacture, placing on the market, and use of PFAS' in Europe.¹⁵¹ They further noted that several states in the US, including Maine and Minnesota have passed laws to ban PFAS including cookware, textiles, children's products, cosmetics and toiletries.¹⁵²
- 1.110** Where stakeholders have called for greater alignment with international standards, this is discussed throughout the report as is the evidence of witnesses from California and Minnesota in the USA about their experiences studying and/or regulating PFAS.¹⁵³

¹⁵⁰ Submission 19, NSW Government, p 12; see also United States Environmental Protection Agency, *Per and Polyfluoroalkyl Substances (PFAS) Final PFAS National Primary Drinking Water Regulation* (19 February 2025), <https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>.

¹⁵¹ Submission 45, CSIRO, p 13.

¹⁵² Submission 45, CSIRO, pp 13-14.

¹⁵³ See Evidence, Dr Li and Dr Max Aung, Assistant Professor, Division of Environmental Health, Department of Population and Public Health Sciences, Keck School of Medicine, University of Southern California, 20 May 2025, pp2-9; and Evidence, Senator Judy Seeberger, Minnesota State Senator, representing Senate District 41 and Ms Avonna Starck, State Director, Clean Water Action Minnesota, 20 May 2025, pp 10-16.

Community engagement

- 1.111** A final crucial aspect of managing PFAS in New South Wales relates to effective community engagement and the government advised that it aims to provide accurate and timely advice to the community regarding PFAS contamination.¹⁵⁴
- 1.112** For example, as discussed earlier in the chapter, under the PFAS investigation program led by the EPA, the TAG reviews the results of investigations and delivers precautionary advice to communities affected by PFAS contamination on the action that people can take to reduce their exposure to PFAS (for instance, limiting the consumption of produce that has been affected by PFAS contaminated water).¹⁵⁵ Mr Beaman of the EPA noted the case of Williamtown, New South Wales in this regard, and extensive door knocking that occurred to inform the local community following the discovery of PFAS contamination in water leaving the RAAF Base:
- ...I'll take Williamtown, for example—the reason you do the work on biota is to give the community dietary advice. We have been very transparent. For example, at Williamtown we doorknocked almost 750 people. We have been very transparent in trying to give the community the best information that we can, using the latest science, so people are aware of what those harms are.¹⁵⁶
- 1.113** Mr Chappel of the EPA also stressed that such community engagement is a two-way process – an important part of it is listening to householders so that the advice the government provides about minimising PFAS exposure fits peoples' individual circumstances:
- The reason we doorknock is so we can actually understand—and make sure the household understands—the scope of the issue, and really understand how they use water or vegetables or chickens and what their particular context is in that household...We can make sure we are doing whatever is required to have the right communication so that we're confident the person has understood the issue, and then shared with us, in their own context on their property, how they use water. What do they eat that they grow, or what do they catch, fish, or how does that work in their life? Then we can give them precautionary advice about breaking those pathways.¹⁵⁷
- 1.114** In addition, the government advised that it has established a dedicated website: www.nsw.gov.au/pfas. The website contains guidance on PFAS and drinking water and on the actions undertaken by government agencies to ensure the safety of drinking water. In addition, the government stated that authorities responsible for drinking water have a role informing and engaging local communities as to the safety of their drinking water, and information can be found on their websites.¹⁵⁸
- 1.115** Opportunities for the Australian and NSW Governments to increase and improve community engagement and transparency around PFAS are discussed throughout the report.

¹⁵⁴ Submission 19, NSW Government, p 11.

¹⁵⁵ Submission 19, NSW Government, p 10.

¹⁵⁶ Evidence, Mr Beaman, 6 December 2025, p 27.

¹⁵⁷ Evidence, Mr Chappel, 6 December 2025, p 33.

¹⁵⁸ Submission 19, NSW Government, p 11.

Chapter 2 PFAS affecting the Blue Mountains New South Wales

This chapter explores the recent discovery of elevated PFAS levels affecting certain drinking water supplies in the Blue Mountains, New South Wales. It provides background information about the Blue Mountains local government area, the discovery of the elevated PFAS levels in mid-2024, and the government's response to date. It then discusses the concerns raised by stakeholders in response to this case including around testing and reporting requirements for PFAS in New South Wales, health and claims that the case illustrates the existence of a cultural problem amongst state water regulators. The chapter finishes with findings and recommendations that aim to address the concerns raised.

The Blue Mountains Local Government Area

2.1 The Blue Mountains local government area is located just over 50 kilometres west of the Sydney central business district and is within the Country of the Dharug and Gundungurra peoples. It is also within the Greater Blue Mountains World Heritage Area, being one of only two cities in the world surrounded by such a heritage area.¹⁵⁹

2.2 Home to 80,000 residents, the Blue Mountains is also a popular tourist destination and each year it hosts more than four million domestic and international tourists. With regard to the waterways of the area, Mr Will Langevad, Director Environment and Planning Services, Blue Mountains City Council, highlighted their importance to local residents, wildlife, and the tourism industry alike, and spoke of their considerable cultural significance:

Blue Mountains waterways sustain an enormous diversity of life, contribute to both local and regional drinking water supplies for over five million people, and provide a significant recreation and tourism resource for Greater Sydney and the world generally. The living waterways of the Blue Mountains also hold great cultural significance for Dharug and Gundungurra people.¹⁶⁰

2.3 The council also stressed that any suggestion that Blue Mountains waterways are affected by PFAS contamination is a threat to the 'clean, green brand' that attracts so many people to this World Heritage Area.¹⁶¹ In addition, Mr Langevad noted that the geography of the area is such that national park and drinking water supplies are particularly vulnerable should a water contamination event occur:

We have a situation that the Blue Mountains is located above the drinking water catchments. Its geography is such that all water moves down into that catchment, a lot of which is a national park and drinking water catchment, so anything that contaminates that water supply is a high level concern for council and certainly the community as well.¹⁶²

¹⁵⁹ Evidence, Mr Will Langevad, Director, Environment and Planning Services, Blue Mountains City Council, 3 February 2025, p 11.

¹⁶⁰ Evidence, Mr Langevad, 3 February 2025, p 11.

¹⁶¹ Evidence, Mr Langevad and Ms Emma Kennedy, Acting Program Leader Healthy Waterways, Blue Mountains City Council, 3 February 2025, p 18.

¹⁶² Evidence, Mr Langevad, 3 February 2025, p 12.

Elevated PFAS levels in Blue Mountains Drinking Water

Discovery of elevated PFAS levels

- 2.4** On 11 June 2024, in a *Sydney Morning Herald* article, investigative journalist Carrie Fellner reported that PFAS chemicals had been found in tap water across Australia at potentially unsafe levels, including perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA).¹⁶³ Dr Ian Wright, Associate Professor, Environmental Science, Western Sydney University, noted that this led to several other media stories and widespread debate about the presence of PFAS in Australia's drinking water, and the potential health risks.¹⁶⁴
- 2.5** Against this background, Dr Kerry Chant, Chief Health Officer, Deputy Secretary, Population and Public Health, NSW Health stated on the ABC's PM program on 11 June 2024 that Sydney's drinking water was safe.¹⁶⁵
- 2.6** On 15 June 2024 on Simon Marnie's ABC Radio Sydney Weekend Breakfast Program, it was revealed that Sydney Water had released a statement that 'Sydney Water regularly consults with WaterNSW and NSW Health to assess any potential risk to Sydney's drinking water supply' and that 'There are no known PFAS hotspots in our drinking water catchments'.¹⁶⁶
- 2.7** Then, on 25 June 2024, Sydney Water collected samples from the Cascade Water Filtration Plants at Katoomba and Blackheath in the Blue Mountains, and in August 2024 it was announced that these samples contained elevated levels of PFAS.¹⁶⁷ At this time the ABC also reported that these filtration plants supplied drinking water to more than 30,000 people in the Blue Mountains.¹⁶⁸
- 2.8** As discussed in chapter one, the Australian Drinking Water Guidelines (ADWG) managed by the National Health and Medical Research Council (NHMRC) provide guidance to water regulators and suppliers on monitoring and managing drinking water quality.¹⁶⁹ They include health-based guideline values as to what is considered a safe level of PFOA, PFOS, perfluorohexane sulfonic acid (PFHxS) and perfluorobutane sulfonic acid (PFBS) in drinking

¹⁶³ Carrie Fellner, "'There's no safe level': Carcinogens found in tap water across Australia', *Sydney Morning Herald*, 11 June 2024.

¹⁶⁴ Submission 10, Dr Ian A. Wright, p 1.

¹⁶⁵ PM, ABC Listen, 'Concerns over "toxic" chemicals in tap water', Alison Xiao, 11 June 2024; see also Submission 10, Dr Ian A. Wright, p 1.

¹⁶⁶ *Sydney Saturday Breakfast*, ABC Radio Sydney, 'Testing Drinking Water for PFAS Contamination "Fundamental"', Simon Marnie, 15 June 2024; see also Submission 10, Dr Ian A. Wright, p 2.

¹⁶⁷ Submission 10, Dr Ian A. Wright, p 3.

¹⁶⁸ Xanthe Gregory, *PFAS 'forever chemicals' found in water filtration plants and platypus livers in NSW* (20 August 2024) ABC News website, <https://www.abc.net.au/news/2024-08-20/australia-forever-chemicals-pfas-drinking-water-platypus/104244072>.

¹⁶⁹ Submission 19, NSW Government, pp6 and 13, see also National Health and Medical Research Council, *Australian Drinking Water Guidelines*, <https://www.nhmrc.gov.au/about-us/publications/australian-drinking-water-guidelines>.

water.¹⁷⁰ These guideline values are based on tolerable daily intakes developed by the Department of Health, Food Standards Australia New Zealand (FSANZ), that is, the level of daily, oral exposure that it is considered can take place over a lifetime without a significant human health risk.¹⁷¹

- 2.9** As also discussed in chapter one, new guideline values were introduced on 25 June 2025.¹⁷² In 2022, the Australian Government's Department of Health and Aged Care had asked the NHMRC to conduct a review of the ADWG values for PFAS. As well as reviewing the guideline values for PFOA, PFOS and PFHxS, the NHMRC also considered PFBS and hexafluoropropylene oxide (HFPO) dimer acid and its ammonium salt, known as 'GenX chemicals'.¹⁷³
- 2.10** The NHMRC released updated draft guidelines for public consultation from 21 October – 22 November 2024.¹⁷⁴ The updated ADWG proposed a significant decrease as to what would be counted to be safe levels of PFAS in drinking water, and the NHMRC confirmed they were based on the level of PFAS chemicals people can ingest over a lifetime without an appreciable risk to health.¹⁷⁵
- 2.11** The new guidelines following this consultation process, published on 25 June 2025 (the 'new limits'), are the same as for those proposed at the public consultation (the 'proposed limits') except for PFOS where the *proposed* limit was 4 nanograms per litre, while the *new* limit has been revised to 8 nanograms per litre.¹⁷⁶
- 2.12** Taking these changes into account, whilst the PFOS levels in the June 2024 Cascade water samples were found to be within the ADWG limits that were *current* at that time, they were found to be above the *proposed* limits of 4 nanograms per litre, and they are above the *new* limits published on 25 June 2025. This is illustrated in the table below.¹⁷⁷

¹⁷⁰ Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41; and Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines' 25 June 2025.

¹⁷¹ Australian Government Department of Health and Aged Care, *Health Based Guidance Values for PFAS*, April 2017, p 1.

¹⁷² Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines', 25 June 2025.

¹⁷³ Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41.

¹⁷⁴ National Health and Medical Research Council, *Australian Drinking Water Guidelines – Public Consultation on Draft Guidance for Per-and Polyfluoroalkyl Substances (PFAS)*, <https://consultations.nhmrc.gov.au/environmental-health/australian-drinking-water-guidelines-2024-pfas/>

¹⁷⁵ Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41; and Media release, National Health and Medical Research Council, 'Australian Drinking Water Guidelines: Public Consultation now open', 21 October 2024.

¹⁷⁶ See Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41; and Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines', 25 June 2025.

¹⁷⁷ Sydney Water, *PFAS Monitoring Results*, <https://www.sydneywater.com.au/water-the-environment/how-we-manage-sydneys-water/safe-drinking-water/water-analysis/pfas-and->

Table 4 PFAS levels at Cascade filtration plants, June 2024, compared with limits under the Australian Drinking Water Guidelines

Chemical	ADWG limit current in June 2024	ADWG limit published 25 June 2025	Level found at Cascade Blackheath Water Filtration Plant (June 2024 sample)	Level found at Cascade Katoomba Filtration Plant (June 2024 sample)
PFOS	The sum of PFOS and PFHxS in drinking water should not exceed 70 nanograms/litre	8 nanograms /litre* (* N.B. the <i>proposed</i> limit at public consultation was 4 nanograms /litre)	15.5 nanograms litre (under limit current at June 2024, above <i>new</i> and <i>proposed</i> limit)	16.4 nanograms/litre (under limit current at June 2024, above <i>new</i> and <i>proposed</i> limit)
PFHxS	The sum of PFOS and PFHxS in drinking water should not exceed 70 nanograms/litre	30 nanograms /litre* (*N.B. this new limit is the same as the <i>proposed</i> limit at public consultation)	13.6 nanograms/litre (under limit current at June 2024 and new limit)	14.2 nanograms /litre (under limit current at June 2024 and new limit)
PFOA	560 nanograms /litre	200 nanograms/litre* (*N.B. this new limit is the same as the <i>proposed</i> limit at public consultation)	Less than 0.1 nanograms/litre (under limit current at June 2024 and new limit)	Less than 0.1 nanograms/litre (under limit current at June 2024 and new limit)

2.13 In particular, Stop PFAS – Blue Mountains noted that the PFOS levels for the Katoomba Cascade Plant within the June 2024 samples of 16.4 nanograms/litre, were four times the proposed limit of 4 nanograms/litre.¹⁷⁸

2.14 Both Dr Wright and Stop PFAS – Blue Mountains also noted the much stricter advice that applies in the United States of America (USA) regarding safe levels of PFAS in drinking water,

drinking-water/pfas-monitoring-results.html; and Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines', 25 June 2025. See also Submission 10, Dr Ian A. Wright, p 3.

¹⁷⁸ Submission 47, Stop PFAS – Blue Mountains, p 3.

touched upon in chapter one, when compared with Australia.¹⁷⁹ In short, in April 2024, the United States (US) Environmental Protection Agency announced the National Primary Drinking Water Regulation which:

- reduced the limits considered safe in drinking water for a number of PFAS chemicals – setting 'maximum contaminant level goals' (MCLGs), and
- provided the water industry with five years, to 2029 to meet legally enforceable limits – setting 'maximum contaminant levels' (MCLs).

These stricter standards are set out in the table below:¹⁸⁰

Table 5 United States drinking water standards for PFAS

Chemical	MCLG	MCL
PFOA	0	4 nanograms/litre
PFOS	0	4 nanograms /litre
PFHxS	1 nanogram/litre	1 nanogram /litre
HFPO-DA (Gen X chemicals)	1 nanogram/litre	1 nanogram/litre

- 2.15** Stop PFAS – Blue Mountains noted that when compared with the US standards, the PFHxS levels for the Katoomba samples were too high, at 14.2 nanograms per litre compared with the 10 nanograms /litre safe levels.¹⁸¹

Regulatory response

- 2.16** In response to the discovery of the elevated PFAS levels at the Cascade plants, Water NSW began investigating raw water supplies to the Blue Mountains in an effort to determine the source. As noted in chapter one, raw water is untreated water in the environment, with sources including rivers, lakes and groundwater.¹⁸² Also referred to as source water, it is provided to drinking water suppliers to treat for customers' consumption.¹⁸³ These investigations revealed elevated PFAS levels in Medlow Dam, a local water supply reservoir.¹⁸⁴

¹⁷⁹ Submission 10, Dr Ian A. Wright, p 1; and Submission 47, Stop PFAS – Blue Mountains, p 10.

¹⁸⁰ See Submission 10, Dr Ian A. Wright, p 1; Submission 47, Stop PFAS – Blue Mountains, p 10; and United States Environmental Protection Agency, *Per and Polyfluoroalkyl Substances (PFAS) Final PFAS National Primary Drinking Water Regulation* (19 February 2025), <https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>.

¹⁸¹ Submission 47, Stop PFAS – Blue Mountains, p 3.

¹⁸² SAMCO, *Five Common Problems with Raw Water and How You Can Treat them*, [https://samcotech.com/common-raw-water-problems-how-to-treat-them/#:~:text=Raw%20water%20\(untreated%20water%20found%20naturally%20in,sources%2C%20including%20rivers%2C%20lakes%2C%20oceans%2C%20or%20groundwater.&text=Typicall y%20these%20solids%20are%20found%20in%20surface,or%20decayed%20vegetation%2C%20to%20name%20a%20few.](https://samcotech.com/common-raw-water-problems-how-to-treat-them/#:~:text=Raw%20water%20(untreated%20water%20found%20naturally%20in,sources%2C%20including%20rivers%2C%20lakes%2C%20oceans%2C%20or%20groundwater.&text=Typicall y%20these%20solids%20are%20found%20in%20surface,or%20decayed%20vegetation%2C%20to%20name%20a%20few.)

¹⁸³ Submission 19, NSW Government, p 14.

¹⁸⁴ See Submission 19, NSW Government, p 14; Submission 10, Dr Ian A. Wright, p 3.

- 2.17** In August 2024, the ABC reported the untreated water in this dam returned readings for the sum of PFOS and PFHxS of 90 nanograms per litre when under the ADWG current at the time the sum of PFOS and PFHxS in drinking water should not exceed 7 nanograms per litre.¹⁸⁵ Consequently, that same month, this dam and the downstream Greaves Creek Dam were disconnected from supply.¹⁸⁶
- 2.18** In December 2024, Sydney Water upgraded the Cascade Water Filtration Plant, Katoomba in an aim to improve drinking water quality, installing what the Minister for Water, the Hon. Rose Jackson MLC described as 'an advanced PFAS treatment system'. The Minister advised that this system uses the 'proven filtration technologies' of granular activated carbon and ion exchange resin in an aim to significantly reduce PFAS levels in water.¹⁸⁷
- 2.19** By 5 February 2025, Mr Roch Cheroux, Managing Director, Sydney Water reported that the newly installed PFAS treatment system was a success, and that it would be effective to ensure compliance with the upcoming stricter ADWG. Mr Cheroux informed the committee: 'I'm pleased to report that the plant is effective at removing PFAS from the water and the concentration in the treated water is reducing, and the plant will be producing water that is below the proposed new guideline level'.¹⁸⁸
- 2.20** WaterNSW advised that it was undertaking a forensic investigation into the underlying sources and causes of the elevated PFAS levels in the Blue Mountains.¹⁸⁹ As part of this, WaterNSW advised that it was:
- conducting ongoing monitoring and testing of raw water sources throughout the Blue Mountains catchment including water and soil testing
 - mapping land use throughout the catchment, and
 - developing a conceptual site model in an effort to understand how contaminants may move from soil and water sources through the catchment and thereby assist with strategies for mitigation, management and remediation.¹⁹⁰
- 2.21** Water NSW advised that it was keeping the community up to date on these investigations, publishing water monitoring test results fortnightly on its website and publishing quarterly

¹⁸⁵ Jean Kennedy, 'WaterNSW disconnects Medlow Dam in the Blue Mountains as investigations continue into presence of "forever chemicals" in water', *ABC News website*, 28 August 2024, <https://www.abc.net.au/news/2024-08-28/blue-mountains-dam-medlow-shut-pfas-chemicals/104282482>; see also WaterNSW, *August 2024 sampling – Raw (untreated) water*, <https://www.watnsw.com.au/water-services/water-quality/pfas/blue-mountains-investigations>; Submission 10, Dr Ian A. Wright, p 3; and Submission 47, Stop PFAS – Blue Mountains.

¹⁸⁶ See Submission 13, Blue Mountains City Council, p 2; and Submission 19, NSW Government, p 14.

¹⁸⁷ Media release, Hon Rose Jackson MLC, Minister for Water, 'Cascade Filtration Plant receives upgrade to improve drinking water quality', 3 December 2024.

¹⁸⁸ Evidence, Mr Roch Cheroux, Managing Director, Sydney Water, 5 February 2025, p 43.

¹⁸⁹ Evidence, Ms Fiona Smith, Executive Manager, Strategy and Performance, WaterNSW, 5 February 2025, p 53.

¹⁹⁰ See Evidence, Ms Smith, 5 February 2025, p 53; and WaterNSW, *Blue Mountains PFAS investigation and raw water testing results*, <https://www.watnsw.com.au/water-services/water-quality/pfas/blue-mountains-investigations>.

community updates regarding the investigations and surrounding issues since September 2024, as well as hosting local community drop-ins.¹⁹¹

2.22 In addition, WaterNSW advised that it was working with other government agencies, including Fire and Rescue NSW (FRNSW) and the Rural Fire Service, to explore historical land use activities that may have involved PFAS, including firefighting.¹⁹² As discussed in chapter one, historically three types of PFAS chemicals: PFOS, PFOA and PFHxS were included in firefighting foams, and these foams were used at airports, defence bases, industrial sites such as power stations and by FRNSW and Rural Fire Services across the state.¹⁹³

2.23 In the Blue Mountains context, Medlow Dam where the elevated PFAS levels were discovered is less than two kilometres from the Great Western Highway on which there has been a history of crash incidents involving the use of firefighting foam.¹⁹⁴ Assistant Commissioner Michael Morris JP, CF, Assistant Commissioner Metropolitan Operations, FRNSW confirmed that FRNSW had provided WaterNSW with incident reports for all incidents along the Great Western Highway between Medlow Bath and Blackheath from the mid-1980s to 2007.¹⁹⁵

2.24 Of particular note is a petrol tanker explosion that occurred on the Great Western Highway at Medlow Bath in September 1992 for which a large amount of firefighting foam was used. Mr Jon Dee, Stop PFAS – Blue Mountains noted that the crash took place near a waterway entrance that leads to Adams Creek which flows into Medlow Dam:

...everyone points to the September 1992 petrol tanker crash in Medlow Bath. The locals took us to where the crash took place. It was extremely close to a waterway entrance that leads to the drinking water dam. At most, it's about 80 metres away from the crash scene.¹⁹⁶

2.25 Mr Dee told the committee that he had obtained news footage of the incident which showed 'a huge amount' of firefighting foam flowing into Adams Creek from the incident.¹⁹⁷ In response to questioning about the incident, Assistant Commissioner Morris confirmed that while there was no official FRNSW record as to the amount of foam used at the incident, and despite measures being put in place to limit any contamination, foam was used near a tributary to Adams Creek:

¹⁹¹ See Evidence, Ms Smith, 5 February 2025, p 53; and WaterNSW, *Blue Mountains PFAS investigation and raw water testing results*, <https://www.waternsw.com.au/water-services/water-quality/pfas/blue-mountains-investigations>.

¹⁹² WaterNSW, *Blue Mountains PFAS investigation and raw water testing results*, <https://www.waternsw.com.au/water-services/water-quality/pfas/blue-mountains-investigations>.

¹⁹³ NSW Environment Protection Authority, *PFAS investigation program FAQs*, <https://www.epa.nsw.gov.au/Your-environment/Chemicals/PFAS-in-NSW/nsw-government-pfas-investigation-program/pfas-investigation-faqs>.

¹⁹⁴ See Submission 47, Stop PFAS – Blue Mountains, pp 3-5; and Answers to questions on notice, Fire and Rescue NSW, 4 March 2025, p 1.

¹⁹⁵ Evidence, Assistant Commissioner Michael Morris JP, CF, Assistant Commissioner, Metropolitan Operations, Fire and Rescue NSW, 3 February 2025, p 19.

¹⁹⁶ Evidence, Mr Jon Dee, Founder and Convenor, Stop PFAS – Blue Mountains, 3 February 2025, p 3.

¹⁹⁷ Evidence, Mr Dee, 3 February 2025, p 3.

It's undeniable that the foam that was used at that particular incident was closely adjacent to the water supply and, as we've seen, the location of that particular gully feeds directly into the Medlow Dam, so there's no question...At that particular incident there were efforts for the dirt culvert that's adjacent to the highway to be dammed and try to contain the run-off as best it could. There's evidence that there were clean-up operations involving removing the contaminants from there, including the soil that was used to temporarily dam that. But obviously there's the absorption of the materials into the surrounding earth-ways.¹⁹⁸

- 2.26** On 3 February 2025, Mr Dee stated that Adams Creek was now a focus of the WaterNSW investigation into the cause of the elevated PFAS levels in the Blue Mountains, and that a note on the WaterNSW website confirms that the creek is in fact 'an area for targeted investigations'.¹⁹⁹
- 2.27** FRNSW also confirmed that its records identify three incidents in total during which firefighting foam was used on the Great Western Highway, Medlow Bath between 1986 and 2007, and Assistant Commissioner Morris spoke of a 2002 petrol tanker fire during which 240 litres of foam concentrate were used.²⁰⁰
- 2.28** In addition, Assistant Commissioner Morris indicated that there was ongoing consultation with WaterNSW to identify historical land use activities that may have involved PFAS. The Assistant Commissioner stated 'There is an ongoing consultation with WaterNSW. As we work through the data, there are requests for more data. That's an ongoing process of consultation to look at the historic records and expand or contract or home in on particular searches as required'.²⁰¹
- 2.29** On 16 May 2025, WaterNSW announced it had completed its initial investigation into the source of the Blue Mountains PFAS contamination, Jacobs Group (Australia) Pty Ltd (Jacobs) was engaged to undertake this work, with the findings reviewed by the NSW PFAS Technical Advisory Group and the NSW Environment Protection Authority (EPA), both of which agreed with those findings.²⁰² Three potential sources had been identified: the abovementioned 1992 petrol tanker explosion and 2002 motor vehicle accident, both at Medlow Bath, with the third possible source identified as the Medlow Bath Rural Fire Brigade Station.²⁰³

¹⁹⁸ Evidence, Assistant Commissioner Morris, 3 February 2025, p 20.

¹⁹⁹ See Evidence, Mr Dee, 3 February 2025, p 3; and WaterNSW, *Blue Mountains PFAS investigation and raw water testing results*, <https://www.waternsw.com.au/water-services/water-quality/pfas/blue-mountains-investigations>.

²⁰⁰ See Answers to questions on notice, Fire and Rescue NSW, 4 March 2025, p 1; and Evidence, Assistant Commissioner Morris, 3 February 2025, pp 19-20.

²⁰¹ Evidence, Assistant Commissioner Morris, 3 February 2025, p 24.

²⁰² Water NSW, *Technical Memorandum 02 – WaterNSW, Lake Medlow and Lake Greaves, Blue Mountains Catchment Assessment* (31 January 2025), Water NSW, https://www.waternsw.com.au/_data/assets/pdf_file/0004/264559/WaterNSW_Technical-Memo_PFAS-Initial-Investigation-2025.pdf.

²⁰³ See WaterNSW, *Blue Mountains PFAS investigation and raw water testing results*, [https://www.waternsw.com.au/water-services/water-quality/pfas/blue-mountains-investigations#:~:text=WaterNSW%20has%20completed%20its%20initial,earlier%20vehicle%20accidents%20and%20bushfires; Jessica Kidd and Xanthe Gregory, *Likely sources of "forever chemicals" found in Blue Mountains drinking water catchment revealed* \(16 May 2025\), ABC News website, <https://www.abc.net.au/news/2025-05-16/nsw-pfas-chemicals-blue-mountains-water->](https://www.waternsw.com.au/water-services/water-quality/pfas/blue-mountains-investigations#:~:text=WaterNSW%20has%20completed%20its%20initial,earlier%20vehicle%20accidents%20and%20bushfires;Jessica Kidd and Xanthe Gregory, Likely sources of 'forever chemicals' found in Blue Mountains drinking water catchment revealed (16 May 2025), ABC News website, https://www.abc.net.au/news/2025-05-16/nsw-pfas-chemicals-blue-mountains-water-)

- 2.30** A detailed site investigation will now be undertaken pursuant to the National Environment Protection Measure 1999 with its outcomes to inform possible remediation options. WaterNSW advised that these investigations are likely to involve various agencies, with support from the EPA and that the Medlow and Greaves Creek Dams will remain disconnected from supply until WaterNSW is satisfied that permanent mitigation measures have been implemented.²⁰⁴
- 2.31** WaterNSW also advised that it would continue to keep the community updated, publishing raw water monitoring data from the Blue Mountains storage dams on its website and hosting further local community drop-in sessions in May and June 2025 in conjunction with Sydney Water and NSW Health.²⁰⁵

Concerns arising from the Blue Mountains case

- 2.32** This section discusses a number of concerns raised by stakeholders in response to the discovery of elevated levels of PFAS in Blue Mountains drinking water in 2024. This includes concerns about inadequate monitoring, testing and reporting around PFAS; concerns about a potential cultural problem amongst state water regulators, in particular a lack of accountability and transparency; and health concerns of local residents. It also discusses proposals for future action to address identified issues.

Monitoring, testing and reporting

- 2.33** PFAS was discovered in part of the Blue Mountains water supply despite a statement being issued by Sydney Water on 15 June 2024 that 'there are no known PFAS hotspots in our drinking water catchments'.²⁰⁶ A number of stakeholders pointed out that, as Sydney Water had not been testing for PFAS contamination in the areas within its jurisdiction then, it did not have sufficient information to provide the community with that reassurance.
- 2.34** Mr Langevad of Blue Mountains City Council expressed concern at the length of time it took for residents' water supply to be tested for PFAS, considering that PFAS has been a growing issue of concern for decades:

What we understand is that it was the 1950s, we started talking about PFAS; '70s, we got a bit concerned; '90s, we started saying we've got to regulate this. In 2001 we had

report/105300768; WaterNSW, *Technical Memorandum 02 – WaterNSW, Lake Medlow and Lake Greaves, Blue Mountains Catchment Assessment* (31 January 2025), Water NSW, https://www.waternsw.com.au/__data/assets/pdf_file/0004/264559/WaterNSW_Technical-Memo_PFAS-Initial-Investigation-2025.pdf.

²⁰⁴ WaterNSW, *Blue Mountains PFAS investigation and raw water testing results*, <https://www.waternsw.com.au/water-services/water-quality/pfas/blue-mountains-investigations#:~:text=WaterNSW%20has%20completed%20its%20initial,earlier%20vehicle%20accidents%20and%20bushfires>.

²⁰⁵ WaterNSW, *Blue Mountains PFAS investigation and raw water testing results*, <https://www.waternsw.com.au/water-services/water-quality/pfas/blue-mountains-investigations#:~:text=WaterNSW%20has%20completed%20its%20initial,earlier%20vehicle%20accidents%20and%20bushfires>.

²⁰⁶ *Sydney Saturday Breakfast*, ABC Radio Sydney, "Testing Drinking Water for PFAS Contamination "Fundamental", Simon Marnie, 15 June 2024; see also Submission 10, Dr Ian A. Wright, p 2.

reliable testing methods available and yet it was actually in 2024 that we landed the testing in Medlow Dam. That shouldn't happen.²⁰⁷

2.35 Further, Mr Langevad stated that there is no point having a standard (for example, the ADWG) if no testing takes place against that standard – without testing the authorities remain ignorant as to whether the standard is being met.²⁰⁸

2.36 This accords with the evidence of Mr Dee who commented that Sydney Water's claim that there were no known PFAS hotspots was based on an inadequate desktop analysis, not on testing or data. Mr Dee stated:

When I asked Roch Cheroux why they hadn't tested any of our water, he said they'd done a desktop risk analysis, which basically means that they looked at the contamination that was taking place in places like Richmond, in military bases, and where firefighting foam had been used very regularly. They had come to the conclusion that because no PFAS chemicals had been made in the Blue Mountains—they considered it almost zero risk, so therefore they had not done any water testing.²⁰⁹

2.37 In addition, Mr Dee stated that now that testing is finally taking place the number of identified PFAS hotspots in Australia has climbed from the hundreds to the thousands.²¹⁰

2.38 The evidence of Assistant Commissioner Morris of FRNSW also indicated that Sydney Water's claim of 'no known hotspots' may have been made without consulting FRNSW for relevant risk information and data. Under questioning as to whether Sydney Water had approached FRNSW prior to making its 15 June 2024 'no known hotspots' statement, to check whether there had been any historic firefighting incidents involving foam that may have resulted in PFAS contaminated waterways in the Blue Mountains, the Assistant Commissioner could not confirm this.²¹¹

2.39 The Assistant Commissioner stated that he could not 'speak for the time frame of June last year'. However, he could confirm that after the Blue Mountains PFAS levels had become public FRNSW had been providing historical records to WaterNSW 'to do that review of where contamination may have come from'.²¹²

2.40 Dr Ian Wright raised concerns that it was possible the assurances surrounding PFAS levels in Sydney's water were made in the absence of test results. He described Sydney Water's claims of no known PFAS hotspots as 'alarming' given that at the time there was already a known hotspot at North Richmond near the Richmond RAAF Base, which is a known PFAS-contaminated site. Dr Wright also noted a recent University of Western Sydney study, discussed in chapter one, which found elevated levels of PFAS in the livers of deceased platypuses collected from various New South Wales waterways including one collected from Wingecarribee River at

²⁰⁷ Evidence, Mr Langevad, 3 February 2025, p 17.

²⁰⁸ Evidence, Mr Langevad, 3 February 2025, p 13.

²⁰⁹ Evidence, Mr Dee, 3 February 2025, p 4.

²¹⁰ Evidence, Mr Dee, 3 February 2025, p 4.

²¹¹ Evidence, Assistant Commissioner Morris, 3 February 2025, pp 20-21.

²¹² Evidence, Assistant Commissioner Morris, 3 February 2025, p 21.

Berrima in Sydney's Warragamba drinking water catchment. Dr Wright stated that the Warragamba reservoir supplies Sydney with 80-90 per cent of its drinking water.²¹³

- 2.41** Dr Wright stated that there had not been uniform testing across regions in New South Wales and stressed that each water supplier across New South Wales should immediately test and publish PFAS levels found in their raw and treated water.²¹⁴ Like others, he expressed surprise that Blue Mountains water had not been tested until 2024 given the state of knowledge surrounding PFAS by that time:

It is remarkable to me that something like the reservoirs of the Blue Mountains—there's five of them in between Blackheath and Katoomba. It was remarkable to me that they were only first tested in June of [2024]...when this has been known for 20-odd years to be a risk, a substantial risk.²¹⁵

- 2.42** Dr Wright also called for ongoing, regular water testing across New South Wales and argued that this should include:

- testing of source (raw) water
- testing the water at filtration plants before and after treatment, because this gives an indication of the effectiveness of treatment
- testing at customers' taps.²¹⁶

- 2.43** In addition, Dr Wright stated that testing should involve multiple samples, on multiple occasions and under different conditions to be effective because PFAS levels in water can vary according to the conditions:

...the levels of PFAS, the concentrations, can be highly variable. When I sample an area, I would take multiple samples at one time. Probably one of our best datasets is Sydney Water's PFAS data for North Richmond. They extract from the Hawkesbury River. They've already made an association between higher PFAS concentrations in wet weather, when there's more flow and more transport, presumably, of pollutants. So multiple samples, multiple occasions and under different conditions. Again, WaterNSW's sampling of Lake Medlow has shown differences at the surface and at different levels of the reservoir. Again, they differ to what's pumped out at the filtration plant. So repeated sampling with good statistics to enable a solid generalisation is required. It would be expensive, but it's really important information.²¹⁷

- 2.44** Dr Wright also cautioned that in obtaining a comprehensive risk analysis it is necessary to test not only the water column for PFAS but also the sediment and the surrounding wildlife – like the platypuses who he said had 'enormous levels' of PFOS in their livers.²¹⁸ Dr Wright stated

²¹³ Submission 10, Dr Ian A. Wright, p 2.

²¹⁴ Evidence, Dr Ian Wright, Associate Professor, Environmental Science, Western Sydney University, 6 December 2024, pp 3-4.

²¹⁵ Evidence, Dr Wright, 6 December 2024, p 4.

²¹⁶ Evidence, Dr Wright, 6 December 2024, p 5. See also Submission 19, NSW Government, p 14 which explains that untreated water is provided to New South Wales drinking water suppliers to treat for consumption, and this untreated water is often referred to as 'raw water' or 'source water'.

²¹⁷ Evidence, Dr Wright, 6 December 2024, p 6.

²¹⁸ Evidence, Dr Wright, 6 December 2024, pp 2-3.

that PFAS is hydrophobic and that PFAS concentrations in sediment are consequently likely to be much larger than those found in the water column:

...if you sample just the water column— remember, PFAS is hydrophobic. It is a really useful material because it resists oil, grease and water. So the smallest part of PFAS in the system is likely to be in the water column. My results line up with that of the EPA, but the sediment is about 25 times higher in terms of the concentration.²¹⁹

2.45 When asked why the sediment results would be important to a risk analysis if PFAS is hydrophobic and it is the safety of drinking water that is the concern, Dr Wright explained that in wet weather, which causes turbulent flow, the sediment can recirculate making it available to the water column. In this context he noted that water suppliers that use river water as their source water have had considerable trouble providing clean drinking water following the floods and droughts of the past decade.²²⁰

2.46 In explaining why testing PFAS levels in wildlife is important for a proper risk analysis, Dr Wright identified that to date, little is known about PFAS levels in Australian wildlife and this is especially concerning as PFAS bioaccumulates. As noted in chapter one, the University of Western Sydney platypus study illustrates how PFOS bioaccumulates in organisms, that is by absorbing more PFOS than they excrete, leading to a build-up within their systems.²²¹ In that context, Dr Wright stated it is particularly important to test fish:

Testing is needed, and something like DPI Fisheries looking at what is in fish, because the concentrations, particularly in rivers, is higher than in the ocean. One of my big questions at the moment is are the fish safe to eat? Because fishing in rivers is a very popular pastime.²²²

2.47 The Environmental Defenders Office (EDO) raised concerns that under the current law, there is no mandatory requirement for periodic PFAS testing – nor a requirement that testing accord with current best practice – and no requirements for the results of such tests to be published.²²³ In calling for legislative reform to introduce mandatory proactive testing and monitoring requirements for PFAS, the EDO stated that regular, proactive monitoring for PFAS is essential to manage and identify risks early.²²⁴

2.48 The EDO also suggested real-time reporting wherever possible, particularly in areas where there has been a PFAS contamination incident.²²⁵

²¹⁹ Evidence, Dr Wright, 6 December 2025, p 2.

²²⁰ Evidence, Dr Wright, 6 December 2025, p 7.

²²¹ Xanthe Gregory, *PFAS 'forever chemicals' found in water filtration plants and platypus livers in NSW* (20 August 2024) ABC News website, <https://www.abc.net.au/news/2024-08-20/australia-forever-chemicals-pfas-drinking-water-platypus/104244072>. See also ScienceDirect, *Bioaccumulation* (2025), <https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/bioaccumulation>.

²²² Evidence, Dr Wright, 6 December 2025, p 4.

²²³ Submission 22, Environmental Defenders Office, pp 8-9 and 13.

²²⁴ Submission 22, Environmental Defenders Office, p 12.

²²⁵ Submission 22, Environmental Defenders Office, p 13.

- 2.49** Professor Denis O'Carroll, Deputy Head of School, Water Research Laboratory, University of New South Wales also stressed that widespread, proactive testing for PFAS is important due to the frequency of PFAS being found in water where there is no known source:

Particularly in the no known source, we found that a surprising number of those samples were above international drinking water standards. So that is kind of like, let's say, in the Blue Mountains, where WaterNSW wouldn't have expected it to be there, but it was there. So I think that's maybe a gap. We need to get out there and sample our source waters. We don't have to sample it every quarter or anything, but we need to do a baseline sample of where humans are going to be exposed to it and just see whether or not it's in there.²²⁶

- 2.50** In addition, Professor O'Carroll indicated government data sharing could be improved as it is not always in a readily accessible format:

In government reports, when there is concentration information—and this is a source of frustration for me—that information is readily available to the public. There's tunnels going under Sydney Harbour at the moment and the Government or consultants collected an awful lot of soil samples for that, and it's in tens of thousands of pages of PDFs. I sent an email to the consultant or Transport for NSW or someone and asked for the information in a digital or Excel format and they said, "No, we're not going to do that." It would take me hundreds or thousands of hours to get that data when it's already readily available, so some of that data sharing would also be incredibly helpful.²²⁷

- 2.51** When asked if government authorities could improve the packaging of information about PFAS so that the public and researchers could more easily understand and use it, EPA witnesses stated that, while the EPA makes efforts to communicate clearly, there could be improvements. They acknowledged that the way that water testing reports are packaged may make extracting data difficult.²²⁸ Mr Stephen Beaman, Executive Director, Regulatory Practice and Services, EPA stated:

We try to make that data really accessible to people. It's in simple diagrams, maps and simple tables, whereas when you get to some of the bigger sites and it's data that's actually owned and developed by someone else—not so much by government but we get it to review it—that can come, particularly in this space, in thousands of pages. That's the thing about how do you make that information really accessible to people so they can make really good, informed decisions.²²⁹

- 2.52** In a similar vein, Mr Langevad of Blue Mountains City Council advocated for dashboard reporting about water quality, stating 'information is critical'.²³⁰

²²⁶ Evidence, Professor Denis O'Carroll, Deputy Head of School (Research), Water Research Laboratory, University of New South Wales, 6 December 2024, p 10.

²²⁷ Evidence, Professor O'Carroll, 6 December 2024, p 12.

²²⁸ Evidence, Mr Tony Chappel, Chief Executive Officer, NSW Environment Protection Authority, 6 December 2024, p 32.

²²⁹ Evidence, Mr Stephen Beaman, Executive Director, Regulatory Practice and Services, NSW Environment Protection Authority, 6 December 2024, pp 32-33.

²³⁰ Evidence, Mr Langevad, 3 February 2025, p 14.

- 2.53** Mr Dee also had suggestions for comprehensive and accessible reporting, arguing for a national database showing PFAS levels in source water and at water filtration plants across the country:

We believe that we should have a national testing regime where every single water authority tests two things: one, the raw water that supplies their drinking water facilities and, again, a test at the filtration plant. Whether they meet the water drinking guidelines or not, we believe that those tests should be disclosed on a regular basis where you could type in your postcode and find out exactly what the PFAS levels are in your water in your local community...²³¹

- 2.54** However, in commenting on PFAS reporting, Dr Jackie Wright, Director/Principal, Environmental Risk Sciences Pty Ltd (enRiskS) cautioned that there is no such thing as 'real-time' reporting, as any samples must be analysed at a laboratory which takes time. Dr Jackie Wright also noted that any information must be published in context to avoid unnecessarily alarming the public:

There are a lot of people who think any value more than zero is a problem. That's not the case. So it is tricky to have that sort of reporting without putting stuff in context. There was a regulation passed a long time ago about reporting things for licensees and putting things online on a monthly basis and stuff, but there was always a requirement that they give some context to the numbers.²³²

- 2.55** In making calls for increased PFAS testing and reporting in New South Wales, Mr Dee, Professor O'Carroll and Mr Anthony Amis, Land Use Researcher, Friends of the Earth Australia also called for testing and reporting on a greater number of PFAS chemicals.²³³

- 2.56** As detailed in chapter one, more than 14,000 PFAS compounds have been identified to date.²³⁴ However, as at 5 February 2025, Sydney Water stated that it tested for 45 PFAS chemicals yet only publicly reported on the ones for which guideline limits were set under the ADWG²³⁵ – that is, only three under the guidelines that were current at that time – PFOS, PFHxS and PFOA – with a fourth to be added under the proposed new guidelines (which have now been published as at 25 June 2025) – PFBS.²³⁶ Sydney Water indicated that its reason for only publishing the results for PFAS chemicals that have limits against them relates to 'sharing information in a way that the community can actually understand'.²³⁷

- 2.57** The calls for testing and reporting of a greater number of PFAS chemicals, and arguments about the guideline limits for specific PFAS chemicals are discussed in more detail in chapter six.

²³¹ Evidence, Mr Dee, 3 February 2025, p 6.

²³² Evidence, Dr Jackie Wright, Director/Principal, Environmental Risk Sciences Pty Ltd (enRiskS), 5 February 2025, p 23.

²³³ See Evidence, Professor O'Carroll, 6 December 2024, p 11; Evidence, Mr Dee, 5 February 2025, p 9; and Evidence, Mr Anthony Amis, Land Use Researcher, Friends of the Earth Australia, 5 February 2025, pp2-3.

²³⁴ Evidence, Dr Brett Molony, Science Director, Environment, CSIRO, 5 February 2025, p 7.

²³⁵ Evidence, Dr Kaye Power, Principal Water and Public Health Adviser, Sydney Water, 5 February 2025, p 47.

²³⁶ Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41; and Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines' 25 June 2025.

²³⁷ Evidence, Dr Power, 5 February 2025, p 47.

- 2.58** In responding to concerns that Sydney Water had claimed 'no known PFAS hotspots' in its drinking water catchments on the basis of a desktop analysis and without having conducted the necessary testing and monitoring, Mr Roch Cheroux, Managing Director, Sydney Water stressed that authorities had done a risk-based analysis along the entire 'value chain' from catchment to tap and having considered that chain in its entirety they had identified no risks:

The principle of the drinking water guidelines is risk-based assessments. What the guidelines say is that you do an assessment on the entire value chain, which is basically catchment to tap for customers. This is a risk assessment that we do jointly with WaterNSW and NSW Health. The three organisations will be looking at all the risks that exist along the value chain and work out if there are any hotspots. In the case of PFAS, when we looked at the entire value chain from catchment to tap, no hotspots were identified.²³⁸

- 2.59** Mr Cheroux also emphasised that all the Sydney Water treatment plants were producing water that met the ADWG current at the time of testing, despite the Cascade results that were not compliant with the proposed new guidelines for PFOS (nor indeed the guidelines for PFOS that have now been published, as at 25 June 2025).²³⁹

- 2.60** Finally, with regard to effecting any changes to testing, monitoring and reporting requirements for PFAS, it is relevant to note that (as detailed in chapter one) the Independent Pricing and Regulatory Tribunal (IPART) plays an important part in supporting safe drinking water in significant parts of New South Wales. IPART has responsibilities pursuant to the *Water NSW Act 2014*, *Hunter Water Act 1991* and the *Sydney Water Act 1994*, under which these water utilities' licences are issued, to advise the Minister for Water with respect to suitable licence conditions.²⁴⁰

- 2.61** In response to some stakeholder suggestions that changes to increase any testing, monitoring and reporting requirements for PFAS may need to be built into the operating licences of Sydney Water or Hunter Water to be effective,²⁴¹ Mr Andrew Nicholls PSM, Chief Executive Officer IPART indicated that as the licences are written in an outcomes-based way there would be no need to change them – IPART regulates according to the standards that apply at any given time, through guidelines and the requirements of NSW Health:

The licensing system as it relates to drinking water quality has two elements to it. The licence itself has components that require compliance with the Australian drinking standards as well as responding to any requirements of NSW Health. Those requirements are written in a deliberately outcome-based way so that those guidelines and requirements can change over time. The licence is not used to establish prescriptive standards but rather to ensure that the outcome, which is public safety and public health,

²³⁸ Evidence, Mr Cheroux, 5 February 2025, p 45.

²³⁹ Evidence, Mr Cheroux, 5 February 2025, pp 43 and 45. See also Sydney Water, *PFAS Monitoring Results*, <https://www.sydneywater.com.au/water-the-environment/how-we-manage-sydneys-water/safe-drinking-water/water-analysis/pfas-and-drinking-water/pfas-monitoring-results.html>; and Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines' 25 June 2025.

²⁴⁰ Evidence, Mr Andrew Nicholls PSM, Chief Executive Officer, Independent Pricing and Regulatory Tribunal, 5 February 2025, p 44.

²⁴¹ See for example Submission 10, Dr Ian A. Wright, p 8 which suggests that more thorough PFAS monitoring and reporting should be addressed in the operating licences of Sydney Water and Hunter Water.

is paramount in the delivery of the licence by the water utility. The work that we do as a regulator is to monitor that performance against the standards and requirements at any given point in time. Should there be a case to change the monitoring regime...that could be effected without a need to change the licence by simply—it may be through amendments of guidelines or it may be that the Government or NSW Health were to issue instructions in that regard.²⁴²

Committee comment – monitoring, testing and reporting

- 2.62** The committee is concerned at the statement made by Sydney Water on 15 June 2024 that there were 'no known PFAS hotspots' in its drinking water catchments. The statement was made in the absence of a rigorous and proactive program of regular monitoring, testing and reporting.
- 2.63** This is evidenced by the subsequent testing in the Blue Mountains that revealed:
- PFOS levels at the Cascade plants above the new Australian Drinking Water Guideline (ADWG) limits, published on 25 June 2025 and
 - combined PFOS and PFHxS in untreated water in the Medlow Dam above the ADWG limits current at the time of testing, that also do not meet the new ADWG limits.
- 2.64** The committee further notes that the statement may have been made without Sydney Water having consulted relevant agencies. For example, Fire and Rescue NSW does not appear to have been consulted about firefighting incidents in the Blue Mountains that could have led to PFAS contamination in local waterways. In addition, the statement was made despite pre-existing evidence of PFAS hotspots within the Sydney Water catchment area, including at the Richmond RAAF Base and the recent University of Western Sydney study that found elevated levels of PFAS in the liver of a deceased platypus collected from the Wingecarribee River at Berrima in Sydney's drinking water catchment.

Finding 1

Sydney Water did not perform an appropriate level of due diligence before claiming, in June 2024, that there were no known PFAS hotspots within its drinking water catchments.

- 2.65** To prevent this reoccurring, the committee recommends regular PFAS testing of water across New South Wales. Further, the committee accepts that there must be clear, pre-determined standards to require testing to comply with current best practice. For example, the committee notes the evidence of Dr Ian Wright that, to adequately manage risk, testing should involve multiple samples, taken on multiple occasions, under different conditions; and that in testing water this should include:
- the raw water or 'source water' that supplies drinking water plants (e.g. in rivers and dams)
 - water at filtration plants before and after treatment, and
 - testing at customer taps.

²⁴² Evidence, Mr Nicholls PSM, 5 February 2025, p 43.

- 2.66** In short, the committee recommends regular, risk-based testing of source water, water at treatment plants before and after treatment and water in the distribution system. Testing at customer taps would be logistically challenging as this is not infrastructure owned by water utilities.
- 2.67** The committee would add that the clear, pre-determined testing standards would need periodic review to ensure that they remain up to date, and thus an appropriate level of flexibility would need to be built into the system to best manage this, fostering timely implementation of any necessary changes.

Recommendation 1

That the NSW Government ensure regular PFAS testing of water across New South Wales and that this require:

- risk-based testing of source water, water at treatment plants before and after treatment, and water in the distribution system
 - testing to a set of pre-determined standards, consistent with current best practice with requirements for periodic review, and
 - timely, accessible public disclosure of the results.
-

- 2.68** Finally, the committee is concerned at evidence, including from the NSW Environment Protection Authority, that in making PFAS data available to the public and researchers, government authorities may sometimes do so in quite inaccessible formats. Accessibility is essential to increase knowledge about PFAS, encourage research, and to foster more informed decision making throughout the community. Government agencies should strive to package information regarding PFAS into accessible, searchable and understandable formats.

Recommendation 2

That in publishing data concerning PFAS, government agencies do so in a format that:

- is easily searchable and accessible, and
- makes extracting and understanding the data as easy as possible

in order to aid research and better inform the public around PFAS.

Transparency and accountability concerns

- 2.69** Mr Jon Dee from Stop PFAS – Blue Mountains spoke of what he called a cultural problem amongst water regulators in New South Wales. Mr Dee alleged a lack of transparency and accountability around PFAS contamination as to the extent of the problem and collusion amongst government agencies to stop media reporting on the issue.²⁴³

²⁴³ See Evidence, Mr Dee, 3 February 2025, pp 4 and 7-9.

- 2.70** Regarding claims of a lack of transparency and accountability, Mr Dee indicated that anyone raising questions about water quality in New South Wales is quickly told by those within the sector to stop talking:

[W]hen Sydney Water, WaterNSW and NSW Health came to say to our community on two days notice that "Don't worry, the water is safe," one of the head engineers from Sydney Water sat where you are, Ms Faehrmann, and said to me that if I wanted to carry on my good relationship with Sydney Water, I had to pull my head in. The attitude is "Keep quiet." There's a song sheet in the water industry. It says, "Australia has the best tap water in the world. Keep singing that song."...If you question that song and the claim that we have the best tap water in the world, then you are very quickly on the outer within the water sector.²⁴⁴

- 2.71** Mr Dee also alleged collusion amongst government agencies with water regulation responsibilities to stop the media publishing information about PFAS contamination in New South Wales, and he read government agency emails onto the record to illustrate his point. The emails were between a senior media adviser at the NSW Department of Climate Change, Energy, the Environment and Water, and the media manager of Sydney Water in 2024 and included the following:

ABC contacted all relevant agencies, including the MO [Minister's office], Sydney Water, and WaterNSW, for an interview. In a show of unity all agencies, including Sydney Water, declined the interview.

This decision was measured and considered and reflects our collective approach to the situation.

...

Sydney Water will not be engaging with ABC radio on this topic there is no way I will be putting a rep up to speak to be ambushed by these guys and potentially put our talent in a position where Jon Dee confronts them live on radio—and forced to debate him, the impact of putting someone on outweighs the benefit as they have their agenda like the SMH [*Sydney Morning Herald*].²⁴⁵

- 2.72** When asked about these matters, Mr Cheroux of Sydney Water stated that Sydney Water values transparency, pointing to the information it makes available on its website and to the public and stating that "There is no issue with talking to the media, we do it all the time".²⁴⁶ On the subject of Ms Waters' email Mr Cheroux indicated that this involved a situation where there was no reason to engage with the media at that exact point in time:

We've been engaging with the ABC and with many other media channels—TV, radio and print—on many, many different occasions, and this email that was discussed in this Committee was just an example where there was no reason to engage at that point. But the engagement of Sydney Water with different media has been extensive, and I think it can be viewed everywhere.²⁴⁷

²⁴⁴ Evidence, Mr Dee, 3 February 2025, p 4.

²⁴⁵ See Evidence, Mr Dee, 3 February 2025, pp 7-8.

²⁴⁶ Evidence, Mr Cheroux, 5 February 2025, p 44.

²⁴⁷ Evidence, Mr Cheroux, 5 February 2025, p 44.

- 2.73 However, in response to questions about what was meant about the ABC and the *Sydney Morning Herald* having an 'agenda' Mr Cheroux conceded that this was not accurate or appropriate, stating 'I think the email was worded in a way that is probably not completely accurate. I guess the choice of word was probably not completely appropriate at that time'.²⁴⁸

Debate over Water Quality Guidelines or Legislated Standards

- 2.74 Amidst these calls for greater accountability for water authorities, some stakeholders also argued that water quality provisions needed to be strengthened to improve compliance. For example, Mr Amis of Friends of the Earth Australia argued that penalties should be imposed on authorities where they do not meet the drinking water guidelines:

...I think that there needs to be some sort of legal enforcement of drinking water guidelines so that—there's got to be some legal recourse. Water authorities, if they end up providing dangerous drinking water to communities, there needs to be some sort of legal stick that can be used to make sure that they don't do that again and that other authorities—because, at the moment, the drinking water authority's guidelines are guidelines only. There's no real legal teeth.²⁴⁹

- 2.75 Mr Langevad of Blue Mountains City Council made a similar point, arguing that there needed to be legislated requirements around water quality in New South Wales, and that it is not enough for water quality provisions to be mere guidelines:

...I think where we have the standard setting, that framework is in place and we've got the Australian Drinking Water Guidelines in place—the word "guidelines" is a bit concerning. I would have thought the word "standard" would be what we'd call up in legislation to give it traction and give it application. It is very difficult for council or most stakeholders dealing with community to clarify or justify why we've got water not of the quality that the guidelines require. I think that's the first thing: that legislative requirement to manage water quality.²⁵⁰

- 2.76 However, in commenting on the prospect of more prescriptive measures to enforce drinking water quality in New South Wales, whilst supporting mandated testing, monitoring and reporting on PFAS (as above), the EDO did not recommend set, legislated drinking water standards. The EDO cautioned that flexibility is needed 'to avoid shackling any relevant entity to a benchmark that is susceptible to obsolescence' noting that the process for updating the drinking water standards can be slow.²⁵¹
- 2.77 In the circumstances, the EDO recommended that where the best scientific evidence overtakes existing guidance the relevant authorities, such as drinking water suppliers, should be able to update their processes to align with that evidence, where this would result in better outcomes.²⁵² Similarly, the EDO stated that the ADWG should be viewed as minimum standards.²⁵³ In sum, to better ensure best practice in evolving circumstances, whilst maintaining necessary flexibility,

²⁴⁸ Evidence, Mr Cheroux, 5 February 2025, p 44.

²⁴⁹ Evidence, Mr Amis, 5 February 2025, pp 4-5.

²⁵⁰ Evidence, Mr Langevad, 3 February 2025, p 17.

²⁵¹ Submission 22, Environmental Defenders Office, p 13.

²⁵² Submission 22, Environmental Defenders Office, p 13.

²⁵³ Submission 22, Environmental Defenders Office, p 14.

the EDO recommended amendments to the Public Health Regulation to require periodic review and update of water suppliers' quality assurance programs and to clarify that the ADWG are minimum standards.²⁵⁴

Committee comment – transparency and accountability and water quality standards

- 2.78** The committee is concerned to hear evidence that various government authorities declined to be interviewed by ABC radio in 2024 concerning PFAS. This was at a time when the Blue Mountains community was anxious to have its questions answered following the discovery of elevated PFAS levels in local water supplies.
- 2.79** Government authorities must be transparent and accountable at all times but especially during periods of crisis when communities look to them for leadership, information and guidance. Robust questioning of authorities at such times is entirely appropriate.
- 2.80** The committee supports initiatives to increase accountability should authorities fail to meet water quality standards.
- 2.81** The committee notes evidence from Mr Cheroux of Sydney Water emphasising that although elevated PFAS levels were found in Blue Mountains water in 2024, all Sydney Water treatment plants were producing water that met the Australian Drinking Water Guidelines (ADWG) current at the time of testing. It was only the proposed new guidelines for PFOS they had failed to meet.
- 2.82** The committee also notes the arguments of the Environmental Defenders Office that legislated water quality standards may have the unintended effect of shackling authorities to obsolete water quality standards which can take some time to update. To encourage the highest possible standards whilst the science is evolving, the committee considers the regulations should make it clear that the ADWG that apply at any given time should be considered as minimum standards.

Recommendation 3

That the NSW Government formally adopt standards for the levels of PFAS chemicals in drinking water and designate the Australian Drinking Water Guidelines as minimum standards in New South Wales.

Health concerns

- 2.83** Another major concern raised in relation to the discovery of the elevated levels of PFAS in Blue Mountains waterways was the potential impact on people's health. This was particularly so given that the contamination had potentially been caused by the abovementioned 1992 petrol tanker explosion on the Great Western Highway at Medlow Bath. Mr Dee pointed out that if the 1992

²⁵⁴ Submission 22, Environmental Defenders Office, p 14.

incident was the cause of the contamination in Medlow Bath, Blue Mountains residents had been drinking contaminated water for a sustained period of more than 30 years.²⁵⁵

2.84 As discussed in chapter one, according to enHealth PFAS exposure has been associated with various health effects in humans including:

- increased levels of cholesterol in the blood
- increased levels of uric acid in the blood
- reduced kidney function
- alterations in some indicators of immune function
- altered levels of thyroid hormones and sex hormones
- later age for starting menstruation in girls, and earlier menopause
- lower birth weight in babies.²⁵⁶

2.85 As also discussed in chapter one, in November 2023, the International Agency for Research on Cancer (IARC) classified PFOA as 'carcinogenic to humans' and PFOS as 'possibly carcinogenic to humans'.²⁵⁷

2.86 In the Blue Mountains context, Mr Dee stated that high cholesterol had emerged as a particular concern. He noted studies from the USA indicating that there is a particular association between PFOS (the PFAS chemical found at elevated levels in the Blue Mountains) and high cholesterol levels:

PFOS chemicals are also associated with high cholesterol levels...there are a number of scientific papers which have looked in detail...I spoke at length with the US EPA. They had about 2,100 peer-reviewed documents and research reports into the impacts of PFAS chemicals. Again, many of those documents...indicated it is known that high cholesterol in people is a known side effect of long-term exposure to PFAS chemicals, in particular PFOS.²⁵⁸

2.87 Mr Dee further stated that he has 'dangerously high levels of cholesterol' for which he has to take medication and that since he advertised this fact on the Stop PFAS – Blue Mountains Facebook page he had been 'inundated' with messages from others who stated they too had high cholesterol and had to take medication. Mr Dee also noted with concern that high cholesterol can lead to various issues including strokes and heart disease and that the issues were so serious for him, he had to submit to heart scans to test for long-term damage.²⁵⁹

²⁵⁵ See Evidence, Mr Dee, 3 February 2025, p 3; and WaterNSW, *Blue Mountains PFAS investigation and raw water testing results*, <https://www.watnsw.com.au/water-services/water-quality/pfas/blue-mountains-investigations#:~:text=WaterNSW%20has%20completed%20its%20initial,earlier%20vehicle%20accidents%20and%20bushfires>.

²⁵⁶ Tabled document, Environmental Health Standing Committee (enHealth) of the Australian Health Protection Principal Committee, *enHealth Factsheet on PFAS*, 11 December 2024, p 2.

²⁵⁷ See Submission 47, Stop PFAS – Blue Mountains, p 11.

²⁵⁸ Evidence, Mr Dee, 3 February 2025, p 5.

²⁵⁹ Evidence, Mr Dee, 3 February 2025, p 5.

- 2.88** Given the potential long-term exposure to PFAS in the Blue Mountains, Mr Dee called for blood testing and expressed frustration that NSW Health had advised it would not conduct blood tests on the local community. He stated: 'I believe we'll need community-wide testing to assess are we the same as other communities or, because of our long-term exposure to PFAS chemicals, are we actually substantially higher than other communities?'²⁶⁰
- 2.89** Dr Ian Wright stated that where communities have been exposed to elevated levels of PFAS, Sydney Water should offer to pay for PFAS blood testing.²⁶¹
- 2.90** As detailed in chapter one, in managing the risks posed to human health by PFAS, the government (including NSW Health) is guided by the PFAS National Environmental Management Plan and the advice of the Environmental Health Standing Committee (enHealth) regarding PFAS.²⁶²
- 2.91** NSW Health was questioned about the growing body of scientific research regarding potential associations between higher levels of PFAS in blood to an increased risk of certain health conditions include some types of cancer. This included the IARC's recent classification of PFOA as 'carcinogenic to humans' and PFOS as 'possibly carcinogenic to humans'. In response, NSW Health noted the enHealth advice emphasising that to date no causative link has been established between PFAS and negative health outcomes. Instead, it encourages a precautionary approach, limiting exposure to PFAS wherever possible.²⁶³
- 2.92** Further, while PFAS has been associated with the abovementioned health effects in humans, including increased levels of cholesterol in the blood, enHealth's advice continues to state that these differences have generally been small and that they are unlikely to cause significant adverse health effects, as shown in Figure 2.²⁶⁴ enHealth advice in relation to PFAS and possible associations with uncommon cancers notes is also shown below.

²⁶⁰ Evidence, Mr Dee, 3 February 2025, p 5.

²⁶¹ Submission 10, Dr Ian A. Wright, p 8.

²⁶² Submission 19, NSW Government, p 12.

²⁶³ Tabled document, *enHealth Factsheet on PFAS*, p 2.

²⁶⁴ Tabled document, *enHealth Factsheet on PFAS*, p 2.

Figure 2 enHealth advice on PFAS²⁶⁵

<p>PFAS exposure has been associated with:</p> <ul style="list-style-type: none"> • increased levels of cholesterol in the blood • increased levels of uric acid in the blood • reduced kidney function • alterations in some indicators of immune function • altered levels of thyroid hormones and sex hormones • later age for starting menstruation in girls, and earlier menopause • lower birth weight in babies. <p>However, these differences have generally been small and unlikely to cause significant negative health outcomes.</p>	<p>Potential associations between PFAS exposure and increased risk of two uncommon cancers, namely testicular and kidney cancer, have also been reported. Much of this evidence relates specifically to PFOA, and not PFOS or PFHxS, which are more common in Australia. However, studies of these cancers remain conflicting and associations have only been observed in high exposure groups, such as workers in international factories where PFOA is produced.</p> <p>It is important to recognise an association does not constitute causation. To date, a causative relationship between the above health effects and PFAS exposure has not been established.</p>
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2.93 Consistent with the above, while stressing the fact that the science around PFAS is evolving and that a precautionary approach is needed that minimises exposure to PFAS, NSW Health cautioned against over-stating the health risks of these chemicals, commenting that the available evidence around the health effects of PFAS is limited.²⁶⁶

2.94 Under questioning, NSW Health stressed that while PFAS has been associated with testicular and kidney cancer in humans no causative relationship has been established. Dr Jeremy McNulty, Executive Director, Health Protection NSW, NSW Health expanded on this point:

There's a lot of research out there and there's a difference between associations and causality. There are particular outcomes and a range of exposures that people might have had. When you do epidemiological studies, you'll often find associations between a higher level of an outcome and exposure to certain things, but that doesn't mean they're causal.²⁶⁷

2.95 At the committee's hearing on 5 February 2025, NSW Health was questioned about an internal email sent by Mr Kishen Lachireddy to Dr McNulty in July 2024 pointing out research on PFAS and cholesterol as well as PFAS and thyroid cancer risk. Regarding PFAS and cholesterol the email stated: 'It is well understood that PFAS, owing to their structural resemblance of lipid molecules, may disrupt human lipid metabolism by activating nuclear receptors, such as peroxisome proliferator-activating receptor alpha'.²⁶⁸ On thyroid cancer, the email attached a study entitled 'Per- and Polyfluoroalkyl substances (PFAS) Exposure and Thyroid Cancer Risk' which stated:

²⁶⁵ Tabled document, *enHealth Factsheet on PFAS*, p 2.

²⁶⁶ See Evidence, Dr Jeremy McNulty, Executive Director, Health Protection NSW, NSW Health, 5 February 2025, p 52.

²⁶⁷ Evidence, Dr McNulty, 5 February 2025, p 61.

²⁶⁸ Return to order for papers, 23 October 2024, PFAS in New South Wales, Document G00134_000035958.

This study reports associations between exposure to PFAS and increased rate of (papillary) thyroid cancer. Thyroid cancer risk from PFAS exposure is a global concern given the prevalence of PFAS exposure. Individual PFAS studied here are a small proportion of the total number of PFAS supporting additional large-scale prospective studies...²⁶⁹

2.96 This email was noted by Dr McAnulty with the written response: 'Interesting. Thanks, Kishen. Jeremy'.²⁷⁰

2.97 When asked whether NSW Health was suppressing some of the evidence and research around the health risks of PFAS, Dr Stephen Conaty, Director, Environmental Health Branch, Health Protection NSW, NSW Health noted that the sharing of up-to-date information within NSW Health is a sign that the agency is functioning as it should. He further emphasised the unsettled state of the science around PFAS, pointing to the PFAS health study conducted by the Australian National University, which reported in 2021. He indicated that this study agreed that there is an association between PFAS exposure and cholesterol, however that the study found that the evidence on associations with other health conditions was inadequate:

It's not uncommon within the health department to exchange papers that we come across...there are thousands of new papers that are dealing with various associations between PFAS and health that are published every year...On the particular point about the association with cholesterol, I think if you look at one of the very good systematic reviews that was done as part of the ANU health study, I think on balance they agree that there is an association between PFAS and cholesterol.

But for the vast majority of other associations in that systematic review, they have considered that the evidence is really inadequate. That goes for a number of the cancers that we've been talking about this afternoon, including kidney and testicular cancer, which are two of the cancers that have been identified, particularly in the large occupational cohort studies in the United States. We haven't seen that at lower levels of PFAS exposure. I think that the evidence is evolving, and I think part of this robust discussion that we have within the health department is a sign, I think, of good health, that we're actually taking some of these potential associations seriously.²⁷¹

2.98 However, in its submission to the inquiry, Stop PFAS – Blue Mountains outlined a number of recent studies linking elevated cholesterol levels to PFAS exposure, including the ANU 2021 study, arguing that 'given these concerns, why is NSW Health refusing to conduct community blood tests to determine if our health has been affected by this long-term PFAS exposure?'²⁷²

²⁶⁹ Return to order for papers, 23 October 2024, PFAS in New South Wales, Document G00134_000035958; and van Gerwen M, Colicino E, Guan H, Dolios G, Nadkarni GN, Vermeulen RCH, Wolff MS, Arora M, Genden EM, Petrick LM. 'Per- and polyfluoroalkyl substances (PFAS) exposure and thyroid cancer risk'. *EBioMedicine*. 2023 Nov;97:104831. doi: 10.1016/j.ebiom.2023.104831.

²⁷⁰ Return to order for papers, 23 October 2024, PFAS in New South Wales, Document G00134_000035958.

²⁷¹ Evidence, Dr Stephen Conaty, Director, Environmental Health Branch, Health Protection NSW, NSW Health, 5 February 2025, p 62; see also Australian National University, *PFAS Health Study*, National Centre for Epidemiology and Population Health, Australian National University website, <https://nceph.anu.edu.au/research/research-projects/pfas-health-study>.

²⁷² Submission 47, Stop PFAS – Blue Mountains, p 6.

- 2.99** On the subject of blood testing for individuals in communities that have been exposed to PFAS, NSW Health also confirmed that it does not support this. Dr McNulty indicated that PFAS blood testing of individuals is not helpful in predicting disease nor in diagnosing any health conditions, but that certain studies at the population level can be helpful:

Screening of blood or testing of blood for an individual does not provide evidence that either predicts disease outcome or helps in the diagnosis of any health conditions... There may be a role in national health, and the Australian Government has recommended there may be a role for well-constructed, well-designed monitoring at a population level over time to see what happens with PFAS results in well-constructed studies where there is concern, and there has been a number of studies that ANU has been involved in that have looked at different levels in different communities.²⁷³

- 2.100** Dr McNulty confirmed that such studies at the population level, tracking PFAS levels in blood over time, can be used to determine whether policies to reduce exposure to PFAS chemicals have been successful.²⁷⁴ Dr Conaty stated that the Australian Government had funded the Australian Bureau of Statistics to conduct a study like this to assist in understanding the distribution of PFAS across the Australian population.²⁷⁵

- 2.101** Similarly, Dr Tony Merritt, Public Health Physician, Hunter New England Local Health District indicated that blood testing can be helpful at the population level as part of a carefully constructed research project that considers the other factors that may have influenced someone's health conditions e.g. high cholesterol levels, and includes a comparison group 'so that you can come to valid conclusions about what you're seeing'.²⁷⁶

- 2.102** However, in arguing that blood testing of individuals is not helpful in predicting whether they are at increased risk of disease and therefore whether other tests are necessary, Dr McNulty stated that PFAS is ubiquitous within the community and all people could be expected to have PFAS in their blood.²⁷⁷ When asked about blood testing for firefighters, following evidence that FRNSW would institute a PFAS blood testing regime in the first quarter of 2025²⁷⁸ Dr McNulty also responded 'If the question is about whether that [blood testing] information is going to help that individual know whether or not they have an increased risk of disease, it won't'.²⁷⁹

- 2.103** Dr Jackie Wright of enRiskS cautioned against alarmism around PFAS exposure, and indicated that the quality of any study needs to be checked before conclusions are drawn from it:

Just having exposure to PFAS does not mean you will contract cancer. It's about the threshold above which there's the potential for cancer. Cancer is one of the health end points that we look at—of many—but it's important to understand how that

²⁷³ Evidence, Dr McNulty, 5 February 2025, p 54.

²⁷⁴ Evidence, Dr McNulty, 5 February 2025, p 55.

²⁷⁵ Evidence, Dr Conaty, 5 February 2025, p 55. The results of this study were released on 27 May 2025, see Media release, Australian Bureau of Statistics, 'New ABS data on PFAS levels' 27 May 2025.

²⁷⁶ Evidence, Dr Tony Merritt, Public Health Physician, Hunter New England Local Health District, p 36.

²⁷⁷ Evidence, Dr McNulty, 5 February 2025, p 54.

²⁷⁸ Evidence, Commissioner Jeremy Fewtrell AFSM, Commissioner, Fire and Rescue NSW, 6 December 2025, p 39, see also Answers to questions on notice, Fire and Rescue NSW, 4 March 2025, p 1.

²⁷⁹ Evidence, Dr McNulty, 5 February 2025, p 54.

mechanism or how that health effect might occur. Just calling PFAS "cancer causing" is, like we say, very alarmist.

...one of the tasks we need to do is check the quality of the studies and have they done those studies well. Not all studies are equal when we look into these things.²⁸⁰

- 2.104** Dr Jackie Wright also drew attention to the ubiquity of PFAS, noting that people may become worried about PFAS exposure from a Defence base, fireground or local creek whilst coming into contact with PFAS everyday through consumer products.²⁸¹
- 2.105** Ms Gayle Sloane, Chief Executive Officer, Waste Management and Resource Recovery Association of Australia also made similar comments, drawing attention to the presence of PFAS in widely-used consumer products, stating that it is important to consider the emerging science and have an informed discussion about the level at which PFAS exposure is actually problematic, instead of 'freaking out'.²⁸²
- 2.106** As touched upon in chapter one, in April 2025 (following evidence given by NSW Health to the inquiry), Dr Kerry Chant AO PSM, Chief Health Officer and Deputy Secretary Population and Public Health, also convened the NSW Health Expert Advisory Panel on PFAS to provide independent advice on the available evidence on PFAS, the potential health impacts and the guidance that should be provided to people concerning their exposure. Dr Chant advised that the Panel included clinical experts in toxicology, primary care, public health, pathology, oncology, cardiology and endocrinology, and that it also included academic experts in risk communication and applied epidemiology.²⁸³
- 2.107** The Panel released its final report on 12 August 2025 which found that research on the health effects of PFAS is extensive and growing and that, based on this large body of research, the health effects of PFAS appear to be small.²⁸⁴ The Panel further stated that many studies that have reported an association between PFAS exposure and adverse health effects 'cannot control for bias and confounding' and that chance may play a role in findings. 'Confounding' occurs where an apparent association between a potential risk factor, e.g. PFAS, and an adverse health effect is impacted by the presence of a third factor e.g. smoking, diet or age.²⁸⁵
- 2.108** Given the IARC's review of PFAS, touched upon above, the Panel also specifically scrutinised evidence related to cancer risk and found that the absolute cancer risk from PFAS was low based on the level of exposure in the Australian population and human epidemiological studies.²⁸⁶ The Panel also cast doubt on the IARC's findings that PFOA is cancer-causing and that PFOS is possibly cancer-causing. On PFOA, the Panel stated:

²⁸⁰ Evidence, Dr Jackie Wright, 5 February 2025, p 23.

²⁸¹ Evidence, Dr Jackie Wright, 5 February 2025, p 23.

²⁸² Evidence, Ms Gayle Sloane, Chief Executive Officer, Waste Management and Resource Recovery Association of Australia, 5 February 2025, p 16.

²⁸³ Correspondence from Dr Kerry Chant AO PSM, Chief Health Officer and Deputy Secretary, Population and Public Health to committee, 11 August 2025.

²⁸⁴ NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, p 1.

²⁸⁵ See NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, pp 3, 5 and 9.

²⁸⁶ NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, p 3.

The IARC found PFOA to be cancer causing due to sufficient evidence for cancer in experimental animals and strong evidence of a mechanism of action. IARC found some evidence from human studies that PFOA caused renal cell and testicular cancer, but the evidence was not strong. For other types of cancer, there was little epidemiological evidence in human studies of a connection between PFAS and an increased risk of cancer.²⁸⁷

- 2.109** Regarding PFOS, the Panel stated human studies provided no adequate evidence, and animal studies provided limited evidence, but this chemical was classified as possibly cancer causing because of strong evidence of a mechanism of action.²⁸⁸
- 2.110** The Panel also questioned whether epidemiological studies to date in Australia enabled accurate conclusions to be drawn about the impact of PFAS on health. The Panel stated that for such studies to contribute positively to an understanding of PFAS and provide reliable information about a clinical effect caused by PFAS there must be:
- a gradient of exposure – with some people exposed more, and others less
 - biologically plausible levels of exposure – high enough levels to cause a measurable effect, and
 - a sufficiently large sample of people.²⁸⁹
- 2.111** Further, the Panel stated that studies would need to account for bias and confounders like age, smoking and diet, which have strong association with health effects. However, the Panel found that these characteristics of a useful study cannot currently be met in the context of the Blue Mountains community nor other communities in New South Wales.²⁹⁰
- 2.112** Finally, the Panel found that there is no clinical benefit for an individual to have a blood test for PFAS. The Panel noted that such blood tests are difficult to interpret. Further, they are not likely to guide medical care as PFAS is detected in most people, there are many different PFAS types and blood levels do not predict current or future health impacts.²⁹¹

Evidence from the United States

- 2.113** PFAS is an issue of global concern, and the committee heard from several witnesses from the United States, including university researchers, a clean water campaigner and a state Senator.
- 2.114** Evidence from the USA witnesses differs from that of the NSW Health position, including around PFAS blood testing.
- 2.115** Dr Shiwen Li and Dr Max Aung of the Keck School of Medicine, University of Southern California spoke of studies they had conducted in the USA that added to 'an emerging body of scientific evidence that PFAS causes cancer and that reducing PFAS water concentrations could

²⁸⁷ NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, p 3.

²⁸⁸ NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, p 4.

²⁸⁹ NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, p 5.

²⁹⁰ NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, p 5.

²⁹¹ NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, p 5.

potentially reduce the incidence of cancer' – at the same time acknowledging that their study of cancers has some limitations.²⁹²

- 2.116** In a Southern Californian epidemiological study, these researchers found that those living in areas where various PFAS chemicals were detected in drinking water had blood PFAS concentrations higher than residents in areas that had no PFAS in drinking water. Dr Li stated that this strongly suggested the levels of PFAS in blood could be reduced by limiting PFAS in drinking water.²⁹³
- 2.117** Further, in a national analysis of PFAS levels in drinking water in the US, these researchers observed that detection or exceedance of proposed permissible PFAS concentrations from a number of PFAS were associated with a higher incidence of cancers affecting the digestive, oral, pharyngeal, respiratory and endocrine system, including thyroid cancer.²⁹⁴ The researchers characterised the associations as 'significant' and stated that these findings illustrate the urgent need for more comprehensive research.²⁹⁵
- 2.118** Dr Li also pointed to a 2022 study conducted by the US National Academies of Sciences, Engineering and Medicine (NASEM) that links PFAS with disease in humans, finding 'PFAS is likely to cause kidney and testicular cancer and to have adverse hepatic, immunological, cardiovascular and developmental effects'.²⁹⁶ This study also recommends that the Centers for Disease Control and Prevention in the USA update clinical guidance and advise clinicians to offer PFAS blood testing to patients likely to have had a history of elevated PFAS exposure, for example, people with occupational exposures or who live in areas with known contamination.²⁹⁷
- 2.119** However, in its final report, the NSW Health Expert Advisory Panel on PFAS, discussed above, questioned NASEM's findings on individual blood testing and the use of blood levels to inform clinical care. The Panel stated that NASEM used human health and epidemiological studies that were limited by potential bias, confounding, small effect sizes and 'intermediate outcomes of uncertain relevance'.²⁹⁸ The Panel further noted that the US Centers for Disease Control and

²⁹² Evidence, Dr Shiwen Li, Post-Doctoral Research Scholar, Department of Population and Public Health Sciences, Keck School of Medicine, University of Southern California, 20 May 2025, p 2.

²⁹³ Evidence, Dr Li, 20 May 2025, p 2.

²⁹⁴ Evidence, Dr Li, 20 May 2025, p 2; see also Tabled document, Shiwen Li et al, 'Associations between per-and polyfluoroalkyl substances (PFAS) and county-level cancer incidence between 2016 and 2021 and incident cancer burden attributable to PFAS in drinking water in the United States' (2025) *Journal of Exposure Science & Environmental Epidemiology*.

²⁹⁵ Tabled document, 'Associations between per-and polyfluoroalkyl substances (PFAS) and county-level cancer incidence between 2016 and 2021 and incident cancer burden attributable to PFAS in drinking water in the United States', p 9.

²⁹⁶ Evidence, Dr Li, 20 May 2025, p 2; see also National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Division on Earth and Life Studies; Board on Population Health and Public Health Practice; Board on Environmental Studies and Toxicology; Committee on the Guidance on PFAS Testing and Health Outcomes, *Guidance on PFAS Exposure, Testing, and Clinical Follow-up* (National Academies Press (US), 2022).

²⁹⁷ See National Library of Medicine, National Center for Biotechnology Information, *Review: Guidance on PFAS Exposure, Testing and Clinical Follow-up*, <https://nap.nationalacademies.org/catalog/26156/guidance-on-pfas-exposure-testing-and-clinical-follow-up>.

²⁹⁸ NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, p 5.

Prevention interpreted the weight of evidence differently from NASEM, and that the Agency for Toxic Substances and Disease Registry, a federal United States public health agency overseen by the Department of Health and Human Services, has also appraised the evidence differently.²⁹⁹ Also, the Panel stated that a 2024 editorial in *Toxicology Communications* (an international, peer-reviewed journal on basic, forensic and clinical toxicology) highlighted unresolved issues in NASEM's report, including that there was no input from medical toxicologists to its guidance document.³⁰⁰

2.120 Dr Li and Dr Aung were asked, having regard to their studies and the NASEM recommendation concerning blood testing in patients likely to have had a history of elevated PFAS exposure, whether the Blue Mountains community should have blood testing and health monitoring given they may have been exposed to elevated levels of PFOS in their drinking water for over 30 years.

2.121 Dr Aung indicated that if this contaminated water was indeed the drinking water that they had been consuming, based off the information from the NASEM study, biomonitoring (of which blood testing is a form³⁰¹) would be helpful in informing clinical interventions and follow up. In particular, Dr Aung indicated that biomonitoring studies can assist with early detection to help prevent disease progression:

It's unfortunate to catch thyroid cancer, although early is better than later. According to the NASEM guidelines, there's also other biomarkers indicative of liver damage and of high cholesterol, and those can even be earlier indicators of chronic disease. I totally agree that there is the spectrum of disease prevention. Having biomonitoring studies can help inform early detection and early prediction so that we can implement a healthcare plan that can help prevent the progression of the disease.³⁰²

2.122 Having regard to the research by Drs Li and Aung that identified significant associations between PFAS in drinking water and certain cancers, Dr Li also indicated that blood testing in communities with elevated exposure is essential to further research and thus increased knowledge and understanding. He commented that without having such evidence as to the levels of exposure it is 'impossible to do any other research'.³⁰³

2.123 Two further USA witnesses – Senator Judy Seeberger, a Minnesota State Senator, and Ms Avonna Starck, Director Clean Water Action Minnesota – provided similar evidence. Senator

²⁹⁹ See NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, p 6; and Agency for Toxic Substances and Disease Registry, *About the Agency for Toxic Substances and Disease Registry* (12 November 2024), <https://www.atsdr.cdc.gov/about/index.html>.

³⁰⁰ See NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, p 6; and Taylor and Francis Online, *Toxicology Communications, About this Journal* (2025), <https://www.tandfonline.com/journals/ttxc20/about-this-journal#advertising-information>.

³⁰¹ Commonwealth of Massachusetts, *Biomonitoring Fact Sheet* (2025), [https://www.mass.gov/info-details/biomonitoring-fact-sheet#:~:text=also%20receive%20biomonitoring-,What%20chemicals%20can%20be%20measured?,called%20polychlorinated%20biphenyls%20\(PCBs\)](https://www.mass.gov/info-details/biomonitoring-fact-sheet#:~:text=also%20receive%20biomonitoring-,What%20chemicals%20can%20be%20measured?,called%20polychlorinated%20biphenyls%20(PCBs)).

³⁰² Evidence, Dr Max Aung, Assistant Professor, Division of Environmental Health, Department of Population and Public Health Sciences, Keck School of Medicine, University of Southern California, 20 May 2025, p 8.

³⁰³ Evidence, Dr Li, 20 May 2025, p 8.

Seeberger authored a 2023 Bill, now law, banning PFAS in consumer products from Minnesota. Under the law:

- intentionally added PFAS was banned from 11 consumer item product categories, starting 1 January 2025
- manufacturers will have to disclose their use of PFAS in any items sold in Minnesota from 1 January 2026, and
- by 2032 there will be a ban on the use of all non-essential PFAS in Minnesota.³⁰⁴

2.124 Minnesota is home to the headquarters of the 3M Company which manufactured products containing PFAS chemicals since the mid-1900s.³⁰⁵ 3M advised the committee that it has not manufactured aqueous film-forming foam, which contains long-chain PFAS, for approximately 20 years and that it is on track to stop manufacturing all forms of PFAS by the end of 2025.³⁰⁶

2.125 Some of the 3M chemical waste was disposed of in the east metro of the Minneapolis-Saint Paul area of Minnesota causing a large, underground PFAS plume that contaminated groundwater over a 150 square mile radius, impacting the drinking water of 140,000 people in Minnesota.³⁰⁷ In 2018, the State of Minnesota settled a lawsuit against the 3M Company for \$850 million.³⁰⁸

2.126 The committee was told the story of Amara Strande, a young woman who grew up near the 3M headquarters and in the plume area and was diagnosed with cancer at the age of 15 years. Amara campaigned for a ban on PFAS chemicals. She passed away in 2023 at the age of 20 years and the law to ban PFAS in Minnesota was called 'Amara's law' in honour of her.³⁰⁹ Ms Starck pointed to Amara's story in voicing her strong support for medical monitoring to aid in early detection:

At the end of the day, I think the story of this young woman, Amara Strande, who spent these last few months of her life walking the halls of the legislature and telling her story—she grew up in the plume area. She was diagnosed with cancer when she was 15 years old. The doctors expressed to her family that, had they caught it early, she might have had a better chance. We are huge advocates of medical monitoring here...The science is there, proving that we are on the right side of history...³¹⁰

³⁰⁴ See Evidence, Senator Judy Seeberger, Minnesota State Senator, Representing Senate District 41, p 10; and Evidence, Ms Avonna Starck, State Director, Clean Water Action Minnesota, 20 May 2025, p 10.

³⁰⁵ Rachel Salvidge and Leana Hosea, '3M knew firefighting foams containing PFAS were toxic documents show', *The Guardian*, 16 January 2025.

³⁰⁶ Submission 50, 3M Company, p 1.

³⁰⁷ Minnesota Center for Environmental Advocacy, *Defending Minnesotans' Health from "forever chemicals"*, <https://www.mncenter.org/defending-minnesotans-health-forever-chemicals#:~:text=Minnesota%20is%20home%20to%20one,Matt%20Norris%2C%20Sen>; see also Evidence, Ms Starck, 20 May 2025, p 10.

³⁰⁸ Minnesota Pollution Control Agency and Department of Natural Resources, *Minnesota 3M PFAS Settlement*, <https://3msettlement.state.mn.us/>

³⁰⁹ Evidence, Ms Starck, 20 May 2025, p 15 and Deena Winter, 'Outspoken PFAS critic Amara Strande dies from cancer', *Minnesota Reformer*, 3 May 2023.

³¹⁰ Evidence, Ms Starck, 20 May 2025, p 14.

- 2.127 Speaking of the differences between USA and Australian views on PFAS and their possible health effects, this time in the context of cholesterol, Mr Dee remarked that Australia is behind:

When I spoke to Rob Bilott, who is our legal adviser in America—he's the man who was portrayed by Mark Ruffalo in the film *Dark Waters*—he said the Australian health sector is very, very behind on accepting the very strong link between PFAS chemicals and increased cholesterol.³¹¹

Committee comment – health concerns

- 2.128 The committee notes the evidence from Mr Jon Dee regarding high cholesterol amongst a number of Blue Mountains residents, in circumstances where they may have been exposed to elevated levels of PFAS in their drinking water for over 30 years.
- 2.129 The committee is concerned that the official position of NSW Health, and the government's more broadly, on the possible health effects of PFAS, and on blood testing, differs from evidence coming out of certain other jurisdictions and bodies including the US and the World Health Organisation.
- 2.130 NSW Health's position is that of the Federal Government's National Health and Medical Research Council which cautions against over-stating the health risks of PFAS, that the available evidence around the health effects of PFAS is limited, and that emphasises that while PFAS has been *associated* with certain health effects in humans, no *causative relationship* has been established. Further, the NSW Health Expert Advisory Panel on PFAS found that research on the health effects of PFAS is extensive and growing and that, based on this large body of research, the health effects of PFAS appear to be small. The committee is concerned that this approach does not appropriately weigh international developments in research on the ways in which exposure to PFAS impacts human health, having regard to the following factors:
- The International Agency for Research on Cancer (IARC), an intergovernmental agency forming part of the World Health Organization of the United Nations, classifying PFOA as 'carcinogenic to humans' and PFOS as 'possibly carcinogenic to humans' in 2023, with a comprehensive monograph supporting these classifications published in February 2025.³¹²
 - The 2022 US National Academies of Sciences, Engineering, and Medicine (NASEM) study that links PFAS with disease in humans, finding that PFAS is likely to cause kidney and testicular cancer and to have adverse hepatic, immunological, cardiovascular and developmental effects.
 - Research conducted by Dr Shiwen Li and Dr Max Aung of the University of Southern California, with others, finding significant associations between PFAS in drinking water and various cancers in the USA, on which they place quite a different emphasis from the one evident in the approach of NSW Health. Instead of stressing the difference between associations and causation, and pointing to limited evidence around the health effects of

³¹¹ Evidence, Mr Dee, 3 February 2025, p 5.

³¹² World Health Organisation International Agency for Research on Cancer, *IARC Monographs Volume 135: Perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS)*, (14 February 2025), World Health Organisation, <https://www.iarc.who.int/news-events/iarc-monographs-volume-135-perfluorooctanoic-acid-pfoa-and-perfluorooctanesulfonic-acid-pfos/>.

PFAS, these researchers emphasise that their studies, whilst having limitations, contribute to an emerging body of scientific evidence that PFAS is associated with cancer and illustrate an urgent need for more comprehensive research.

- 2.131** The NSW Health Expert Advisory Panel on PFAS has cast some doubt on the IARC findings, and the NASEM study. However, the committee is of the view that given the unsettled nature of the science around PFAS to date, and consistent with the precautionary principle, the findings of the IARC, NASEM and Drs Li and Aung with respect to the possible health effects of PFAS should be taken extremely seriously.
- 2.132** The committee also notes that there may be some level of disconnect between the public position of NSW Health on the possible links between PFAS and certain adverse health effects, and internal views surrounding these matters. Email communications brought to the committee's attention indicate that NSW Health officials exchange information and research on the possible links between PFAS and certain health effects and that this information is taken seriously at a senior level, notwithstanding that NSW Health continues its public position of appearing to downplay the possible health risks of PFAS.
- 2.133** In short, in the face of the above factors, the committee considers that the NSW Health position – and by extension the position of the government – unduly downplays the possible health risks of PFAS. While the science in this area is rapidly evolving, and alarmism must be avoided, studies finding associations between PFAS and disease must be taken extremely seriously and the public genuinely informed as to the risks, and further research supported.
- 2.134** Following from this, the committee supports blood testing, and medical monitoring more generally, for individuals in communities that have been exposed to elevated levels of PFAS. Again, the NSW Health position – that PFAS blood testing of individuals is not recommended because it is not helpful in predicting disease nor in diagnosing any health conditions – appears to run counter to evidence emerging from the USA in particular:
- the 2022 NASEM recommendation for blood testing of patients likely to have had a history of elevated PFAS exposure
 - Dr Aung's evidence that where people have been drinking PFAS contaminated water biomonitoring can assist with early intervention, and with the development of health care plans to prevent the progression of disease
 - Ms Avonna Starck's evidence in strong support of medical monitoring noting the case of Amara Strande who grew up in the Minnesota PFAS plume area, passing away from cancer at only 20 years old and whose doctors indicated, had they been able to intervene earlier, may have had a better chance of survival.
- 2.135** As already noted, the NSW Health Expert Advisory Panel on PFAS has cast doubt on NASEM's study. However, given the unsettled state of the science, and consistent with the precautionary principle, the recommendation of NASEM surrounding blood testing should be taken extremely seriously, especially when considered together with the evidence of Dr Aung and Ms Starck on these matters.
- 2.136** Blood testing of communities with elevated PFAS exposure can also inform much needed research into PFAS exposure and possible health effects. As Dr Li has pointed out, without knowing exposure levels it is impossible to do further research. In addition, it would appear to

be consistent with advice from Fire and Rescue NSW that it was establishing a PFAS blood testing program for firefighters in the context of their increased occupational exposure.

- 2.137** The committee further notes that, similar to Dr Li, Dr Merritt of the Hunter Local Health District pointed out the importance of blood testing at the population level to further research the possible health effects of PFAS, whilst cautioning that any such research needs to be carefully constructed and to use a comparison group to assist in reaching valid conclusions.

Finding 2

The advice provided by NSW Health on PFAS, including on potential associations with certain types of cancer and other diseases and whether individuals exposed to higher levels of PFAS should get their blood tested, requires further scrutiny given conflicting evidence, the unsettled state of the science, and the need to proceed consistent with the precautionary principle.

Finding 3

Blood testing and medical monitoring of willing individuals within communities that have been affected by elevated levels of PFAS should be supported by government to:

- aid in early detection of adverse health impacts
 - inform health care plans to prevent disease progression, and
 - inform further, much needed research about the potential health effects of PFAS exposure.
-

- 2.138** Given the Blue Mountains community may have been drinking PFAS contaminated water for over 30 years and given the reports of high cholesterol, the committee considers blood testing would be worthwhile at an individual and population level. In the circumstances, the committee recommends that the NSW Government support blood testing for any willing Blue Mountains residents to:

- determine whether PFAS concentrations are higher in the blood of Blue Mountains community members when compared against the general population
- determine whether higher PFAS concentrations, if any, are associated with a higher incidence of adverse health effects e.g. high cholesterol and cancer
- help inform any clinical interventions on an individual level, if relevant, to prevent the progression of disease.

Recommendation 4

That the NSW Government support blood testing for any willing Blue Mountains residents to:

- determine whether PFAS concentrations are higher in the blood of Blue Mountains community members when compared against the general population
 - determine whether higher PFAS concentrations, if any, are associated with a higher incidence of adverse health effects e.g. high cholesterol and cancer
 - help inform any clinical interventions on an individual level, if relevant, to prevent the progression of disease.
-

Chapter 3 PFAS affecting The Hunter, Central Coast and North Coast of New South Wales

This chapter explores matters relating to PFAS that have arisen in the Hunter, Central Coast and North Coast regions of New South Wales. It starts by exploring PFAS-related matters in the Hunter, in particular the 2015 discovery of PFAS contamination in Williamstown New South Wales, connected with the Williamstown RAAF Base and Newcastle Airport. This includes an exploration of the government's response to this contamination, continuing concerns raised by local residents, and opportunities for improved management of identified issues. The chapter then explores PFAS-related matters affecting Central Coast waterways, the Hunter River, and the Mid North Coast including some case studies touching upon PFAS treatment methods and PFAS-related concerns in the aquaculture industry.

Williamstown

Discovery of PFAS contamination in Williamstown

- 3.1 Williamstown sits in the Hunter region of New South Wales, a 'rural hub' 25 minutes from Newcastle and 30 minutes from Nelson Bay. It is home to Newcastle Airport and the Williamstown RAAF Base.³¹³
- 3.2 Williamstown has been affected by PFAS contamination as a result of the historic use of firefighting foam.³¹⁴ In 2015, the NSW Environment Protection Authority (EPA) issued a media release to advise that legacy firefighting chemicals had been discovered around the Williamstown RAAF Base and Newcastle Airport.³¹⁵ The government also advised that PFAS chemicals had been detected in water leaving the RAAF base which sits on top of a section of the Tomago Sandbed aquifer.³¹⁶
- 3.3 This aquifer is an important underground water source consisting of clay and rock layer under fine sand. Water from the Tomago Sandbeds is vital to Hunter Water's ongoing and backup supply system, providing drinking water to Newcastle, the Lower Hunter regions, and other surrounding areas.³¹⁷

³¹³ See Department of Planning, Housing and Infrastructure, *Hunter Regional Plan* (2025), <https://www.planning.nsw.gov.au/plans-for-your-area/regional-plans/hunter-regional-plan-2041#:~:text=The%20Hunter%20Region%20includes%20the,Stephens%2C%20Singleton%20and%20Upper%20Hunter; and Visit NSW, Williamstown and Medowie> (2025), <https://www.visitnsw.com/destinations/north-coast/port-stephens-area/destination-information/williamtown-and-medowie>.

³¹⁴ Evidence, Mr Darren Cleary, Managing Director, Hunter Water, 4 February 2025, p 20.

³¹⁵ Evidence, Mr David Gathercole, Director, Operations, NSW Environment Protection Authority, 4 February 2025, p 37.

³¹⁶ Evidence, Mr Cleary, 4 February 2025, p 20.

³¹⁷ Hunter Water, *Tomaree and Tomago Sandbeds* (2025), <https://www.hunterwater.com.au/water-and-environment/your-water-supply/water-sources/tomago-sandbeds#:~:text=current%20water%20storage-,The%20catchment,the%20total%20water%20supply%20system>.

Management of PFAS contamination at Williamtown

Management framework – investigation phase

- 3.4 As a Defence site, the Williamtown RAAF Base is Australian Government land.³¹⁸ Therefore, following the announcement of the PFAS contamination at Williamtown, the Department of Defence and NSW Government agencies embarked on investigations.³¹⁹
- 3.5 The Department of Defence started a full environmental investigation to determine the extent of the contamination and any risks to the environment and human health.³²⁰ 2015 was also the year that Defence started its Defence Investigation and Management Program. This program focuses on 28 priority sites in Australia, of which the RAAF Base Williamtown is one. Defence advised that it prioritised these sites as they were known sites for storage or use of PFAS-containing legacy firefighting foams.³²¹
- 3.6 The NSW Government established the Williamtown Investigation Area, issuing a map and dietary advice to minimise PFAS exposure. This included precautionary dietary advice for seafood and fish caught at upper Tilligerry Creek and Fullerton Cove.³²²
- 3.7 The government also established the NSW PFAS Expert Panel (discussed in chapter one) to provide informed advice to the EPA, to assist the government to develop its response to PFAS issues, including contamination.³²³
- 3.8 In August 2016, the Department of Defence released its first Human Health Risk Assessment and Environmental Risk Assessment Reports. They were reviewed by the NSW Government and the Expert Panel and the appropriateness of the precautionary dietary advice, fishing closures and Investigation Area were confirmed, to remain in place. Drinking contaminated groundwater was identified as the major health exposure pathway for humans, and various data gaps were also identified.³²⁴

³¹⁸ See Evidence, Mr Gathercole, 4 February 2025, p 37.

³¹⁹ NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>.

³²⁰ NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>.

³²¹ Submission 64, Department of Defence, p 2.

³²² NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>.

³²³ NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>.

³²⁴ NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>.

- 3.9 In December 2017, the Department of Defence released a detailed Human Health Risk Assessment and Environmental Risk Assessment. After reviewing the Human Health Risk Assessment, the Expert Panel recommended some changes to better reflect contamination exposure levels of residents in certain areas and this included extending management areas beyond the boundaries of the Investigation Area that the EPA established in 2015.³²⁵
- 3.10 Consequently, the Investigation Area is now known as the Williamtown Management Area and it is made up of three zones:
- the primary management zone which has significantly higher levels of detected PFAS and to which the strongest advice applies
 - the secondary management zone which has some detected levels of PFAS
 - the broader management zone within which the topography and hydrology means PFAS detections could occur both now, and in the future.³²⁶
- 3.11 In October 2018, the Department of Defence released the Ecological Risk Assessment, assessing the risks PFAS presented to plants and animals around the Williamtown area.³²⁷

Management framework – ongoing management and monitoring

- 3.12 The investigation phase regarding the PFAS contamination in Williamtown is complete, and there is now an ongoing program of management and monitoring which, again, involves the Department of Defence and the NSW Government.³²⁸
- 3.13 The NSW Government is continuing to provide precautionary dietary advice to Williamtown community members as new information comes to hand.³²⁹

engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring.

³²⁵ See NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>; see also Media release, Department of Defence, 'Williamtown Investigation Area', 19 November 2017.

³²⁶ NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>.

³²⁷ NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>.

³²⁸ NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>.

³²⁹ NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>.

- 3.14** The Department of Defence has released the Williamtown PFAS Management Area Plan, including an ongoing monitoring plan. The management plan outlines the actions Defence will take over coming years to manage the PFAS in Williamtown. Under the monitoring plan, Defence will monitor PFAS levels in the area to ascertain whether these actions are successfully reducing PFAS around the RAAF Base.³³⁰
- 3.15** The EPA and Expert Panel will also continue to review any reports released by Defence 'to ensure they are scientifically sound' and that precautionary dietary advice and the Williamtown Management Area map remain suitable.³³¹

Further detail concerning government action to manage PFAS contamination in Williamtown – drinking water

- 3.16** Having regard to the above overarching management framework, individual agencies – Defence, Hunter Water, the Hunter New England Health District, and the EPA – provided further detail about activities undertaken to manage PFAS contamination in Williamtown.
- 3.17** With regard to action to manage drinking water, Mr Darren Cleary, Managing Director, Hunter Water explained that Hunter Water is the state-owned water corporation with responsibility for the Williamtown area, and as detailed in chapter one, it manages raw and drinking water supplies:

Hunter Water provides water, wastewater and some stormwater and recycled water services to a population of about 640,000 people across the lower Hunter region... We are responsible for drinking water management from catchment to tap, owning and managing two surface water dams, Chichester and Grahamstown, and several aquifer water sources—the Tomago, Tomaree and Anna Bay sand beds—and drawing the water from the Paterson, Allyn and Williams rivers. Construction is currently underway on our region's next water source augmentation, our new desalination plant at Belmont, anticipated to be completed by 2028.³³²

- 3.18** Mr Cleary further explained that following the 2015 announcement of PFAS contamination in Williamtown, Hunter Water connected 350 properties within the Investigation Area to Hunter Water's reticulated water network to ensure access to safe drinking water. These properties in Williamtown, Salt Ash and Fullerton Cove were mainly large rural properties and they did not have a connection to Hunter Water's services. The connection was performed at a cost of \$4.9 million, later funded by the Australian Government.³³³
- 3.19** Hunter Water also developed a plan to manage the Tomago Sandbeds drinking water source via the PFAS operating strategy for the Tomago Bore Field, approved in 2018, and which Mr Cleary advised, as at 4 February 2025, continued to comply with the Australian Drinking Water

³³⁰ NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>.

³³¹ NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>.

³³² Evidence, Mr Cleary, 4 February 2025, p 20.

³³³ Evidence, Mr Cleary, 4 February 2025, pp20 and 24.

Guidelines (ADWG). Mr Cleary advised that under the strategy, two pump stations near the RAAF Base, seven and nine, have been embargoed and comprehensive water quality monitoring is undertaken before water is supplied to customers.³³⁴

3.20 Bore fields are expanses where bores, or wells, are drilled into the ground to access groundwater. They are located to access the water in underground aquifers, like the Tomago Sandbeds aquifer, after which it is pumped to the surface, treated and piped to customers.³³⁵ The Tomago Sandbeds cover a large, 100 square kilometre radius over which 500 bores have been drilled.³³⁶

3.21 Mr Cleary further advised that Hunter Water has implemented an extensive PFAS testing and reporting program for the bore field, and across its entire network, with a summary of results published on its website each month:

...we have implemented an extensive PFAS testing and reporting program for the bore fields and also across our water network. Under this program, Hunter Water samples for PFAS in our catchments and untreated water at all six of our drinking water treatment plants and at 83 locations across our drinking water network. A summary of the results is published on our website each month for transparency with our community.³³⁷

3.22 In addition, each quarter, Hunter Water, in conjunction with NSW Health, reviews all PFAS results across its drinking water system. Since 2016, 4,000 drinking water samples have been collected as well as 4,000 raw, untreated water samples from Hunter Water's catchments and treatment plants.³³⁸

3.23 Mr Cleary stated that there are occasionally low-level detections of PFAS in treated water and that, of the 4,000 samples taken since 2016, 150 have contained PFAS. Where this happens there are 'documented procedures for responding...including engagement with NSW Health'.³³⁹

3.24 Mr Cleary further advised on 4 February 2025 that Hunter Water's analysis indicated that its water supplies would not only meet the ADWG that were current at that time but that it would meet the proposed new guidelines, to come into force later in 2025 (which have now been published, as at 25 June 2025, and are discussed in chapters one and two).³⁴⁰ However, having

³³⁴ Evidence, Mr Cleary, 4 February 2025, p 20.

³³⁵ See SA Health, *Bore water* (2 April 2022), <https://www.sahealth.sa.gov.au/wps/wcm/connect/public+content/sa+health+internet/public+health/water+quality/bore+water/bore+water#:~:text=Bore%20water%20is%20groundwater%20that,organisms%20that%20are%20potentially%20harmful>; and Hunter Water, *Tomaree and Tomago Sandbeds* (2025), <https://www.hunterwater.com.au/water-and-environment/your-water-supply/water-sources/tomago-sandbeds#:~:text=current%20water%20storage-,The%20catchment,the%20total%20water%20supply%20system>.

³³⁶ Evidence, Mr Cleary, 4 February 2025, p 23.

³³⁷ Evidence, Mr Cleary, 4 February 2025, p 20.

³³⁸ Evidence, Mr Cleary, 4 February 2025, p 20.

³³⁹ Evidence, Mr Cleary, 4 February 2025, p 21.

³⁴⁰ Evidence, Mr Cleary, 4 February 2025, p 21; see also Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines', 25 June 2025; and Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41.

to close the two pump stations – seven and nine – under its strategy raises water security issues for the area:

Our sand beds are our drought water reserve, providing especially valuable water during dry periods. The embargoed bores can provide a combined yield of around one billion litres per year on average, and up to 10 million litres per day during peak production, representing about 10 per cent of the accessible storage from the Tomago Sandbeds. The cost of permanently losing access to this water to our community is in the order of 50 to 150 million, and would require us to bring forward our region's next source augmentation to maintain our water security.³⁴¹

3.25 Mr Cleary also confirmed that, with the exception of the abovementioned Williamtown water reticulation program, the 'not insignificant' cost of Hunter Water's PFAS management response has been met by its customers through water bills. Sampling and testing alone cost \$235,000 in the last financial year, with similar costs having been incurred since 2016.³⁴²

3.26 Hunter Water also advised that engagement with the local community has been a vital part of its PFAS management strategy. Mr Cleary stated Hunter Water had been involved in a series of community open days in conjunction with NSW Health and the EPA, providing information and answering questions in an effort to allay concerns as much as possible whilst maintaining a commitment to transparency:

We spent a lot of time with our State Government colleagues—particularly within NSW EPA and NSW Health—going to community open days and events, and responding to questions with respect to the understanding of how the sand beds operate, the hydrology of the sand beds and the testing we were doing...The key lesson for us was engaging with the local community, being open with them, providing the time to answer the questions and being clear about what we did and didn't know.³⁴³

3.27 Mr Cleary further explained that a common question Hunter Water was called on to answer was why it was confident that the groundwater from the RAAF Base was not draining into Grahamstown Dam, which is the Hunter's largest drinking water supply dam. Hunter Water also confirmed that it continues to post a range of information and factsheets to its website surrounding the PFAS matters affecting Williamtown.³⁴⁴

3.28 Regarding stakeholder engagement, Hunter Water confirmed with respect to its role providing wastewater services that, in an effort to control PFAS at its source, it has had some difficult engagements with its commercial trade waste customers. Mr Cleary stated:

...our wastewater network collects sewage from homes and businesses across the region. Like our water treatment processes, our existing wastewater treatment processes are not effective at removing PFAS chemicals should they enter the sewer network. As a result, our focus has been on preventing PFAS being disposed of by our customers

³⁴¹ Evidence, Mr Cleary, 4 February 2025, p 21.

³⁴² Evidence, Mr Cleary, 4 February 2025, p 21.

³⁴³ Evidence, Mr Cleary, 4 February 2025, p 24.

³⁴⁴ Evidence, Mr Cleary, 4 February 2025, p 25; and Hunter Water, *Grahamstown Dam* (2025), <https://www.hunterwater.com.au/water-and-environment/your-water-supply/water-sources/grahamstown-dam>.

within their wastewater discharges. This has required proactive and, at times, difficult engagements with our commercial trade waste customers.³⁴⁵

Further detail concerning government action to manage PFAS contamination in Williamtown – public health

3.29 Another entity to provide evidence about activities undertaken to manage the PFAS contamination in Williamtown was the Hunter Local Health District, with a focus on the government actions taken to manage public health.

3.30 Consistent with Mr Cleary's evidence, Dr Tony Merritt, Public Health Physician, Hunter New England Local Health District advised of the community engagement role that public health officials played in responding to the discovery of PFAS contamination in Williamtown in 2015, conducting community drop-ins and providing a local mental health service:

I've contributed to public health unit engagement with PFAS issues since 2015 and, in addition to Williamtown, there has been a range of other sites impacted by PFAS in Hunter New England over this period. In terms of our roles, the public health unit [of Hunter Local Health District] has a key role in supporting and informing local communities about public health risks and how these can be mitigated. We have, for example, participated in many community drop-in sessions in Williamtown, and the local health district provided a dedicated mental health service to that community when this was recognised as a significant need early in the response.³⁴⁶

3.31 Dr Merritt further advised of the active support and education that the public health unit of the Hunter New England Local Health District had provided to local clinicians which he described as 'particularly critical in the earlier response to PFAS in the Williamtown community'. Dr Merritt stated that the public health unit had operated many sessions for local general practitioners and that they continue to provide up to date information through the local primary health network.³⁴⁷

3.32 With regard to studies of the health impacts of the PFAS contamination on the residents of Williamtown, Dr Merritt confirmed that the lead study, and the study upon which New South Wales health authorities had relied was the PFAS health study conducted by the Australian National University (ANU), which reported in 2021.³⁴⁸

3.33 Dr Merritt explained that this study was conducted across three locations, Williamtown, Oakey in Queensland, and Katherine in the Northern Territory, and he identified that its notable findings were of increased psychological stress and cholesterol levels in Williamtown residents:

I guess the most detailed study that we can draw on, in terms of science around the health impacts, was done by the Australian National University, and that reinforced our

³⁴⁵ Evidence, Mr Cleary, 4 February 2025, p 21.

³⁴⁶ Evidence, Dr Tony Merritt, Public Health Physician, Hunter New England Local Health District, 4 February 2025, p 28.

³⁴⁷ Evidence, Dr Merritt, 4 February 2025, p 28.

³⁴⁸ Evidence, Dr Merritt, 4 February 2025, p 28; see also Australian National University, *PFAS Health Study*, National Centre for Epidemiology and Population Health, Australian National University website, <https://nceph.anu.edu.au/research/research-projects/pfas-health-study>.

own impressions. We could talk about that at length, but I guess the headline findings there were around the psychological distress—so that really significant finding. That was borne out by our experience with community members at those early drop-in centres. The ANU study looked at levels of PFAS in blood samples, they looked at people's exposure histories, and they looked at data linkage with health outcomes across a broad range of things. In addition to that psychological distress, they noted an increase in cholesterol levels in Williamtown residents.³⁴⁹

- 3.34** Dr Merritt also confirmed that the Australian Government funded a blood testing program for Williamtown residents in the early stages of the response and he confirmed that blood testing was part of the ANU research study.³⁵⁰
- 3.35** As discussed in chapter two, NSW Health does not support PFAS blood testing at the individual level, stating that it is not helpful in predicting disease nor in diagnosing any health conditions.³⁵¹ However, Dr Merritt indicated it can be useful at the population level as part of carefully constructed research that considers the other factors that may have influenced someone's health e.g. high cholesterol levels, and includes a comparison group 'so that you can come to valid conclusions about what you're seeing'.³⁵²
- 3.36** The final report of the NSW Health Expert Advisory Panel on PFAS, published on 12 August 2025, and discussed in earlier chapters, also found that levels of PFAS exposure in Australia, coupled with the size of populations, mean it is challenging to conduct epidemiological research to reliably inform about the health effects of PFAS. However, in commenting on future priorities for research it did confirm that, in the right conditions, Australian research should be considered.³⁵³

Further detail concerning government action to manage PFAS contamination in Williamtown – management of contaminated sites

- 3.37** The EPA and the Department of Defence also provided further detail about the government action undertaken to manage the PFAS contamination in Williamtown, with a focus on the management of contaminated sites.
- 3.38** As touched on above, the Williamtown RAAF Base, from which the PFAS contamination in Williamtown originates, is a Defence site and thus Australian Government land. The EPA has no power to compel the Australian Government to undertake remediation on Australian

³⁴⁹ Evidence, Dr Merritt, 4 February 2025, p 28.

³⁵⁰ Evidence, Dr Merritt, 4 February 2025, p 36. Note, p x. of the ANU report states: "These findings should be interpreted cautiously considering the study's limitations. Our study population is not representative of the general populations of Katherine, Oakey and Williamtown, or Alice Springs, Dalby, and Kiama and Shellharbour. Community members chose whether or not to participate in the Blood Serum Study and, therefore, our study population was 'self-selected', not randomly sampled. Participants may have been more or less likely to have been exposed to PFAS than non-participants. Further, blood serum PFAS concentrations and biochemical markers are samples collected at a single point in time and do not reflect historical exposure or health."

³⁵¹ See Evidence, Dr Stephen Conaty, Director, Environmental Health Branch, Health Protection NSW, NSW Health, 5 February 2025, p 62.

³⁵² Evidence, Dr Merritt, 4 February 2025, p 36.

³⁵³ NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, p 7.

Government land.³⁵⁴ This means that the EPA leads the PFAS investigation program in New South Wales (a program to investigate, manage, monitor and remediate PFAS contaminated sites), and under New South Wales law, the polluter is to pay for contaminated sites. However, the EPA has no legal powers to compel Defence to undertake remediation action at the contaminated Williamtown RAAF Base.³⁵⁵

- 3.39** Notwithstanding this, the NSW Government does have a role coordinating with Defence to manage the contamination in Williamtown. This includes reviewing any reports released by Defence 'to ensure they are scientifically sound' and that the precautionary dietary advice and the associated Williamtown Management Area map – determined by the government – remain suitable.³⁵⁶
- 3.40** The EPA further advised that, despite its lack of power to compel action regarding PFAS contamination on Australian Government land, it still advocates on behalf of impacted communities, to ensure appropriate assessment and management.³⁵⁷ With regard to Williamtown, Mr Stephen Beaman, Executive Director, Regulatory Practice and Services, EPA stated 'We've been pushing Defence pretty hard and we want to stay on the hammer to ensure that if they say they're going to do something, then they do it'.³⁵⁸
- 3.41** As noted earlier, Defence has released the Williamtown PFAS Management Area Plan, including an ongoing monitoring plan, outlining the actions it will take over coming years to manage the PFAS in Williamtown. Under the monitoring plan, Defence will monitor PFAS levels in the area to ascertain whether these actions are successfully reducing PFAS around the RAAF Base.³⁵⁹
- 3.42** Defence provided some further detail about how monitoring is conducted under such plans, including sampling of private properties and publishing sampling results on the Defence website. It also confirmed that it coordinates with the EPA prior to publication:

At each program site, Defence has an Ongoing Monitoring Plan, which sets out how Defence regularly monitors PFAS to track changes where PFAS are found and at what concentrations. This allows Defence to manage potential PFAS exposure risks and provide regular updates to impacted communities. Defence frequently conducts ad hoc sampling of private properties at the request of an owner.

³⁵⁴ See Evidence, Mr Gathercole, 4 February 2025, p 37.

³⁵⁵ See Evidence, Mr Gathercole, 4 February 2025, p 37.

³⁵⁶ NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>; see also Submission 64, Department of Defence, p 5.

³⁵⁷ Evidence, Mr Gathercole, 4 February 2025, p 37.

³⁵⁸ Evidence, Mr Stephen Beaman, Executive Director, Regulatory Practice and Services, NSW Environment Protection Authority, 5 February 2025, p 55.

³⁵⁹ NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>.

When Defence conducts sampling at private properties, the results are provided and communicated in plain English to the owner. Defence provides monitoring results to the...EPA...[and] publishes periodical Ongoing Monitoring Reports and summary factsheets on its website. These are provided to the EPA for input before publication.

Where a resident has requested that property identification be kept private, this information is withheld from public reporting. Defence maintains a comprehensive database of monitoring data from the program.³⁶⁰

- 3.43** In addition, Defence provided detail as to the sort of remediation actions that take place under PFAS area management plans, such as the one that applies in Williamtown, to minimise the amount of PFAS leaving Defence sites, remove PFAS sources, and treat water:

Remedial works target source areas to minimise PFAS leaving a Defence property....Remediation includes a combination of activities such as removal of PFAS sources and ongoing water treatment to target the higher contamination concentrations.

...Remediating PFAS in soil on Defence sites includes extraction, onsite treatment, offsite thermal destruction and controlled landfill disposal. Soils with the highest concentrations of PFAS are excavated and taken to a licenced facility for thermal destruction. Soils with lower concentrations of PFAS are often managed onsite through remedial works involving stabilisation or capping.³⁶¹

- 3.44** Defence also indicated that significant action has taken place under its Investigation and Management Program to treat water at the Williamtown RAAF Base:

...Remediating PFAS in groundwater and surface water on Defence sites includes commercially available treatment methods involving concentration, separation and collection of PFAS. These include the use of materials to absorb PFAS, such as activated carbon or ion exchange resins, or separation processes such as reverse osmosis, nano-filtration and foam fractionation. At RAAF Base Williamtown, Defence uses ion exchange resins to absorb PFAS that is then extracted from the resins in a highly concentrated form and sent for thermal destruction at a licensed facility in Victoria. So far, Defence has treated more than 5.5 billion litres of water at RAAF Base Williamtown using this technology and collected more than 53,000 grams of PFAS.³⁶²

- 3.45** Mr Beaman of the EPA also commented on Defence action at Williamtown to treat contaminated water, stating that Defence had installed pumping wells in the primary management zone, just outside the RAAF base, so that contaminated water could be pumped back onto the base and treated.³⁶³

- 3.46** Defence further advised that following an independent review of land uses around key Defence sites impacted by PFAS, conducted by Mr Jim Varghese AM, the Australian Government is 'establishing a PFAS National Coordinating Body with senior representation from all key

³⁶⁰ Submission 64, Department of Defence, pp 3-4.

³⁶¹ Submission 64, Department of Defence, p 3.

³⁶² Submission 64, Department of Defence, p 3.

³⁶³ Evidence, Mr Beaman, 5 February 2025, p 55.

portfolios to promote a stronger and more integrated whole of government response to PFAS management'.³⁶⁴

3.47 As an initial step, the PFAS National Coordinating Body will establish a Williamtown Working Group to pilot new initiatives in the community, working in conjunction with the NSW Government, and local government.³⁶⁵

3.48 Finally, in discussing the EPA's role of providing precautionary dietary advice to communities affected by significant levels of PFAS contamination, Mr David Gathercole, Director, Operations, emphasised the importance of local surveys and one-on-one engagement with locals so that advice is appropriately tailored, noting that doorknocking has taken place in Williamtown:

For communities impacted by significant off-site PFAS contamination, we provide tailored precautionary dietary advice. We often undertake local surveys to understand people's use of groundwater and whether they grow their own produce. We often follow up with individual doorknocking so that we can have one-on-one conversations when providing this advice so the resident can understand absolutely what that means for them. We're always looking for better ways to engage with impacted communities and how we can provide simple advice to minimise their exposure to PFAS.³⁶⁶

Ongoing concerns raised by local residents – Dr Michael Walton and Mr Paul Rooms

3.49 This section explores ongoing concerns raised by local residents Dr Michael Walton and Mr Paul Rooms, notwithstanding the above government measures to manage PFAS contamination in Williamtown.

The concerns

3.50 Dr Michael Walton and Mr Paul Rooms are local residents of Pacific Dunes Medowie, New South Wales. Pacific Dunes is community association land, near the Williamtown RAAF Base, and within that land is the Pacific Dunes Golf Course, Medowie.³⁶⁷ The golf course is an approximate 4.5 kilometre drive from the RAAF Base.³⁶⁸

³⁶⁴ See Submission 64, Department of Defence, p 2; and Department of Defence, *National PFAS Investigation and Management Program*, <https://www.transparency.gov.au/publications/defence/department-of-defence/department-of-defence-annual-report-2023-24/chapter-7---environmental-performance/national-pfas-investigation-and-management-program>.

³⁶⁵ Submission 64, Department of Defence, p 2.

³⁶⁶ Evidence, Mr Gathercole, 4 February 2025, p 38, see also p 41.

³⁶⁷ See Evidence, Mr Paul Rooms, local resident, 4 February 2025, p 4; and Evidence, Dr Michael Walton, local resident, 4 February 2025, p 3.

³⁶⁸ Google Maps, <https://www.google.com/maps/dir/RAAF+Base+Williamtown,+Williamtown+RAAF+NSW+2314/Pacific+Dunes,+18+Hole+Championship+Golf+Course,+Huntingdale+PI,+Medowie+NSW+2318/@-32.7783163,151.8403927,14z/data=!3m1!4b1!4m14!4m13!1m5!1m1!1s0x6b736e88920c56c3:0xf017d68f9f0ac20!2m2!1d151.8526428!2d->

- 3.51** Mr Rooms informed the committee that in June 2024 he noticed foam accumulating in a drain on the golf course and discovered a pump and foamy body of water about 100 metres away. He stated that he believed the body of water was being pumped into other water courses throughout Pacific Dunes.³⁶⁹
- 3.52** Mr Rooms further explained that he tried to inform the golf course management of his discovery but they did not engage with him.³⁷⁰ He also stated that he did not report it to the Newcastle EPA because he has 'absolutely no faith in their jurisdiction or interest in environmental damage', nor did he report it to Hunter Water, alleging that whenever he had raised concerns with this agency 'they've always minimised it and basically said there's no problem'.³⁷¹
- 3.53** Mr Rooms explained that all the ponds on the golf course are connected and that he believed that they drain out to Grahamstown Dam.³⁷² As identified earlier, Grahamstown Dam is the Hunter's largest drinking water supply dam.³⁷³ Dr Walton indicated that bubbling and frothing had been observed elsewhere:
- The other concern is the frothing is not an isolated thing. There is bubbling and frothing in other areas. Pacific Dunes has water all the way through it because it was originally marshland and turned into a golf course, but there is a body of water all around Medowie, and this is not the only frothing that's been observed.³⁷⁴
- 3.54** Dr Walton and Mr Rooms sent samples of water from the common property of Pacific Dunes to an accredited laboratory that specialises in PFAS for testing.³⁷⁵ They informed the committee that the results, dated 6 December 2024, which they had interpreted by an expert in PFAS³⁷⁶ 'indicated a catastrophic and dangerous level of forever chemicals in the water'.³⁷⁷
- 3.55** Dr Walton stated the test results were '54 times the Australian standard for freshwater'.³⁷⁸ He and Mr Rooms expanded on this in a supplementary written submission, stating 'Specifically, when comparing the latest freshwater guidelines of [less than] 9.1ng/L water to sample no. 2 of 491 ng/L, it appears to be 54 x greater than is currently recommended in Australia'.³⁷⁹

32.7929079!1m5!1m1!1s0x6b736fcf8416246f:0xf017d68f9f00640!2m2!1d151.8679827!2d-32.7667175!3e0?entry=ttu&g_ep=EgoyMDI1MDYwMy4wIKXMDSOASAFQAw%3D%3D

³⁶⁹ Evidence, Mr Rooms, 4 February 2025, p 2.

³⁷⁰ Evidence, Mr Rooms, 4 February 2025, p 2.

³⁷¹ See Evidence, Mr Rooms, 4 February 2025, pp 2-3.

³⁷² Evidence, Mr Rooms, 4 February 2025, p 4.

³⁷³ Hunter Water, *Grahamstown Dam* (2025), <https://www.hunterwater.com.au/water-and-environment/your-water-supply/water-sources/grahamstown-dam>.

³⁷⁴ Evidence, Dr Walton, 4 February 2025, p 4.

³⁷⁵ See Evidence, Dr Walton and Mr Rooms, 4 February 2025, pp 4-5

³⁷⁶ Evidence, Dr Walton, 4 February 2025, p 4.

³⁷⁷ Submission 9A, Mr Paul Rooms and Dr Michael Walton, p 5.

³⁷⁸ Evidence, Dr Walton, 4 February 2025, p 4. See also Answers to questions on notice, Dr Michael Walton and Mr Paul Rooms, local residents, 25 February 2025, which are the published test results.

³⁷⁹ Submission 9A, Mr Paul Rooms and Dr Michael Walton, p 5.

3.56 Dr Walton also provided testing results from the same laboratory for soil near the drain, dated 13 May 2025, stating that these too contained significant concentrations of PFAS.³⁸⁰

3.57 Commenting about the possible causes of the PFAS levels at Pacific Dunes, Dr Walton and Mr Rooms questioned whether contaminated soil removed from the RAAF Base and surrounding areas had been transported to Pacific Dunes and used to develop the golf course:

In light of the published test result at Pacific Dunes, we ask where has the contaminated or treated soil from Williamtown RAAF Base, Newcastle Airport and the industry precinct been removed to. A full investigation needs to be undertaken, including all persons involved and the specifics of their obligations. It has been widely reported that Pacific Dunes was built in and around swamp. Soil and sand was allegedly trucked in to develop the estate and 18-hole Championship Golf Course, and allegedly still continues, even under the cover of darkness.³⁸¹

3.58 In light of his lack of faith in the authorities, including Defence, the EPA and Hunter Water, Mr Rooms called for the establishment of an independent body to address PFAS contamination, indicating that government agencies do not want to investigate or remediate these problems given the enormous expense of doing so:

I'm hopeful that someone might address the thought of remediation and fixing the problem, but previous experience would suggest to me that it may not be in the interests of the particular government of the day to do so. This is a very expensive exercise, and everybody wants to allocate their money in different areas, even Defence. Quite honestly, I think our only solution is to get an independent body involved in this to make sure that our agencies have the best interests of not only residents, but just the basic outcomes of what we're going to face. Because the costs—international research shows that the costs of not doing anything.³⁸²

Hunter Water response to the concerns

3.59 Mr Cleary of Hunter Water stated that Hunter Water is aware of the concerns of Dr Walton and Mr Rooms and that, as some of the claims relate to private property, any detailed response might best occur *in camera* (a confidential hearing) for privacy reasons. More generally, and on the public record, he could confirm that the issue being raised is not a concern with respect to the area's drinking water source:

In general, our response to that is, from a drinking water perspective and our understanding of contamination in the Tomago Sandbeds, we have a very good understanding of how groundwater is moving and we do extensive testing. We are confident that the issue that is being raised is not a concern with respect to our drinking water source...[T]he knowledge we have of groundwater flows and the extensive testing we do demonstrates that. For example, the bore station that is closest to that potential incident that is being raised, we do test that and we have not tested PFAS in that bore.³⁸³

³⁸⁰ Correspondence from Dr Michael Walton, local resident, to committee secretariat, providing soil testing results for Pacific Dunes Medowie dated 13 May 2025, 19 May 2025.

³⁸¹ Submission 9A, Mr Paul Rooms and Dr Michael Walton, p 14.

³⁸² Evidence, Mr Rooms, 4 February 2025, p 5; see also pp 2-3.

³⁸³ Evidence, Mr Cleary, 4 February 2025, p 22.

- 3.60** Mr Cleary also stated that Hunter Water did some further research to understand the matters being raised and found some archival news footage of a tanker accident in the area. Hunter Water referred this to the EPA to investigate or consider as part of its role managing contaminated sites.³⁸⁴
- 3.61** In addition, Mr Cleary emphasised that, consistent with its role, the testing Hunter Water does relates to drinking water. As mentioned, the Tomago Sandbeds cover a large, 100 square kilometre radius over which 500 bores have been drilled and Hunter Water tests those bores, drawing water 12 and 15 metres below the surface. Mr Cleary stated that this water is not necessarily representative of what a private resident would be testing, and Hunter Water does not test private bores.³⁸⁵

EPA response to the concerns

- 3.62** On 1 April 2025, the EPA issued a media release stating that, in response to concerns of residents near Pacific Dunes Golf Course, Medowie, it had conducted surface water testing of three dams used for irrigation of the golf course that are understood to intersect with groundwater. The EPA advised that the results for all samples collected showed PFAS concentrations below 10 nanograms per litre, 'roughly equivalent to a drop of water in an Olympic swimming pool'.³⁸⁶
- 3.63** The EPA concluded that these results complied with relevant water quality guidelines, stating 'This means there were no exceedances of relevant recreational water or the 95% ecological water quality guidelines in any of the dams sampled'.³⁸⁷
- 3.64** The EPA also alluded to the abovementioned tanker accident about which Hunter Water had referred, stating that it took no samples relating to this as part of its site assessment as there were no relevant drains or water to test:

As part of our assessment of the site we also considered reports of a truck crash in the area in 1994 which could have resulted in firefighting foam entering the groundwater, however there were no drains or water in the vicinity to sample.³⁸⁸

Further correspondence from Dr Walton and Mr Rooms

- 3.65** Following the EPA's media release, Dr Walton wrote to the committee complaining that he and Mr Rooms were not satisfied with the EPA's response. Amongst his concerns was that the EPA had not tested in the same location at Pacific Dunes from which he and Mr Rooms had taken their water samples for testing. Dr Walton further advised that Mr Rooms had invited the EPA

³⁸⁴ Evidence, Mr Cleary, 4 February 2025, p 22.

³⁸⁵ Evidence, Mr Cleary, 4 February 2025, p 23.

³⁸⁶ Media release, NSW Environment Protection Authority, 'Surface water sampling at Medowie show PFAS levels below recreational guidelines', 1 April 2025.

³⁸⁷ Media release, NSW Environment Protection Authority, 'Surface water sampling at Medowie show PFAS levels below recreational guidelines', 1 April 2025.

³⁸⁸ Media release, NSW Environment Protection Authority, 'Surface water sampling at Medowie show PFAS levels below recreational guidelines', 1 April 2025.

to send an officer so that he could show them from exactly where the Walton/Rooms samples had been taken but that this offer had not been accepted.³⁸⁹

Further information provided by Hunter Water – compliance with Australian Drinking Water Guidelines

- 3.66** Hunter Water also provided more detailed evidence about the Tomago Sandbeds drinking water source, indicating that the organisation is confident water from its bores will continue to meet the ADWG into the foreseeable future, notwithstanding the PFAS contamination from the RAAF Base.³⁹⁰
- 3.67** As above, under Hunter Water's plan to manage the Tomago Sandbeds drinking water source, two pump stations near the RAAF Base, seven and nine, have been embargoed and comprehensive water quality monitoring is undertaken before water is supplied to customers.³⁹¹
- 3.68** In response to a question about the PFAS levels within those two pump stations, Hunter Water advised that the pump stations were first embargoed in September 2014 (i.e. even before the EPA's 2015 announcement regarding PFAS chemicals in water leaving the RAAF base) and that representative water quality samples of extracted groundwater can only be taken from operational pump stations. Since the embargo, pump station nine has been inoperable and pump station seven has been maintained mechanically and electronically so that it can still be operated.³⁹²
- 3.69** Hunter Water further reported that the last time pump station nine was sampled in an operational state was in 2015, and that PFOS was detected in a representative sample at a level of 170 nanograms per litre. Hunter Water stated that since that time sampling has been limited to individual spearpoints (bores), with the highest recorded values as follows:
- 70 nanograms per litre of PFOS (Hunter Water sample)
 - 2,910 nanograms of PFOS and PFHxS (sample procured by the Department of Defence)
 - 90 nanograms of PFOA (sample procured by the Department of Defence)
 - 3 nanograms per litre of PFOA (Hunter Water sample).³⁹³
- 3.70** This information is presented in table format below, and compared with guideline levels under the ADWG up until 25 June 2025 and the new ADWG published by the NHMRC on that date.³⁹⁴ This reveals that there have been recorded exceedances of PFOS and PFHxS associated with pump station nine, but not of PFOA. Hunter Water did not supply any results for PFBS,

³⁸⁹ Correspondence from Dr Michael Walton, local resident, to secretariat, 4 April 2025.

³⁹⁰ See Evidence, Mr Cleary, 4 February 2025, pp 20-23.

³⁹¹ Evidence, Mr Cleary, 4 February 2025, p 20.

³⁹² Answers to questions on notice, Mr Darren Cleary, Managing Director, Hunter Water, 4 March 2025, pp 1-2.

³⁹³ Answers to questions on notice, Mr Cleary, p 2.

³⁹⁴ See Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41; and Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines' 25 June 2025.

so it is possible sampling for this PFAS chemical has not taken place in relation to pump station nine.

Table 6 PFAS levels at Pump Station Nine, Tomago Sandbeds drinking water source

Sample	Level at Pump Station Nine	ADWG limit until 25 June 2025	ADWG limit, published 25 June 2025	Exceedance?
PFOS – 2015 representative sample	170 nanograms per litre	The sum of PFOS and PFHxS in drinking water should not exceed 70 nanograms/litre	8 nanograms per litre	Yes – exceeded previous and new ADWG
PFOS (Hunter Water sample – bore only)	70 nanograms per litre	The sum of PFOS and PFHxS in drinking water should not exceed 70 nanograms/litre	8 nanograms per litre	Unclear if exceeded previous ADWG as combined PFOS/PFHxS level is not recorded. Exceeded new ADWG.
PFOS and PFHxS (Sample procured by Defence – bore only)	2,910 nanograms per litre	The sum of PFOS and PFHxS in drinking water should not exceed 70 nanograms /litre	PFOS: 8 nanograms per litre PFHxS: 30 nanograms per litre	Yes – exceeded previous and new ADWG
PFOA (Hunter Water sample – bore only)	30 nanograms per litre	560 nanograms per litre	200 nanograms per litre	No – within previous and new ADWG
PFOA (sample procured by Defence – bore only)	90 nanograms per litre	560 nanograms per litre	200 nanograms per litre	No – within previous and new ADWG

PFBS – no samples reported	No sample reported	No guideline level	1,000 nanograms per litre	N/A
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- 3.71** Regarding pump station seven, Hunter Water advice indicates that there has never been a case where PFOS, PFHxS or PFOA levels have been sampled and found to be above the levels set out in the ADWG that applied until 25 June 2025, or the new ADWG.³⁹⁵ Again, no mention was made of PFBS so it is unclear whether this PFAS chemical has been sampled as it relates to pump station seven.
- 3.72** Hunter Water advised that PFOS, PFHxS and PFOA were not detected in a representative sample that was taken by running pump station seven (it is unclear when this sample was taken).³⁹⁶ In addition, PFOS and PFOA have never been detected in bore-only ('spearpoint') samples taken by Hunter Water. However, in 2023, PFHxS was detected for the first time in a sample from an individual bore at pump station seven at a level of 28 nanograms per litre.³⁹⁷
- 3.73** In explaining why pump station seven had been quarantined notwithstanding the fact there have been no PFAS detections associated with it that exceed any versions of the ADWG, Mr Cleary explained that Hunter Water had done so as part of a very conservative approach to be certain that contaminated water is not being drawn into any drinking water bores.³⁹⁸
- 3.74** Hunter Water indicated it is confident that the strategies it has in place to manage the Tomago Sandbeds drinking water source will not draw contamination into the drinking water bores, nor accelerate the plume of PFAS contaminated water off the RAAF Base. Mr Cleary stated:
- The movement of groundwater and the movement of the contaminant plume is relatively slow and relatively well understood—not perfectly. We've got confidence that things will not change quickly with respect to groundwater flow. That's not only from our PFAS monitoring but the other monitoring of chemicals within the sand beds. The main contaminant plume moving off the RAAF base—with the embargoes that we've got in place, the management we have in place and the management protocols we have in place with respect to operating our bores, we are confident that we are not going to draw that into our bores and that we are also not going to accelerate the movement of that plume off that base.³⁹⁹
- 3.75** The EPA indicated that experts and technology are available to track the movement of PFAS plumes and to model how they are likely to behave into the future. Mr Beaman of the EPA stated:

³⁹⁵ See Evidence, Mr Cleary, 4 February 2025, p 21; Answers to questions on notice, Mr Cleary, p 2; Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41; and Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines' 25 June 2025.

³⁹⁶ Answers to questions on notice, Mr Cleary, p 2.

³⁹⁷ Answers to questions on notice, Mr Cleary, p 2.

³⁹⁸ Evidence, Mr Cleary, 4 February 2025, p 21.

³⁹⁹ Evidence, Mr Cleary, 4 February 2025, p 23.

If you are able to get enough groundwater monitoring bores in place to get a good spatial coverage of the area that you're interested in, and you can do that regular testing and then develop up plume models—in the EPA we're lucky that we have a couple of hydrogeologist specialists with PhDs and this is their speciality; it is a very specialised area—you can do that plume modelling to work out where the plume is today and where, with the movement of that groundwater, we think it goes in the future.⁴⁰⁰

- 3.76** Mr Beaman further noted the Williamstown case as a good example where such advantages have been used:

Williamstown actually has three zones: a primary zone, which is just outside the Defence base; a secondary zone; and a broader management zone. There's a lot of community debate about those zones, but the zones were developed with an eye to what the plume models were telling us might happen in the future so we could be quite protective early on. When we issued that map in December 2017, we could then say, "It mightn't be in this part of the area now but, if nothing changes, the plume expects to"—if you think of a plume, it's a little bit like ink on a blotting paper; it just spreads out. And so we could model that quite effectively.⁴⁰¹

- 3.77** Hunter Water concluded that, as a trend, PFAS is not increasing in the bores of the Tomago Sandbeds and the agency is confident it will be safe to drink in 10 or 20 years' time, but it will continue to test to ensure that this is the case.⁴⁰²

Committee comment

- 3.78** The committee notes the complaints regarding PFAS levels in water and soil samples collected from Pacific Dunes Medowie by Dr Walton and Mr Rooms, which they had tested at a laboratory. In particular, that a water sample from December 2024 was '54 times the Australian standard for freshwater'.
- 3.79** The committee also notes Hunter Water's response that the issues being raised are not a concern with respect to the area's drinking water, having regard to its knowledge of groundwater flows and the testing it carries out. In particular, the committee notes Hunter Water's advice that the bore station that is closest to the area about which Dr Walton and Mr Rooms have concerns is tested, and Hunter Water has identified no PFAS within it.
- 3.80** The committee was also satisfied at broader evidence from Hunter Water that its plan for managing the Tomago Sandbeds drinking water source – including the embargo of two pump stations near the RAAF Base, Williamstown and comprehensive water quality monitoring – is meeting with success. In particular, it welcomes evidence that Hunter Water is confident the bores in the area will continue to meet the Australian Drinking Water Guidelines (ADWG) into the future, being safe for those in the area to drink in 10 or 20 years' time. In this regard, the committee notes the expertise and technology now available to authorities to track the movement of contamination in groundwater – such as the PFAS plume from the RAAF Base – and to perform modelling to predict future behaviour. This is highly valued in such a technical area.

⁴⁰⁰ Evidence, Mr Beaman, 5 February 2025, p 64.

⁴⁰¹ Evidence, Mr Beaman, 5 February 2025, p 64.

⁴⁰² Evidence, Mr Cleary, 4 February 2025, p 23.

- 3.81** With regard to compliance with ecological and recreational water quality guidelines, the committee notes tests conducted by the NSW Environment Protection Authority (EPA) in response to the complaints of residents near Pacific Dunes Golf Course. In particular, it notes the EPA's surface water testing of three dams used for irrigation at the golf course that are understood to intersect with groundwater, and that the results for all samples collected showed PFAS concentrations below 10 nanograms per litre. Further, the committee notes the EPA concluded that these results complied with the relevant guidelines – there being no exceedances of recreational water quality guidelines nor the 95 per cent ecological water quality guidelines. The committee did not have the opportunity to question the EPA about these results.
- 3.82** The committee is concerned at Dr Walton's claims that the EPA did not consult with Mr Rooms nor with him in conducting its tests at the golf course, and that it appears to have continued to fail to consult with them after Mr Rooms offered to show the EPA the exact location from which he and Dr Walton had taken their samples revealing elevated levels of PFAS.
- 3.83** In circumstances such as this, where community members have complained of elevated PFAS levels, and backed this up with test results from a laboratory, it is vital that the authorities liaise directly with them to ensure clinicians and community members are supported in interpreting and communicating information related to PFAS. The committee recommends such liaison take place.

Recommendation 5

That relevant government authorities liaise directly with local community members who have raised concerns about elevated PFAS levels, and who have corroborated this with privately obtained test results, to ensure clinicians and community members are supported in interpreting and communicating information related to PFAS.

- 3.84** Finally, the committee notes Dr Walton and Mr Rooms' calls for an independent body to address PFAS contamination, given their claims that government agencies do not want to investigate or remediate these problems owing to the enormous expense.
- 3.85** Despite the need for improvement, the committee was convinced by the evidence received that New South Wales authorities are acting to ensure drinking water is not contaminated as a result of the historical use of PFAS at the RAAF Base, in the Williamstown area now and into the future. This includes the EPA's interactions with Defence to progress remediation at the RAAF Base.
- 3.86** Further, and on this point, action on PFAS in Williamstown is complicated given New South Wales authorities must interact with the Australian Government in managing it, as Defence owns the RAAF Base. Any independent body at the state level would encounter similar issues. In short, the committee considers a number of measures can be taken to improve authorities' management of PFAS in Williamstown, and in New South Wales more generally. This includes increased accountability (e.g. more testing and reporting), better community engagement, fostering more research, and better coordination amongst state authorities and between the New South Wales and Australian Governments. Recommendations are made accordingly throughout the report, including in what follows of this chapter.

Opportunities for improved management of PFAS – Williamtown

Community outreach and the coordination of the response to PFAS

- 3.87** In light of the concerns raised by Dr Walton and Mr Rooms that the response of government authorities to PFAS could be improved, this section explores opportunities for more effective community outreach and coordination of the PFAS response in Williamtown and its surrounds.
- 3.88** As touched on earlier, in providing information to communities affected by PFAS contamination, evidence was received as to the importance of this advice being appropriately tailored to the individuals in question. Both NSW Health and the EPA stressed to the committee that for this reason one-on-one discussions are particularly useful, as is providing information in various formats. Dr Merritt of the Hunter New England Local Area Health Service noted that while some people just want simple headline messages to know what to do in such circumstances others require more detailed information.⁴⁰³
- 3.89** Mr Beaman of the EPA noted door-knocking as a particularly helpful way to ensure advice to those in PFAS-affected communities is appropriately tailored:
- We just find the doorknocking approach, to go and knock on the door and metaphorically have the cup of tea, and have that discussion with the property owner and give them advice for their situation. Because often it's about, "Do you have a bore?" Often some people have some unregistered bores. We say, "That's okay. We don't worry about that, but we'd like to sample it. We'd like to give you advice. Do you grow veggies in the garden?" You can actually have a very meaningful one-on-one conversation—it's not sitting in a brochure or a newsletter or a pamphlet.⁴⁰⁴
- 3.90** An important part of the EPA's role in managing the PFAS contamination in Williamtown has been issuing precautionary dietary advice to the locals.⁴⁰⁵
- 3.91** As has been identified in earlier chapters, where PFAS is found in waterways it can bioaccumulate in the surrounding wildlife, including fish, meaning that these organisms absorb more PFAS than they can excrete.⁴⁰⁶ Mr Beaman indicated the EPA had been observing this type of bioaccumulation in the food chain since 2016:

We see that type of accumulation happening in the food chain. When you do a study on a defence base and then you go and do the biota sampling in the area around the community, you do detect PFAS in fish and other wildlife.

⁴⁰³ Evidence, Dr Merritt, 4 February 2025, p 32.

⁴⁰⁴ Evidence, Mr Beaman, 5 February 2025, p 59.

⁴⁰⁵ See NSW Environment Protection Authority, *RAAF Base Williamtown PFAS Contamination – Background and Ongoing Management*, <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/RAAF-Williamtown-contamination/background-ongoing-management-and-monitoring>.

⁴⁰⁶ Xanthe Gregory, *PFAS 'forever chemicals' found in water filtration plants and platypus livers in NSW* (20 August 2024) ABC News website, <https://www.abc.net.au/news/2024-08-20/australia-forever-chemicals-pfas-drinking-water-platypus/104244072>. See also ScienceDirect, *Bioaccumulation* (2025), <https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/bioaccumulation>.

This is the work that has really stemmed from 2016...I'll take Williamtown for example – the reason you do the work on biota is to give the community dietary advice. We have been very transparent. For example, at Williamtown we doorknocked almost 750 people. We have been very transparent in trying to give the community the best information that we can, using the latest science, so people are aware of what those harms are.⁴⁰⁷

3.92 Indeed, the EPA confirmed that there is still dietary advice in place for certain aquatic biota caught in the vicinity of Williamtown, and some other locations around New South Wales.⁴⁰⁸ However, Mr Gathercole of the EPA stated that the EPA had not conducted doorknocking more recently amongst the locals in Williamtown. He indicated that the last door knock at which the EPA had dispensed precautionary dietary advice took place in 2017 and it had been the only such door knock undertaken, though there is a plan to 'double back' to the community to re-iterate within the next two years.⁴⁰⁹

3.93 Regarding government coordination of the response to PFAS, the EPA was also questioned as to why the EPA did not coordinate with NSW Health and the water utilities across New South Wales to proactively test the water for PFAS, particularly when bioaccumulation in the food chain had been observed by the EPA since 2016. As noted in chapter two, even in a location like the Blue Mountains where PFAS has been found in local waterways, testing did not take place until 2024.⁴¹⁰

3.94 The Chief Executive Officer of the EPA, Mr Tony Chappel responded to this by emphasising that while the PFAS Expert Panel and the Technical Advisory Group (TAG) that supports it have a whole of government coordination role in responding to PFAS, each involved agency has different responsibilities and that the EPA has no jurisdiction for drinking water. Moreover, the science has been evolving:

The EPA doesn't have jurisdiction as the regulator for drinking water. The catchment managers are responsible for managing the delivery of that water. As I said in my statement, there has been a whole-of-government technical advisory group and expert panel chaired by the chief scientist. It is important to acknowledge that the science on this issue has been evolving. It has evolved quite rapidly, and when the science shifts we shift and we take as proactive a posture as possible. But, in terms of the health implications and the delivery of safe drinking water, really, the approach taken by NSW Health is something that I can't speak to.⁴¹¹

3.95 Mr Chappel also acknowledged that the EPA is responsible for alerting NSW Health to any concerns it may have picked up around PFAS contamination, and conceded that there may be examples where communication could improve.⁴¹² However, he and Mr Beaman stated that regular communication takes place between the EPA and NSW Health through the TAG and that the EPA has made it clear to NSW Health that if the priority activities listed in Appendix

⁴⁰⁷ Evidence, Mr Beaman, 6 December 2024, pp 26-27.

⁴⁰⁸ Answers to questions on notice, NSW Environment Protection Authority, 17 January 2025, pp 2-3.

⁴⁰⁹ Evidence, Mr Gathercole, 4 February 2025, p 41.

⁴¹⁰ See Evidence, Mr Will Langevad, Director, Environment and Planning Services, Blue Mountains City Council, 3 February 2025, p 17; and Submission 10, Dr Ian A. Wright, p 3.

⁴¹¹ Evidence, Mr Chappel, 6 December 2024, p 27.

⁴¹² Evidence, Mr Chappel, 6 December 2024, p 27.

B of the PFAS National Environmental Management Plan (NEMP) 2.0 occur in a water catchment, NSW Health should advise the water utilities to carry out the necessary risk assessments.⁴¹³

- 3.96** For context, Appendix B of NEMP 2.0 listed activities associated with PFAS contamination, for example, battery production, agriculture, aviation, aerospace and defence. Since March 2025, and the advent of NEMP 3.0, these activities have been listed in Appendix C of the NEMP.⁴¹⁴
- 3.97** Finally, in examining areas where the coordination of the response to PFAS in Williamstown could improve, Dr Merritt was questioned about the ANU health study which, as discussed earlier in the chapter, was the lead study on the health impacts of PFAS contamination on the residents of Williamstown, reporting in 2021.⁴¹⁵ Under questioning as to whether there had been any follow up work as to how people in the Williamstown community had been tracking health-wise, Dr Merritt stated that he was 'not aware of any comparable follow-up work with that community'.⁴¹⁶

Committee comment

- 3.98** The committee considers that there are opportunities for improved community outreach by government authorities in the vicinity of Williamstown to ensure the community has the latest information and can raise any issues. The committee is concerned that door-knocking of residents to provide precautionary advice appears to not have taken place since 2017.
- 3.99** The committee notes that this type of one-on-one interaction with locals is one community consultation method which can allow for information to be tailored to people's individual circumstances, however it should not replace ensuring that the most up-to-date information is available to the community both online and by other means, such as through leaflets provided to all impacted residents. This is particularly important given that some Williamstown residents would have moved in since 2017 and not had the benefit of a visit from authorities alerting them to the dietary advice and associated matters such as whether vegetables can be grown in the soil.
- 3.100** The Williamstown RAAF Base, from which the PFAS contamination in Williamstown originates, is a Defence site, owned by the Australian Government. Therefore, the Department of Defence must address the ongoing issues in the Williamstown Management Area. The committee recommends that the NSW Environment Protection Authority (EPA) write to Defence calling for it to invest in clean-up and in communicating health and dietary advice to the community. Further, the committee recommends the EPA call on Defence to undertake ongoing community consultation and information regarding these matters.

⁴¹³ Evidence, Mr Chappel and Mr Beaman, 6 December 2024, p 27.

⁴¹⁴ See Heads of EPA, Australia and New Zealand, *PFAS National Environmental Management Plan 2.0* (Commonwealth of Australia, 2020); and Heads of EPA, Australia and New Zealand, *PFAS National Environmental Management Plan 3.0* (Department of Climate Change, Energy, the Environment and Water, 2025).

⁴¹⁵ Evidence, Dr Merritt, 4 February 2025, p 28; see also Australian National University, *PFAS Health Study*, National Centre for Epidemiology and Population Health, Australian National University website, <https://nceph.anu.edu.au/research/research-projects/pfas-health-study>.

⁴¹⁶ Evidence, Dr Merritt, 4 February 2025, p 29.

Finding 4

The provision of up-to-date information for PFAS impacted communities by relevant government authorities, both online and via one-on-one interactions, is essential to equip them with the tools to mitigate any potential risks from PFAS wherever possible.

Recommendation 6

That, as a matter of priority, the NSW Environment Protection Authority:

- write to the Federal Department of Defence, calling on them to invest to clean up the Williamtown Management Area, and communicate health and dietary advice to the community
 - call on the Federal Department of Defence to undertake ongoing community consultation and information.
-

3.101 Regarding better coordination of the response to PFAS in Williamtown, the committee has also identified health as an area for improvement. It was surprising to hear that since the Australian National University (ANU) PFAS Health Study (which reported in 2021, and which, to date, appears to have been the only specific study on exposure levels and the health impacts of PFAS contamination in the residents of Williamtown), there seems to have been no follow-up work, particularly in terms of tracking the health of Williamtown residents. The committee notes that while the NSW Health Expert Advisory Panel on PFAS, commenting on future priorities for PFAS research, cast some doubt on the utility of epidemiological research in Australia, the Panel did confirm that, in the right conditions, Australian research should be considered.

3.102 As a location of significant PFAS concern, the committee is of the view that regularly monitoring the health of the local Williamtown population over time is crucial both at an individual level to identify disease early, and at a population level, aiding research and thus increased knowledge and understanding of PFAS. The committee therefore recommends that the Department of Defence undertake regular monitoring of PFAS levels and potential health effects in Williamtown residents and commission a follow-up study in the near future.

Recommendation 7

That the Federal Department of Defence undertake regular monitoring of PFAS levels and potential health effects in Williamtown residents along with a follow-up study to complement the Australian National University's PFAS Health Study, which reported in 2021.

3.103 Finally, whilst exploring opportunities for improved PFAS management into the future is vital, it is also important to examine missed opportunities, to avoid mistakes being repeated. In this context, the committee notes evidence that the EPA had identified PFAS bioaccumulation in the food chain in Williamtown as early as 2016. However, despite this evidence that PFAS was

in the environment, no coordination took place with NSW Health and water utilities to ensure that drinking water across the state was tested to ensure its safety. Indeed, even in a location such as the Blue Mountains where elevated levels of PFAS have been found in local waterways, PFAS testing did not take place until 2024. The committee considers the EPA's 2016 discoveries around PFAS bioaccumulation should have triggered a far more proactive response.

Finding 5

The identification of PFAS bioaccumulation in wildlife, including fish, in the vicinity of Williamstown in 2016 should have triggered relevant government agencies to coordinate proactive testing for PFAS in waterways and drinking water across New South Wales.

Liaison with the Australian Government

- 3.104** Evidence was also received that a significant area for improvement in authorities' management of PFAS is how information is shared between levels of government. Specifically, in areas of New South Wales where the Australian Government, specifically the Department of Defence, has jurisdiction information is hard to come by. This view, put forward by some witnesses, was also confirmed by the experience of the committee.
- 3.105** As noted, the Williamstown RAAF Base, from which the PFAS contamination in Williamstown originates, is a Defence site and thus Australian Government land. The EPA therefore has no power to compel the Australian Government authorities to undertake remediation on Australian Government land.⁴¹⁷ However, despite this lack of power, the EPA advised that it still advocates on behalf of impacted communities to ensure appropriate assessment and management of such PFAS contamination.⁴¹⁸
- 3.106** Notwithstanding this, the EPA indicated that greater collaboration is needed between state and Australian Government agencies to ensure PFAS-affected sites are assessed and managed appropriately and communities receive accurate information. Mr Gathercole stated:
- In New South Wales, we have fostered a collaborative approach to the management of PFAS across the agencies, including the health and water agencies and the Department of Primary Industries and Regional Development. This has not always been our experience working with Federal agencies. We would appreciate the opportunity to extend the spirit of collaboration across jurisdictions. Greater effort from the Federal agencies to work with us on matters relating to PFAS contamination in New South Wales will ensure the local community receives consistent and accurate information.⁴¹⁹
- 3.107** Elaborating on this point, Mr Gathercole stated that as the EPA has no power to compel Defence to take remediation action on Defence sites, PFAS investigations and remediation on such sites takes too long when compared with others:

⁴¹⁷ See Evidence, Mr Gathercole, 4 February 2025, p 37.

⁴¹⁸ Evidence, Mr Gathercole, 4 February 2025, p 37.

⁴¹⁹ Evidence, Mr Gathercole, 4 February 2025, p 37.

Starting with the Commonwealth...the polluter pays in New South Wales, and that's really important. We can't compel Defence to take remedial action. They have cooperated somewhat, though, with some of their defence bases, but it does take a long time, and it is of frustration to the EPA on how time moves over that period. Whereas with industry, the EPA has jurisdiction in New South Wales to compel industry to do what we want them to do with PFAS investigations. They usually work with us a bit more expediently to get their PFAS investigations and/or any remediation undertaken.⁴²⁰

3.108 In addition, Mr Gathercole stressed in this context that it is important not only for PFAS investigations to proceed quickly, but for them to proceed in accordance with the NEMP.⁴²¹

3.109 Mr Chappel also expressed frustration that Defence does not always adequately consult with state authorities about PFAS-related issues which can jeopardise communities receiving consistent and accurate information:

Recently we have seen an example around Botany Bay, where signs have been erected without communication with our agency, which contradicts the advice the EPA has provided based on sampling and scientific testing. Greater effort from Commonwealth agencies to work with us on matters relating to PFAS contamination in New South Wales would help ensure that local communities receive consistent and accurate information.⁴²²

3.110 Regarding formal agreements to facilitate collaboration between state and Australian Government agencies to manage contaminated sites in New South Wales, Mr Chappel confirmed that an intergovernmental agreement exists. However, he re-iterated that holding Australian Government entities to account under the 'polluter pays' principle is complicated, and he pointed to the Commonwealth Constitution:

When I'm talking about the polluter paying an ultimate liability, or conviction for offences, the Commonwealth Constitution creates some challenges there for the entities. There is an intergovernmental agreement, but I think it would be more effective if we could agree that either Commonwealth entities would submit themselves to the same rules and regulations that apply to every other entity in the State or duplicate or replicate those and try and align.⁴²³

3.111 Mr Chappel was asked whether there may be ways to enforce state law against Australian Government entities and whether the EPA had considered or obtained advice about suing the Australian Government to recover the costs of remediation. Mr Chappel indicated that the EPA had examined this but provided no further detail. In addition, in answer to a question about whether the EPA had examined enforcing common law rights, or taking action in tort against the Australian Government, Mr Chappel indicated that this was being considered.⁴²⁴

⁴²⁰ Evidence, Mr Gathercole, 4 February 2025, pp 43-44.

⁴²¹ Evidence, Mr Gathercole, 4 February 2025, p 40.

⁴²² Evidence, Mr Chappel, 5 February 2025, p 50.

⁴²³ Evidence, Mr Chappel, 5 February 2025, p 55.

⁴²⁴ Answers to questions on notice, Mr Tony Chappel, Chief Executive Officer, NSW Environment Protection Authority, 6 March 2025, p 2.

- 3.112** This evidence that greater collaboration is needed between state and Australian Government agencies to ensure PFAS-affected sites are assessed and managed appropriately and communities receive accurate information is consistent with evidence discussed later in the report in relation to PFAS contamination in Wagga Wagga, New South Wales.
- 3.113** There was no opportunity to question Defence in relation to these matters. Defence was invited to give evidence at the committee's hearings in Williamstown on 4 February 2025 and in Wagga Wagga 8 April 2025 but declined both times.

Committee comment

- 3.114** The committee was concerned at evidence from the NSW Environment Protection Authority (EPA) that greater cooperation is needed from Australian Government agencies, in particular Defence, in working with NSW Government agencies to ensure PFAS-affected sites in this state are assessed and managed appropriately, and communities receive accurate information. In contrast to the usual 'polluter pays' scenario in New South Wales, the EPA has no power to compel Australian Government agencies such as Defence to remediate Commonwealth land.
- 3.115** In particular, the committee was worried to hear that Defence action to remediate PFAS-contaminated sites may take longer than would be the case for sites owned by polluters over whom the EPA has powers of compulsion. Where PFAS contamination has occurred, assessment and remediation should follow as expeditiously as possible, and proceed according to the accepted requirements under the PFAS National Environmental Management Plan 3.0, to minimise any harm to local communities and the environment.
- 3.116** It was also displeasing to hear evidence that Defence does not always adequately consult with state authorities about PFAS-related issues which can jeopardise communities receiving consistent and accurate information. This could cause unnecessary community confusion or alarm and it could lead to health and safety issues. Consultation should always take place prior to action being taken or announcements being made.
- 3.117** The committee was frustrated that it did not have an opportunity to question Defence about this evidence, as a result of Defence being invited to appear at two of the committee's hearings and declining both times. Further, Defence has taken no action since the evidence was published to dispute its veracity.
- 3.118** It was encouraging to hear that the EPA is considering its options to enforce state law against Australian Government entities in this area and it supports any action designed to achieve greater cooperation and collaboration.

Finding 6

There is a lack of effective collaboration between the Australian Government—particularly the Department of Defence—and New South Wales authorities in managing PFAS contamination, which hampers timely remediation efforts and undermines the provision of consistent and accurate information to affected communities. The NSW Government has consistently said that the Department of Defence needs to take more responsibility for the contamination it has caused.

Central Coast Waterways

Discovery of PFAS contamination in Ourimbah Creek

- 3.119** In January 2025, Central Coast Council advised that officers had detected PFAS in raw, untreated water in the upper reaches of the Ourimbah Creek catchment.⁴²⁵ This catchment is located on the New South Wales Central Coast, approximately 90 kilometres north of Sydney. It covers a total area of 160 square kilometres.⁴²⁶
- 3.120** Ourimbah Creek was also the location from which the recent University of Western Sydney study, discussed in chapter one, sourced one of the eight dead platypuses found to have elevated levels of PFOS in its liver. Of all eight platypuses, this platypus was found to have the second highest concentration of PFOS in its liver at 740,000 nanograms of PFOS per kilogram. As detailed in chapter one, the ABC has reported that draft guidelines from the Australian Government suggest that platypus exposure to PFOS directly from their diet should not exceed 3,100 nanograms per kilogram of their wet weight.⁴²⁷
- 3.121** Mr Rob Manning is the Managing Director, Sustainable Oil Recovery and Remediation (SORR). SORR has conducted remediation work on Tuggerah Lakes, extracting PFAS chemicals in the process. The Tuggerah Lakes system is made up of Tuggerah Lake, Budgewoi Lake and Lake Munmorah and the immediate floodplain, and the major rivers which drain into the lakes are the Wyong River and Ourimbah Creek.⁴²⁸ Mr Manning's experience is detailed in the following case study.

Case study – Mr Rob Manning⁴²⁹

Mr Rob Manning lives on Tumby Umbi Creek in Tumby Umbi, a suburb on the Central Coast of New South Wales. He is currently the Managing Director of Sustainable Oil Recovery and Remediation

⁴²⁵ NSW Environment Protection Authority, *Water Quality Monitoring in the Upper Ourimbah Creek Catchment* (2025), <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/Mangrove-Mountain-Landfill/water-quality>.

⁴²⁶ NSW State Emergency Service, *Ourimbah Creek Floodplain Risk Management Study and Plan 2019*, <https://floodata.ses.nsw.gov.au/flood-projects/ourimbah-creek-floodplain-risk-management-study-plan222#:~:text=The%20Ourimbah%20Creek%20catchment%20is,City%20LGA%20to%20the%20south.>

⁴²⁷ Xanthe Gregory, *PFAS 'forever chemicals' found in water filtration plants and platypus livers in NSW* (20 August 2024) ABC News website, <https://www.abc.net.au/news/2024-08-20/australia-forever-chemicals-pfas-drinking-water-platypus/104244072>.

⁴²⁸ NSW State Emergency Service, *Tuggerah Lakes Floodplain Risk Management Study and Plan*, <https://floodata.ses.nsw.gov.au/flood-projects/tuggerah-lakes-floodplain-risk-management-study-and-plan#:~:text=The%20Tuggerah%20Lakes%20system%20comprises,Flood%20awareness%20education.>

⁴²⁹ Submission 48, SORR; Submission 48a, SORR; Evidence, Mr Rob Manning, Managing Director, Sustainable Oil Recovery and Remediation, 4 February 2025, pp 14-19. This case study is based on the content of the submissions and the transcript of evidence.

(SORR). Mr Manning informed the committee of work that he and SORR have undertaken to manage and mitigate PFAS in waterways in New South Wales, as well as the deployment of SORR's technology in countries such as the United Kingdom, Ireland, India, and Saudi Arabia.

Mr Manning became involved in waterway remediation after noticing the increased pollution of a Central Coast waterway, Tuggerah Lakes. Mr Manning entered the 'Changemakers Course' to learn more about the pollution, and what he could do to help. Through the Changemakers Course, Mr Manning encountered a company called SORR, and was successful in applying for and receiving a grant, leading to a Tuggerah estuaries and stormwater trial on Tuggerah Lakes.

Mr Manning and SORR started their remediation work on Tuggerah Lakes in early 2023, using the SORR Gyroid Sponge to capture hydrocarbons from oil in the water. However, they soon found the sponge was also capturing heavy metals, as well as PFAS chemicals.

In April 2023, three months after first deploying the sponges on Tuggerah Lakes, Mr Manning and SORR reported what the sponge was capturing to Central Coast Council. Mr Manning indicated the sponge was not only removing hydrocarbons and heavy metals including phosphorus, zinc and lithium, but it was also capturing 2.94 grams of PFAS chemicals per kilogram of sponge across the full range of short and long-string PFAS chemicals. Mr Manning also told the Council that the sponge was able to hold these chemicals.

Mr Manning stated that, at the time, the Member for The Entrance, Mr David Mehan MP, had also identified some Central Coast stormwater outlets that had been contaminated with diesel. Mr Manning and SORR were asked to deploy the sponges to pick up the diesel that was coming through the stormwater, and so the sponges were placed at stormwater outlets at Shaw Street, Long Jetty. Again, according to Mr Manning, the sponges not only helped remove diesel from the water, but also captured 2.94 grams of PFAS per kilogram of sponge.

Mr Manning stated that a year later, in April 2024, the sponges were still capturing PFAS in Tuggerah Lakes. However, at that point, Central Coast Council requested SORR to remove its sponges from the water, as well as any SORR branded signage. Mr Manning further stated that he was told by the Council officers that the Council had problems across Central Coast waterways, and therefore they could not pick or choose which ones to remediate first.

Speculating further on the reasons SORR was asked to remove its sponges, despite their success, Mr Manning stated that government bureaucracies often believed the 'problem too big', with an attitude of 'if it's everywhere, we can't fix it'.

Mr Manning also believed that funding concerns within the Council were precluding it from embracing the sponge and its technology. He indicated that while there were certain individuals within the Council who were very concerned about what was happening on Tuggerah Lakes, and who supported widening the deployment of the sponge, others did not, for budgetary reasons. In addition, Mr Manning claimed that another reason for the Council's decision related to the original purpose of the trial on Tuggerah Lakes: it was to remove hydrocarbons and oil from the water. Therefore, PFAS removal was seen as beyond the scope of the trial.

Benefits of the SORR Gyroid Sponge

Mr Manning provided further detail about the benefits of the sponge, stating that it presents a comprehensive solution to PFAS contamination, providing diagnostics, prevention, and remediation.

On diagnostics, he stated that the sponge can 'provide robust environmental data for scientific and remediation purposes' acting as a 'passive sampling tool'. Mr Manning noted it has high sensitivity, with the ability to capture low level concentrations of PFAS over short periods of deployment. Consequently, it allows for contamination mapping – identifying PFAS hotspots, and for an understanding of dispersion patterns within waterways.

On prevention, Mr Manning indicated that the sponge can be deployed in stormwater systems, drainage networks and industrial discharge points to stop contaminants from entering waterways. In sum, he stated that the sponge can proactively capture contaminants at their source, reducing potential impacts downstream, and preventing further environmental degradation.

On remediation, Mr Manning stated that the sponge adsorbs and holds PFAS, hydrocarbons, and microplastics from contaminated environments. Mr Manning further reported that the sponge can remove over 90 per cent of PFAS from water in a single pass and that it is suitable for small-scale deployments, like urban drains, and large-scale projects, for example cleaning up contaminated lakes.

Mr Manning further explained that the destruction process SORR uses – a titanium dioxide decomposition process – means there is no need to burn the waste once the sponge has removed the PFAS from the water, thereby creating toxic by-products. There is also no need to bury it in landfill. He stated that instead, the decomposition method, operating at 800 degrees Celsius without the use of flames, breaks the chemical bonds that hold the strings of PFAS together.

Mr Manning also explained how SORR sent samples of the sponge to SOCOTEC UK, 'a globally recognised laboratory' for independent analysis. He stated that SOCOTEC UK confirmed the sponge's high adsorption efficiency, noting its ability to capture multiple PFAS compounds, and its consistency across environments, working in variable field conditions. Mr Manning further indicated that other organisations with suitable expertise such as the Newcastle Global Centre for Environmental Remediation and the ChemCentre laboratory in Western Australia, acknowledged the sponge's ability to remove PFAS chemicals from water.

Mr Manning noted that despite the sponge's potential as a sustainable and cost-effective solution to PFAS contamination, Australia has been slow to embrace it. He even suggested the cost effectiveness of the sponge may actually be a disadvantage in gaining traction in the Australian market. Mr Manning stated that in working with certain parties interested in trialling PFAS remediation methods, he had been told SORR's original scope for a proof of concept demonstration, at \$35,000, was well below the 'normal budget' for these sorts of activities. Mr Manning summed up by stating 'We're a First World country with First World problems and we don't like Third World solutions, when a Third World solution is all we need to fix this problem'.

In contrast to SORR's experiences in Australia, Mr Manning described how in January 2025, SORR signed a \$20 million contract with Bharat CSR Network, an organisation in India, which will see the deployment of Gyroid Sponges across various rivers and waterways in the Indian state of Goa.

Committee comment

- 3.122** The committee was most interested by Mr Manning's evidence in support of an innovative and relatively simple PFAS treatment method that his company, Sustainable Oil Recovery and Remediation (SORR), has developed involving the use of the Gyroid Sponge and which he says is very effective in treating PFAS in waterways. The committee encourages government authorities to thoroughly explore all possibilities and treatment methods in procuring appropriate PFAS remediation across New South Wales to ensure the most effective and cost efficient solutions wherever possible. PFAS treatment methods are discussed in more detail in chapter six.

EPA evidence concerning PFAS contamination in Central Coast waterways

- 3.123** In response to questioning about the action the EPA has taken regarding PFAS contamination within Central Coast waterways, Mr Gathercole stated that the EPA has targeted power stations in assessing the source, as they have historically used firefighting foams. He advised that major PFAS investigations had been conducted on the coal-fired power stations in the area, including the former Lake Munmorah Power Station. As part of these investigations, the government also analysed fish and crustacea from Tuggerah Lake and Lake Macquarie, resulting in the provision of precautionary dietary advice to the local community in 2017.⁴³⁰

- 3.124** Regarding the recent PFAS detections in Ourimbah Creek, Mr Gathercole confirmed that this is a raw water supply, not used for drinking:

What's important, just on that last point, is that at the Mardi Dam where water is provided, the drinking water, it complies with the national health and medical research guidelines for drinking water. Ourimbah Creek hasn't been used by council since last year—I think, from memory, August—to go into the water supply. That has been isolated and is not proposed to be used.⁴³¹

- 3.125** Further, Mr Gathercole advised that the Central Coast Council had started a sampling program for Ourimbah Creek, and that detected PFAS levels were below the NEMP 2.0 ecological guidelines for 95 per cent species protection.⁴³²

- 3.126** Since then, a note on the EPA website reveals that the Department of Climate Change, Environment, Energy and Water (DCCEE) conducted sampling, including PFAS testing, in February 2025, with 'an additional monitoring location on Ourimbah Creek upstream of the confluence with Hallards Creek and Stringybark Creek' included.⁴³³ As a result of this testing, PFAS was detected at all sites except Hallards Creek.⁴³⁴

⁴³⁰ Evidence, Mr Gathercole, 4 February 2025, p 39.

⁴³¹ Evidence, Mr Gathercole, 4 February 2025, p 39.

⁴³² Evidence, Mr Gathercole, 4 February 2025, p 39.

⁴³³ NSW Environment Protection Authority, *Water Quality Monitoring in the Upper Ourimbah Creek Catchment* (2025), <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/Mangrove-Mountain-Landfill/water-quality>.

⁴³⁴ NSW Environment Protection Authority, *Water Quality Monitoring in the Upper Ourimbah Creek Catchment* (2025), <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/Mangrove-Mountain-Landfill/water-quality>.

- 3.127** The EPA advised that the PFAS concentrations were below the recreational and drinking water guideline values. However, as part of this testing it appears that the applicable ecological water quality guidelines values should be those for 99 per cent species protection, and the sampling revealed levels that were above these. The EPA stated:

[T]he PFAS concentrations...exceed the ecological water quality guideline values for the protection of 99% of freshwater species at the sites [where] it was detected. The 99% species protection level is recommended for slightly to moderately disturbed ecosystems, particularly for chemicals that bioaccumulate and biomagnify in wildlife such as PFOS and PFOA.⁴³⁵

- 3.128** The EPA also advised that it had teamed up with the Central Coast Council in an attempt to identify the source of the PFAS in Ourimbah Creek, with ongoing sampling of the nearby Mangrove Mountain landfill to determine if it is linked to the contamination.⁴³⁶

- 3.129** When asked whether the EPA had contacted Fire and Rescue NSW to check if historically there had been any significant traffic accidents within the vicinity of Ourimbah Creek at which significant levels of firefighting foam had been used, Mr Beaman took the question on notice. The answer provided was that the local council, the EPA and NSW Health were working to identify the potential PFAS sources of the Ourimbah Creek contamination such as those within Appendix B of NEMP 2.0 that may contribute to PFAS contamination in waterways.⁴³⁷ More broadly, Mr Beaman indicated that serious traffic accidents are an important consideration in investigating the source of PFAS contamination across New South Wales but that this must be qualified according to risk:

... I qualify it on a risk basis. It's a bit like PFAS more generally: You're going to have [PFAS] applied in hundreds or if not thousands of motor vehicle accidents over the last 30 or 40 years. ... even [massive petrol tanker accidents]...you're going to have a lot that have occurred over the last 40 or 50 years. The overlay of that is what's the sensitive land use nearby. If it's on the edge of a drinking water catchment, if it's on the edge of a sensitive receiver, that's the work we're starting to think about. How do you get that intersection of the records of the motor vehicle accident data and sensitive land use?⁴³⁸

Committee comment

- 3.130** The committee notes the recent detections of elevated PFAS levels within the Ourimbah Creek on the Central Coast. Taken with Mr Manning's evidence of PFAS contamination in Tuggerah Lakes, and the recent study by Western Sydney University which revealed very high levels of PFOS in a deceased platypus sourced from the Ourimbah Creek, these are disturbing trends for the area.

⁴³⁵ NSW Environment Protection Authority, *Water Quality Monitoring in the Upper Ourimbah Creek Catchment* (2025), <https://www.epa.nsw.gov.au/Working-together/Community-engagement/updates-on-issues/Mangrove-Mountain-Landfill/water-quality>.

⁴³⁶ See Evidence, Mr Gathercole, 4 February 2025, pp 39-40; and Evidence, Mr Beaman, 5 February 2025, pp 64-65.

⁴³⁷ Answers to questions on notice, Mr Stephen Beaman, Executive Director, Regulatory Practice and Services, NSW Environment Protection Authority, 6 March 2025, p 2.

⁴³⁸ Evidence, Mr Beaman, 5 February 2025, p 65.

- 3.131** The committee also notes the confusion regarding which ecological water quality guideline for the protection of freshwater species applies to Ourimbah Creek. As noted in Chapter 1, the 99 per cent ecological water quality guideline value should be used for slightly to moderately disturbed ecosystems, which is what Ourimbah Creek is classified as, because PFAS bioaccumulates in wildlife. Noting the evidence by Dr Ian Wright that the levels of PFAS in the Belubula River were alarmingly high given the river is classified as a high conservation value freshwater ecosystem, the committee is of the view that government authorities must do more to prevent, monitor, manage and remediate PFAS contamination in freshwater ecosystems to meet ecological water quality guidelines.

Recommendation 8

That the NSW Government undertake an audit of the state's 'high conservation value' and 'slightly to moderately disturbed' freshwater ecosystems to determine which do not meet the 99 per cent ecological water quality guideline for PFAS, and take action to identify source pollution and prevent and remediate contamination wherever possible.

- 3.132** The committee was also concerned that in conducting investigations as to the possible source of the PFAS contamination, it appears as though the NSW Environment Protection Authority did not contact Fire and Rescue NSW (FRNSW) to request information about whether historically there were any large traffic accidents in the vicinity of Ourimbah Creek, at which considerable levels of firefighting foam were used. Given the situation in the Blue Mountains where a significant petrol tanker explosion in 1992 has been identified as a likely cause of PFAS contamination in nearby waterways, consulting with FRNSW about whether such accidents have occurred should be standard procedure in investigating possible sources of elevated PFAS levels in waterways.

Recommendation 9

That, in investigating the cause of elevated PFAS levels within waterways, it be standard procedure for government investigators to consult with Fire and Rescue NSW about whether historically there have been any significant traffic accidents on nearby roadways at which large amounts of PFAS-containing foam has been used and, if so, there be follow-on investigations as to where that foam flowed.

Hunter River

- 3.133** The EPA was also questioned about PFAS contamination in the Hunter River in New South Wales, with reference once more to the University of Western Sydney platypus study. The study found that of the eight dead platypuses examined within this study, the one found to have the most PFOS in its liver – at 1,200,000 nanograms of PFOS per kilogram – was collected from

the Hunter River at Morpeth. These concentrations were described by the ABC as some of the highest of any species in the world.⁴³⁹

- 3.134** When questioned about the possible causes of these high levels, the EPA confirmed that the platypus in question was found at the boat ramp at Morpeth, upstream of the Morpeth sewerage treatment plant, operated by Hunter Water Corporation.⁴⁴⁰ The EPA further noted:
- Hunter Water had advised that it tests for PFAS in the effluent from Morpeth sewerage treatment plant every two months, and the EPA had requested access to this information.
 - As part of its investigations into the causes of these high levels of PFOS in the platypus, the EPA undertook PFAS water sampling of the Hunter River at Morpeth on 12 February 2025, and the results were being analysed in a laboratory.⁴⁴¹ At the time of writing, these results did not appear to have been released publicly.
- 3.135** Regarding the actions that water utilities can take to prevent and manage contamination in waterways that are near sewerage treatment plants, Mr Gathercole advised the committee that Hunter Water has trade waste agreements with industry, imposing limits on what can be discharged into its sewers.⁴⁴²
- 3.136** Mr Cleary of Hunter Water noted that their existing wastewater treatment processes are not effective at removing PFAS chemicals should they enter the sewer network. Therefore, they have focused on preventing PFAS being disposed of by their customers within their wastewater discharges. Mr Cleary noted that this requires proactive and difficult engagements with commercial trade waste customers.⁴⁴³
- 3.137** In addition, Mr Gathercole indicated that if Hunter Water imposes limits on how much PFAS can be put into the sewer, this would be easier than employing treatment methods at the back end to deal with the PFAS.⁴⁴⁴ Notwithstanding this, the EPA confirmed that Hunter Water was examining all of its operations to assess where PFAS treatment may be required in its network.⁴⁴⁵
- 3.138** However, despite suggesting discharge limits, Mr Gathercole informed the committee that, as PFAS is an emerging issue, there are currently no load limits imposed under environment protection licences as to PFAS amounts that industry or water treatment plants can discharge into waterways.⁴⁴⁶
- 3.139** There was also evidence from some stakeholders that, owing to the ubiquity of PFAS in industrial, commercial and consumer products, it is extremely difficult for the organisations that

⁴³⁹ Xanthe Gregory, *PFAS 'forever chemicals' found in water filtration plants and platypus livers in NSW* (20 August 2024) ABC News website, <https://www.abc.net.au/news/2024-08-20/australia-forever-chemicals-pfas-drinking-water-platypus/104244072>.

⁴⁴⁰ Answers to questions on notice, NSW Environment Protection Authority, 19 February 2025, p 1.

⁴⁴¹ Answers to questions on notice, NSW Environment Protection Authority, 19 February 2025, p 1.

⁴⁴² Evidence, Mr Gathercole, 4 February 2025, pp 44-45.

⁴⁴³ Evidence, Mr Cleary, 4 February 2025, p 21.

⁴⁴⁴ Evidence, Mr Gathercole, 4 February 2025, p 45.

⁴⁴⁵ Evidence, Ms Corrie Ford, Manager, Operations, NSW Environment Protection Authority, 4 February 2025, p 45.

⁴⁴⁶ Evidence, Mr Gathercole, 4 February 2025, p 45.

are receiving waste to police waste load limits – and extremely costly to treat it. In these circumstances they urged the committee that by far the most effective way to reduce PFAS contamination is controlling it at the source e.g. by banning its use in products.

- 3.140** Ms Gayle Sloan, Chief Executive Officer of the Waste Management and Resource Recovery Association of Australia (WMRR), stated that the government imposes unrealistic limits on the amount of PFAS the industry is to manage on its sites, which cannot be policed given PFAS is so common in consumer products:

[T]he sector, like water, at the end of the supply chain receives this material, a chemical that we cannot see. Yet we have these crazy expectations at times from government about regulators, around levels that we should be managing onsite. Again, we can't see it. We don't see it in a truck. It's highly mobile; it bioaccumulates... But we find ourselves in a situation where we're being told, through things like the NEMP regulatory intervention, that our products that we are making to address issues like climate change and keep materials that we receive circulating can't have levels of PFAS in them... We get levels put on us in organics and other products that we can't possibly meet, given the presence and levels that are on the shelf.⁴⁴⁷

- 3.141** Similarly, Blayney Shire Council which operates the Blayney Waste Facility stated that the costs that it now incurs to investigate, monitor and treat the PFAS associated with the facility are crippling. The council argued that in circumstances where products containing PFAS have been freely available on the market for over 50 years, this runs counter to the 'polluter pays' principle:

The EPA has now placed additional requirements on council under its Environment Protection licence for the Blayney Waste Facility... These include additional ongoing monitoring and further investigation. The initial investigation alone has been quoted by an expert consultant at \$90,000. Additional monitoring has been estimated at least \$20,000 per annum.

Council has recently constructed a leachate collection system, however additional capital works will also be required, including the construction of an advanced leachate treatment system...the capital cost of the project has been costed at over \$400,000, a major cost impost for a small rural Council...

It seems unreasonable that a small rural council operating a very small landfill must pay the price for what is a societal issue that has existed in excess of 50 years. This approach is completely at odds with the polluter pays principle....⁴⁴⁸

Committee comment

- 3.142** The committee is extremely concerned at the high levels of PFOS found in the liver of the platypus collected from the Hunter River at Morpeth – 1,200,000 nanograms per kilogram. This discovery has potentially serious implications for biodiversity in this vicinity, and beyond.
- 3.143** The committee notes the evidence of the NSW Environment Protection Authority (EPA) that the Morpeth sewerage treatment plant is near to where the platypus was found, and is thus a

⁴⁴⁷ Evidence, Ms Gayle Sloan, Chief Executive Officer, Waste Management and Resource Recovery Association of Australia, 5 February 2025, p 14.

⁴⁴⁸ Submission 68, Blayney Shire Council, pp 3-4.

possible cause of the high PFAS levels and that investigations are ongoing. However, the committee is alarmed at the lack of any regulation to limit what Hunter Water is examining, where PFAS treatment may be required in its network, and evidence that it is helpful for Hunter Water to be able to impose limits on the amount of PFAS that its trade customers can discharge into its sewers.

3.144 In the circumstances, the committee has considered whether environment protection licences should include limits on the amount of PFAS that industry and water treatment plants can discharge into waterways in New South Wales. The committee has also considered evidence from the Waste Management and Resource Recovery Association of Australia and Blayney Shire Council that owing to the ubiquity of PFAS in industrial, commercial and consumer products, it is extremely difficult for the organisations that are receiving waste to police waste load limits and very costly for them to treat it. The committee agrees that there must be more focus on source control.

3.145 The committee recommends that the government include load limits within environment protection licences relating to the amount of PFAS that industry and water treatment plants can discharge into waterways. However, the committee also finds the arguments concerning source control compelling, and agrees that source control must be the ultimate focus. In short, non-essential PFAS must be phased out of consumer, commercial and industrial products in Australia or it will continue to be impossible to control and very expensive to treat. In this vein, the committee makes recommendations concerning source control later in the report – and recommendations to better fund PFAS treatment methods.

Recommendation 10

That the NSW Government include load limits within environmental protection licences issued under the *Protection of the Environment Operations Act 1997* as to the amount of PFAS chemicals industry and treatment plants can discharge into waterways in New South Wales, with the aim of meeting ecological guidelines.

Mid North Coast – Nambucca Heads

3.146 The chapter concludes with a case study regarding PFAS-related concerns on the Mid North Coast of New South Wales in the aquaculture industry.

Case study – Mr Brad Withyman⁴⁴⁹

Mr Brad Withyman, a resident of Nambucca Heads on the Mid North Coast of New South Wales, told the committee of his experience trying to alert local and state government authorities to the environmental risks and harms that chemical drums and PFAS may be causing to local estuarine ecosystems, and to residents.

⁴⁴⁹ Submission 56, Mr Brad Withyman, pp 1-3; Evidence, Mr Brad Withyman, Founder, River Guardians, 5 February 2025, pp 32-36. This case study is based on the content of the submission and the transcript of evidence.

Mr Withyman first began studying the health of local waterways when he noticed fish stocks decreasing in his local area catchments. The main practice which concerned Mr Withyman was the repurposing of empty chemical drums as marine flotation devices for aquaculture in local waterways.

Chemical drums and the EPA, Hazmat Coffs Harbour and Nambucca Valley Council

Mr Withyman advised that certain chemical drums, manufactured by Mauser Packaging, are designed to store hazardous chemicals that contain PFAS. Examples of such chemicals include agricultural chemicals, industrial chemicals and solvents, petrochemicals, lubricants, and pharmaceuticals. Mr Withyman stated that the chemical drums are also manufactured from a plastic polymer called HDPE, which is known to contain PFAS.

Mr Withyman further advised that the empty chemical drums often end up at recycling yards and are sold to the public, with many locals repurposing them, for example, by turning them into garden beds. Mr Withyman expressed concern that the empty drums are not certifiably cleaned before being sold.

In September 2022, Mr Withyman recovered various empty drums to use as garden beds at his residence. Whilst cutting the drums, he stated that he noticed they still contained traces of chemical residues. He recounted that after handling the drums, his forearms began to itch, and he woke up the next morning experiencing symptoms of diarrhoea and feeling nauseous.

Mr Withyman contacted a chemical drum recycler, who recommended he ring Hazmat Coffs Harbour and request they remove the drums from his property. The chemical drum recycler also advised that he had ceased handling the drums as his staff were experiencing fingernail discoloration, with some of them having their fingernails fall off completely.

Mr Withyman reported that after inspecting the drums, Hazmat Coffs Harbour contacted the EPA, who in turn informed Mr Withyman that they would be passing the management of the drums and their disposal to Nambucca Valley Council, and that he should expect a phone call from the council. Hazmat Coffs Harbour placed all the chemical residues into a hazardous waste bin, which they left on Mr Withyman's property, along with the now empty chemical drums. Hazmat also called Mr Withyman an ambulance and he went to hospital and was put on an intravenous drip, after which he visited his general practitioner who was 'very concerned'.

Mr Withyman stated that, following the Hazmat visit, Nambucca Valley Council communicated with him via email for two and a half months, but failed to show up at his property to examine and dispose of the drums and hazardous waste bin. Noting the stress of having the hazardous waste on his property, Mr Withyman attempted to dispose of the drums, however, was rejected by the local rubbish tip. Mr Withyman advised that he left the drums at a stockpile of drums along the river at the old Pacific Highway.

Mr Withyman decided to take samples he had extracted from the chemical drums and the hazardous waste bin to the EPA office in Coffs Harbour. Mr Withyman stated that staff at the office refused to deal with him after he explained his situation. Mr Withyman left the hazardous waste bin at the office,

after which he understands Hazmat was called and the entire building evacuated. Mr Withyman advised that after this time, he decided to have no further dealings with the EPA.

Mr Withyman also stated that prior to these events, in 2020-21, he had complained to the then government about the used chemical drums, but the EPA had written to him stating that it had investigated his claims and found no evidence of toxic residues nor anything to be concerned about.

Chemical drums and aquaculture in New South Wales

Mr Withyman reported that tens of thousands of Mauser chemical drums are repurposed and used as flotation devices across dozens of New South Wales waterways. In aquaculture/oyster farming, oysters are placed between a timber structure that acts as a raft, and lowered into the river or estuary, suspending them into the water to develop. The drums are used to keep the timber structure afloat.

Mr Withyman explained that the drums are prone to breakdown, as they are not protected with any ultraviolet (UV) inhibitors. As above, they are also manufactured from HDPE, a plastic polymer known to contain PFAS. Mr Withyman stated that over time, the exposure to UV rays photodegrades the drums, with microplastics breaking down into a chalky substance and spreading into waterways along with the chemical residues inside the drums.

Mr Withyman spoke with a lead engineer at Mauser Packaging and commented that the lead engineer was alarmed to hear how the drums were being repurposed for aquaculture, noting that the chemical residues would be leaching through the plastic within ten years. The lead engineer told Mr Withyman that Mauser doesn't recommend the drums be used after ten years.

Mr Withyman stated that he also consulted an engineer at Huon Aquaculture in Tasmania. Mr Withyman recounted how the engineer laughed when he heard how the drums were being used in aquaculture across New South Wales, as he did not believe they would ever be repurposed in such a way. Mr Withyman recalled how the engineer asked in disbelief 'how are they getting away with that?', in reference to the lack of regulation of chemical drums, and noted that if the empty drums were used in Tasmania for aquaculture, the Tasmanian community would have the practice shut down 'in an instant'.

Committee comment

- 3.147** The committee notes that Mr Withyman's case study corresponds with evidence from other stakeholders, discussed throughout the report, including Mr Jon Dee of the Blue Mountains, and Dr Walton and Mr Rooms of Medowie, who raised concerns about a lack of action from government authorities regarding PFAS as well as inadequate PFAS regulation and policy in this area.

Chapter 4 PFAS affecting further areas of New South Wales

This chapter explores matters relating to PFAS that have arisen in further areas across New South Wales. It starts by exploring PFAS contamination discovered in the Belubula River in Central West New South Wales in 2024 and considers the government response to this discovery, how matters could have been dealt with better, and suggestions for future action.

The chapter then documents the 2024 discovery of elevated PFAS levels in drinking water supply systems in three localities within regional New South Wales – Wialalda, Tarcutta and Narrabri – following a testing program that local water utilities carried out, supported by NSW Health. Coupled with a discussion of earlier PFAS detections in drinking water supply systems in Dubbo, this section considers the cost implications of these discoveries for regional local water utilities, against a backdrop of water security concerns.

The chapter concludes by examining the issues surrounding PFAS contamination originating from the Defence bases in Wagga Wagga, New South Wales – the Blamey Barracks, Kapooka and the RAAF Base Wagga. In particular, it covers concerns about the response by the Department of Defence to the contamination and includes a case study about issues arising from a private irrigation scheme established under the *Water Management Act 2000 (NSW)* in a suburb of Wagga Wagga called Gumly Gumly.

Central West New South Wales – PFAS contamination in the Belubula River

Discovery of the contamination

- 4.1 The Belubula River is located in the central west region of New South Wales and is part of the Lachlan River catchment. It rises midway between Orange and Bathurst and flows south and west through the towns of Blayney, Carcoar and Canowindra.⁴⁵⁰
- 4.2 Dr Ian Wright, Associate Professor, Environmental Science, Western Sydney University advised that the Belubula River is classified as a high conservation value river under the *Fisheries Management Act 1994 (NSW)*, as part of the Lachlan River endangered ecological community.⁴⁵¹ Dr Wright noted it is an important habitat for Murray cod and the platypus:

It's one of the declining habitats for Murray cod...So the Belubula River all the way up to—I think at Carcoar there is a dam that is specified that protection...[I]t's one of the

⁴⁵⁰ See NSW Government Water, *Belubula Water Security Project* (2025), <https://water.dpie.nsw.gov.au/our-work/water-infrastructure-nsw/regional-projects/belubula-water-security-project>, and NSW Government Fishing, *Lachlan Catchment* <https://www.dpi.nsw.gov.au/fishing/habitat/your-catchment/lachlan#:~:text=The%20Lachlan%20catchment%20covers%20an,Boorowa%2C%20Belubula%20and%20Crookwell%20Rivers>.

⁴⁵¹ Submission 10, Dr Ian A. Wright, p 6.

last western-flowing rivers that's a known platypus habitat, and platypus researchers like Tom Grant have highlighted what a regionally significant population it is.⁴⁵²

- 4.3 Dr Wright also stated that the river is extremely important for primary producers, being used for lucerne production, vineyards, cattle and sheep.⁴⁵³
- 4.4 Dr Wright advised that in winter 2024, local landholders along the Belubula River became concerned about the appearance of large accumulations of foam. They had the foam tested at a commercial laboratory, with the results revealing that 'the foam contained an extraordinarily large and hazardous amount of PFAS mixed with metals'.⁴⁵⁴
- 4.5 A group of local landholders belonging to the Cadia Community Sustainability Network (CCSN), stated that ponds on their farms next to the Belubula River were 'heavily contaminated with a cocktail of PFAS, hydrocarbons and heavy metals' with foam 'half a metre deep' observed, leading to a program of monitoring and testing in the district.⁴⁵⁵
- 4.6 Mrs Frances Retallack, Vice Chair, Cadia Community Sustainability Network, told the committee that the contaminated foam represents a significant risk to the livestock industry in the district, noting that cattle drink from the contaminated river.⁴⁵⁶ Significantly, many farms also pump water out and use it for drinking water.⁴⁵⁷
- 4.7 Dr Wright collected his own samples, and when doing so noted that the PFAS was hyper-accumulating in the foam, when he compared it with PFAS concentrations in the river sediment and water column.⁴⁵⁸ He stated:

Australian river water quality guidelines recommend PFOS less than 9.1 ng/L for protection of 99% of aquatic species in high ecological-value river (ANZG, 2023). This was exceeded by the Belubula River PFOS water concentration (median 20 ng/L) by 2.1 times and the PFOS foam concentration (median 375,000 ng/L) by more than 41,000 times.⁴⁵⁹

Possible implications of the contamination

- 4.8 Dr Wright explained to the committee that these results had adverse implications for aquatic ecosystem health for the Belubula River and adjoining lands, particularly considering the serious

⁴⁵² Evidence, Dr Ian Wright, Associate Professor, Environmental Science, Western Sydney University, 6 December 2024, p 8.

⁴⁵³ Evidence, Dr Wright, 6 December 2024, p 8.

⁴⁵⁴ Submission 10, Dr Ian A. Wright, p 4.

⁴⁵⁵ Evidence, Mrs Frances Retallack, Vice Chair, Cadia Community Sustainability Network, 3 February 2025, p 27.

⁴⁵⁶ Evidence, Mrs Retallack, 3 February 2025, p 27.

⁴⁵⁷ Evidence, Mrs Retallack, 3 February 2025, p 28.

⁴⁵⁸ Submission 10, Dr Ian A. Wright, p 5.

⁴⁵⁹ Submission 10, Dr Ian A. Wright, p 6.

issue of bioaccumulation.⁴⁶⁰ As discussed in earlier chapters, PFAS bioaccumulates in wildlife, meaning that these organisms absorb more PFAS than they can excrete.⁴⁶¹

- 4.9 Regarding agriculture risks, Dr Wright also noted research indicating a risk of meat contamination should cattle drink water containing more than 3 nanograms of PFAS per litre, with possible implications for the beef export market:

There has been published research...Three nanograms—three parts per trillion—has been associated with the risk of meat contamination. Internally within Australia, we don't test anywhere as thoroughly as some of our export markets do when we export...I've recently travelled, and Australian beef is often highlighted on menus because it has a fantastic, clean reputation...[3 nanograms per litre] would be three eyedrops in 20 Olympic swimming pools. They're phenomenally small amounts that are dangerous, that can bioaccumulate.⁴⁶²

- 4.10 Dr Wright also indicated he had serious concerns for human health about the PFAS detected in the river, stating that people swim and fish in it, and probably even drink from it:

Bakers Shaft is a public reserve on the Belubula River. I've seen kids swimming in it and people fishing. I have no doubt people are dropping a billy in the water and drinking it. But the foam—it worries me that a child would look at that like bubble bath. It is the most horrifically dangerous stuff I have ever encountered.⁴⁶³

- 4.11 Mrs Frances Retallack, Vice Chair, CCSN noted that Bakers Shaft is a very popular recreation and tourist spot where people camp, fish and even pan for gold:

Bakers Shaft is a public reserve upstream from where our property is. It's a very, very popular camping and fishing reserve. The council, who has been advertising it as a tourist attraction—go there and go gold panning. The last time we were there collecting samples with Ian Wright—I think it was back in September school holidays—there were families there playing in the mud, panning for gold.⁴⁶⁴

- 4.12 However, Dr Wright stated that no signs had been erected along the river where the PFAS contamination had been found, though he had suggested through journalists and with local residents that such signs be installed. Dr Wright said he had spoken with some community groups about the contamination and 'some of them said they had no idea'.⁴⁶⁵

⁴⁶⁰ See Submission 10, Dr Ian A. Wright, p 6, and Evidence, Dr Wright, 6 December 2024, p 5.

⁴⁶¹ Xanthe Gregory, *PFAS 'forever chemicals' found in water filtration plants and platypus livers in NSW* (20 August 2024) ABC News website, <https://www.abc.net.au/news/2024-08-20/australia-forever-chemicals-pfas-drinking-water-platypus/104244072>. See also ScienceDirect, <https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/bioaccumulation>.

⁴⁶² Evidence, Dr Wright, 6 December 2024, p 5, see also Submission 10, Dr Ian A. Wright, p 6.

⁴⁶³ Evidence, Dr Wright, 6 December 2024, p 8.

⁴⁶⁴ Evidence, Mrs Retallack, 3 February 2025, p 29.

⁴⁶⁵ Evidence, Dr Wright, 6 December 2024, p 9.

Investigations into the possible causes of the contamination

Stakeholder evidence as to possible causes

4.13 Stakeholders also discussed the possible causes of the PFAS contamination in the Belubula River, with Dr Wright suggesting there may be a link with the nearby Cadia Gold and Copper Mine⁴⁶⁶ now owned by Newmont Corporation.⁴⁶⁷ In March 2018, the northern tailings dam wall failed at the mine, collapsing into the southern tailings dam.

4.14 Dr Wright explained that tailings dams generally have plumes under them that can discharge into the nearby groundwater:

There are two walls. An internal wall for the second of the tailings dams collapsed. The lower downstream one held, fortunately. Tailings dams generally have a discharge plume under them into the groundwater, and the results I've seen from the mine's monitoring—EPA has recently done some monitoring—there does seem to be some transport from there into the groundwater.⁴⁶⁸

4.15 CCSN also asserted there was a link between the river contamination and the mine, pointing to a history of frequent onsite fires. CCSN stated that documents it had obtained pursuant to the *Government Information (Public Access) Act 2009* indicated that between 14 July 2019 and 4 March 2024 there was a total of 48 fires onsite at the mine.⁴⁶⁹ Mrs Retallack noted that Cadia Valley Operations asserted that PFAS-containing firefighting foam was used at the mine until 2015.⁴⁷⁰ However CCSN later advised the committee that their GIPA revealed one Incident Notice of a fire from 13 August 2023 where 'the loader operation activated the (Aqueous Film Forming Foam) AFFF which extinguished the fire'.⁴⁷¹

4.16 In addition, Mrs Retallack named a dewatering plant at Blayney, connected with the mine's operations, and the Orange wastewater treatment plant as possible causes for the river's contamination.⁴⁷²

Investigations by the EPA

4.17 Mr Stephen Beaman, Executive Director, Regulatory Practice and Services, EPA confirmed on 6 December 2024, that the EPA was investigating the source of the river's contamination⁴⁷³ and this was with a view to putting measures into place to mitigate any risks.⁴⁷⁴

⁴⁶⁶ Evidence, Dr Wright, 6 December 2024, p 8.

⁴⁶⁷ See Newmont Corporation, *Newmont Cadia* (2025), <https://www.cadiavalley.com.au/newcrest/cvo>.

⁴⁶⁸ Evidence, Dr Wright, 6 December 2024, p 8.

⁴⁶⁹ Answers to questions on notice, Cadia Community Sustainability Network, 10 March 2025, p 2.

⁴⁷⁰ Evidence, Mrs Retallack, 3 February 2025, p 34.

⁴⁷¹ Answers to questions on notice, Cadia Community Sustainability Network, p 2.

⁴⁷² Evidence, Mrs Retallack, 3 February 2025, p 30.

⁴⁷³ Evidence, Mr Stephen Beaman, Executive Director, Regulatory Practice and Services, NSW Environment Protection Authority, 6 December 2024, p 26.

⁴⁷⁴ Media release, NSW Environment Protection Authority, 'EPA continues Belubula River water monitoring program' 5 December 2024.

- 4.18** In carrying out these investigations, from May 2024 the EPA commenced an ongoing water monitoring program, involving surface water testing along the Belubula River. It collected samples from locations both upstream and downstream from potential contamination sources. Mr Beaman indicated that the Cadia Mine had been identified as a possible contamination source as had three sites in the township of Blayney: a landfill, a composter and a former abattoir.⁴⁷⁵
- 4.19** The EPA also advised in December 2024 that the results to date had indicated the risk to livestock was low, but that as a precaution, it would take some soil samples for testing at select properties where livestock graze adjacent to impacted waterways. Further, the EPA stated it would undertake sampling of the Cadia Mine tailings facility.⁴⁷⁶
- 4.20** By April 2025, the EPA had identified the Blayney composting facility, Australian Native Landscapes compost site, as the most likely source of the river's contamination. Cadia Mine and the Blayney landfill, run by the local council (and touched upon briefly in chapter three), were also identified as continuing causes for concern. The December 2024 round of sampling had revealed the highest levels of PFAS were within Cowriga Creek, downstream of the compost site, and within Mackenzies Waterhole Creek, near the landfill. Both of these creeks are tributaries of the Belubula River.⁴⁷⁷
- 4.21** The PFOS level in the sample upstream of the compost site was 2.5 nanograms per litre, while the results immediately downstream were 150 nanograms per litre, with the ABC noting that this downstream result was 'more than 650 times HEPA's ecological water guideline for freshwater species'.⁴⁷⁸
- 4.22** Regarding the Cadia Mine, PFOS was identified at 13 of the 16 sites tested on the property, with groundwater to its west and south exceeding ecological guidelines in six of 10 bores.⁴⁷⁹
- 4.23** The EPA advised that, as a result of these investigations, it had imposed new conditions on the environment protection licences of all three sites – the compost facility, mine and landfill, meaning that each site must undertake detailed investigations to assess on and off-site impacts. The EPA advised that these investigations will inform its future regulatory activities.⁴⁸⁰

⁴⁷⁵ Evidence, Mr Beaman, 6 December 2024, p 35; see also Media release, NSW Environment Protection Authority, 'EPA continues Belubula River water monitoring program' 5 December 2024.

⁴⁷⁶ Media release, NSW Environment Protection Authority, 'EPA continues Belubula River water monitoring program' 5 December 2024.

⁴⁷⁷ Xanthe Gregory and Joanna Woodburn, *NSW EPA traces Belubula River PFAS contamination to composting facility*, 10 April 2025, ABC News website, <https://www.abc.net.au/news/2025-04-10/nsw-epa-traces-belubula-river-pfas-contamination/105159960>.

⁴⁷⁸ Xanthe Gregory and Joanna Woodburn, *NSW EPA traces Belubula River PFAS contamination to composting facility*, 10 April 2025, ABC News website, <https://www.abc.net.au/news/2025-04-10/nsw-epa-traces-belubula-river-pfas-contamination/105159960>.

⁴⁷⁹ Xanthe Gregory and Joanna Woodburn, *NSW EPA traces Belubula River PFAS contamination to composting facility*, 10 April 2025, ABC News website, <https://www.abc.net.au/news/2025-04-10/nsw-epa-traces-belubula-river-pfas-contamination/105159960>.

⁴⁸⁰ NSW Environment Protection Authority, *Upper Belubula River catchment surface water and groundwater testing – 9 to 12 December 2024*, <https://www.epa.nsw.gov.au/sites/default/files/2025-04/25p4581-belubula-river-water-testing-december-2024.pdf>, p 41.

Questions surrounding the adequacy of the EPA's regulatory response to the PFAS contamination

- 4.24** Questions were asked as to the adequacy of the EPA's regulatory response to PFAS contamination in the Belubula River.
- 4.25** The EPA was asked why, when concerning levels of PFAS had been found in the river (and particularly in the foam accumulating within it), so much so that the EPA started a water sampling program in May 2024, the EPA had not also immediately erected signs along the river, warning people not to swim or fish in it. Specifically, the EPA was asked whether it had acted consistent with the precautionary principle by at least installing signs while they were undertaking testing.
- 4.26** In response, Mr Beaman stated that there was no reason to stop people swimming in the river, as it had continued to meet the guidelines for recreational use.⁴⁸¹ As discussed in chapter one, under the Guidelines for Managing Risk in Recreational Water, managed by the National Health and Medical Research Council (NHMRC), which cover exposure to PFAS from recreational water that may occur when undertaking activities such as swimming, diving, and boating, the recommended health-based guidance value for the sum of PFHxS and PFOS is 2,000 nanograms per litre; whilst for PFOA it is 10,000 nanograms per litre.⁴⁸²
- 4.27** However, noting the PFOS concentrations of 375,000 nanograms per litre in the foam collected from the river, reported by Dr Wright, Mr Beaman was asked whether it was really safe to swim in, with Mr Beaman conceding that nobody should swim or play in the foam.⁴⁸³
- 4.28** Regarding PFAS testing of the river's fish to examine whether they were safe to eat, there was evidence that despite water sampling having started in May 2024, fish testing still had not commenced by December that year. The EPA advised this testing had been delayed owing to flooding in the area.⁴⁸⁴
- 4.29** Mrs Retallack stated that the CCSN had conducted its own testing on carp from the river and they had been found to be 'heavily contaminated with PFOS and copper'.⁴⁸⁵ Further, she confirmed that by January 2025, the EPA had sent NSW Fisheries to properties near the river, including her own, to test Murray Cod and carp. However, as at 3 February 2025, it was still the case that no warning signs concerning fishing, or swimming, had been erected along the river.⁴⁸⁶
- 4.30** The EPA also provided background information as to how it formulates its precautionary dietary advice, based on the work of Food Standards Australia New Zealand (FSANZ). The EPA emphasised that while community members may be fearful when they hear about elevated

⁴⁸¹ Evidence, Mr Beaman, 6 December 2025, p 31.

⁴⁸² National Health and Medical Research Council, *PFAS Guidance for Recreational Water FAQs*, <https://www.nhmrc.gov.au/about-us/publications/guidelines-managing-risks-recreational-water/pfas-guidance-recreational-water-faqs#:~:text=What%20are%20the%20recommended%20HBGVs,health%20officials%20here%20in%20Australia.>

⁴⁸³ Evidence, Mr Beaman, 6 December 2024, p 32.

⁴⁸⁴ Evidence, Mr Beaman, 6 December 2024, p 31.

⁴⁸⁵ Evidence, Mrs Retallack, 3 February 2025, p 28.

⁴⁸⁶ See Evidence, Mrs Retallack, 3 February 2025, pp 27-29.

PFAS levels, assuming any level is harmful, the authorities base their dietary advice on minimising exposure to contaminants so that it does not reach an unacceptable level. Mr Beaman stated:

For PFAS generally, all types of it...[FSANZ] work out how many micrograms per kilogram by body weight per day. You can actually work out how much before you get what they think is an unacceptable effect. All of our work stems off that tolerable daily intake.

...I completely understand it from the community's perspective, where they hear something—everything is a harm...This is about minimising—the advice we are really about providing is how do people practically minimise their exposure to all contaminants, including PFAS.⁴⁸⁷

- 4.31** Under questioning as to whether the EPA had acted consistent with the precautionary principle in failing to erect signs along the Belubula River warning people not to swim or fish in it, at least until tests had taken place to ensure safety, Mr Tony Chappel, Chief Executive Officer of the EPA noted the EPA's above approach to issuing dietary advice. In addition, he stated that, according to the EPA's tests, the water in the river did not impose any kind of acute risk that would trigger more substantive action, such as bans on swimming. He also stressed that testing must take place using nationally accredited methods to be accurate, not discounting the fact that information provided by the community is highly valued:

The precautionary principle says that in the absence of full scientific certainty, the absence of that certainty should not be an impediment to taking cost-effective action to manage a risk. You've heard our approach on dietary advice generally, and I'm sure that advice applies in the Belubula River too. The water in the river that we have tested doesn't pose any kind of acute risk... I know that there is a variety of tests that we've done but also tests that others have done. We always ask the community and scientists to share those results with us. They haven't been shared in terms of some of this work, which makes it harder for us to quantify any particular risk that that data might show.

I think when you're doing sampling for something like this, it's really important to use nationally accredited methodologies and have a calibrated, methodological approach to give you an accurate picture. That generally requires multiple datasets over different time horizons, and that's what this program is doing in the Belubula River. We're obviously working with the community. We want to be as informed by community insights as possible. ...I think that it's just not accurate to say that there's an acute risk that is evident, based on what we know for swimming in that water...[T]hat's what would trigger more substantive action in terms of a precautionary approach.⁴⁸⁸

- 4.32** Further, Mr Beaman confirmed that the EPA had tested water, not sediment or foam, in coming to the conclusion that the water in the Belubula River met the recreational guidelines. In this regard he stated 'You've got to use the right guideline to do the right comparison. You're using the water quality guidelines to do the recreational water standards. That sets the recreational water standard, so that's the one you test against'.⁴⁸⁹

⁴⁸⁷ Evidence, Mr Beaman, 6 December 2024, p 30.

⁴⁸⁸ Evidence, Mr Tony Chappel, Chief Executive Officer, NSW Environment Protection Authority, 6 December 2024, p 32.

⁴⁸⁹ Evidence, Mr Beaman, 6 December 2024, p 34.

- 4.33** Summing up its concerns about the EPA, the CCSN commented that the agency is not sufficiently proactive and the Chair, Ms Gem Green stated '...from the group's perspective on the EPA, we have often found it to be very underwhelming and reactive in nature, not proactive for the community and the environment'.⁴⁹⁰
- 4.34** CCSN advised that local community members had paid in excess of \$30,000 for accredited laboratories to conduct PFAS tests on the river, and committed over 1,000 hours of volunteer time in an effort to get the contamination concerns addressed by the authorities.⁴⁹¹ Mrs Retallack commented 'I don't understand how a known contamination risk for 20 years can have been discovered because I went and got an esky full of foam from the river. That is just ridiculous'.⁴⁹²
- 4.35** Mrs Retallack also noted that local community members have not been offered any blood testing by the government in response to the discovery of PFAS contamination in the Belubula River.⁴⁹³

Committee comment

- 4.36** The committee considers that the NSW Environment Protection Authority's (EPA's) regulatory response to PFAS contamination in the Belubula River has been inadequate. In particular, when noting Dr Wright's evidence that in mid-2024 his tests of the river revealed extremely high PFOS concentrations, particularly in foam.
- 4.37** Parts of the Belubula River are used for swimming, fishing and possibly even drinking. In the circumstances, as soon as the EPA became aware of the discovery of PFOS concentrations of this magnitude, it should have issued advice and erected signs along the river, warning against activities like swimming and fishing until further notice – allowing testing to take place to determine the safety, or otherwise, of the water and of eating fish that were caught from it. No such advice was issued and the committee understands no such signs have been erected.
- 4.38** The committee is also concerned at evidence from the EPA that the reason it has not advised against swimming in the Belubula River is because its PFAS concentrations do not exceed the recreational guidelines. The committee notes that in coming to this conclusion the EPA tested the water in the river but not the sediment or foam.
- 4.39** It seems clear, given Dr Wright's testing results, that had the EPA tested the foam, it would not have met the recreational guidelines, having much higher PFOS concentrations within it than the water. Indeed, Mr Beaman conceded that even though the EPA had issued no advice against swimming in the Belubula River, people should not swim in the foam.
- 4.40** Absent any warning from authorities, there is no guarantee that people swimming in the water – particularly children – will make this distinction and stay away from the foam. Indeed, the committee agrees with Dr Wright that children may even be attracted to the foam, likening it to bubble bath. This is a dangerous situation and a failure on the part of the EPA to protect the health and safety of communities. In short, the committee finds that in failing to erect signs as

⁴⁹⁰ Evidence, Ms Gem Green, Chair, Cadia Community Sustainability Network, 3 February 2025, p 33.

⁴⁹¹ See Answers to questions on notice, Cadia Community Sustainability Network, p 1; and Evidence Ms Green and Mrs Retallack, 3 February 2025, pp 31 and 33.

⁴⁹² Evidence, Mrs Retallack, 3 February 2025, p 33.

⁴⁹³ Evidence, Mrs Retallack, 3 February 2025, p 33.

soon as it became aware of the PFOS in the river, the EPA acted inconsistently with the precautionary principle.

- 4.41** Further, given the very high levels of PFOS the EPA found in Cowriga Creek – a tributary of the Belubula River – in December 2024, and the potential danger posed by PFAS-containing foam, the committee recommends that the EPA inform the community about the possible PFAS contamination in the Belubula River including to avoid any contact with the foam.

Finding 7

In failing to erect signs along the Belubula River, immediately following the PFAS contamination discovery, warning against swimming and fishing until testing of the water and fish had been undertaken, the NSW Environment Protection Authority failed to act consistently with the precautionary principle.

Recommendation 11

That the NSW Environment Protection Authority inform the community about the possible PFAS contamination in the Belubula River including to avoid any contact with the foam.

- 4.42** The committee is also displeased that authorities took so long to start PFAS testing of fish in the Belubula River and its tributaries after the contamination had been discovered. Whilst the EPA began water testing in May 2024, it is understood NSW Fisheries did not start testing fish in the area until January 2025. Again, this represents a failure to safeguard the health of the community, delaying its receipt of any relevant precautionary dietary advice, particularly given evidence from Cadia Community Sustainability Network (CCSN) that its testing – understood to have been procured through an accredited laboratory – had revealed high levels of PFOS in carp.
- 4.43** The EPA stated the delays in testing were the result of flooding in the area but this does not explain its extent – eight months – in such serious circumstances. The delay is only compounded by the fact that in that time no signs were erected along the river, as a precaution, warning people not to fish. The committee finds the EPA took too long to instigate testing of the river's fish.

Finding 8

The delay by the NSW Environment Protection Authority of more than eight months to test fish in the Belubula River for PFAS contamination, after tests on carp caught in the river found high levels of PFAS, was unacceptable.

- 4.44** The committee also notes the CCSN's view that the EPA has displayed a lack of proactivity in its handling of the PFAS contamination in the Belubula River. Community members have gone to considerable private expense – both in time and money – to test PFAS levels on the river in order to get the EPA involved in the matter.
- 4.45** This is particularly disappointing given the Belubula's classification as a high conservation value river under the *Fisheries Management Act 1994* – an important habitat for the native Murray cod and the platypus – and its importance to local agriculture. Parallels can be drawn with evidence of other stakeholders discussed earlier in the report that authorities are not doing enough to monitor, test or manage PFAS in this state, for example, the complaints from Blue Mountains residents.

Finding 9

Community members are spending a significant amount of their own money and resources to test for PFAS in local waterways.

- 4.46** Finally, the committee notes evidence that residents within the vicinity of the Belubula River have not been offered PFAS blood testing by the government despite the PFAS discovery. Concerningly, the committee took some evidence about farms in the community pumping water out and using it for drinking water, and for livestock drinking water. The committee notes the evidence, documented in this report, linking PFAS with serious health effects, and that there are PFAS exposure pathways besides drinking water, including through diet.
- 4.47** In the circumstances, the committee is of the view that the government support PFAS blood testing for willing participants in the vicinity of the Belubula River – both at the individual level to assist with early intervention, and at the population level to inform further much need research into PFAS and its possible health effects. A recommendation regarding blood testing for impacted communities is dealt with later in this chapter.

Elevated PFAS concentrations in drinking water – Warialda, Tarcutta, Narrabri and Dubbo

Detection of elevated PFAS concentrations

- 4.48** As discussed in chapter one, local water utilities (LWUs), which are generally but not always owned and operated by local councils, are responsible for providing drinking water and sewerage services to the 1.8 million people in New South Wales who are outside the areas covered by Sydney Water and Hunter Water. There are 89 council-operated LWUs in New South Wales and three further LWUs that exercise water supply and sewerage functions.⁴⁹⁴

⁴⁹⁴ See Local Government NSW, *Local Water Utilities*, <https://lgnsw.org.au/Public/Public/Policy/Local-Water-Utilities.aspx#:~:text=NSW%20councils%20are%20responsible%20for,voluntary%20regional%20alliances%20of%20LWUs;and%20Department%20of%20Planning,Industry%20and%20Environment,Utilities%20that%20carry>

- 4.49** Regarding raw water, some LWUs throughout the state source their raw water from WaterNSW and treat it for customers' consumption, while other LWUs manage their own raw water supply, combining this with their water treatment role.⁴⁹⁵
- 4.50** In 2024, against a backdrop of increased media coverage of the potential health and environmental risks of PFAS, already discussed in chapter two,⁴⁹⁶ NSW Health asked local water utilities that had not yet tested for PFAS in their drinking water supply systems to conduct initial screening tests, providing guidance and some funding to do so.⁴⁹⁷
- 4.51** Dr Jeremy McAnulty, Executive Director, Health Protection NSW, NSW Health advised that NSW Health wrote to the local water utilities and that the resulting testing program involved 83 utilities, and 263 drinking water suppliers:
- We wrote to each water utility, recommending that they do the testing, and then we offered to support them in paying for the tests where they hadn't been able to do a test yet. Through personal communication through public health units and also formal correspondence, local water utilities, who have the responsibility for doing the testing—did the testing...
- There are 83 local water utilities who have 263 individual water systems. Some have multiple water systems at different communities. Those 83 were all tested in 2024.⁴⁹⁸
- 4.52** The samples taken under the testing program were tested by National Association of Testing Authorities laboratories, which are accredited, which resulted in a small number of results that did not meet the Australian Drinking Water Guidelines (ADWG) current at the time of testing and/or proposed new guidelines.⁴⁹⁹
- 4.53** Regarding these proposed new guidelines, as noted earlier in the report, in 2022, the Australian Government's Department of Health and Aged Care asked the NHMRC to conduct a review of the ADWG values for PFAS. As well as reviewing the guideline values for PFOA, PFOS and PFHxS, the NHMRC also considered PFBS and hexafluoropropylene oxide (HFPO) dimer acid and its ammonium salt, known as 'GenX chemicals'.⁵⁰⁰

out water supply and sewerage services, <https://water.dpie.nsw.gov.au/our-work/local-water-utilities/entities-that-carry-out-water-supply-functions>.

⁴⁹⁵ Submission 19, NSW Government, p 14.

⁴⁹⁶ See evidence, Councillor Dallas Tout, Board Director, Local Government NSW, 5 February 2025, p 25; see also Carrie Fellner, "'There's no safe level': Carcinogens found in tap water across Australia', *Sydney Morning Herald*, 11 June 2024; and Submission 10, Dr Ian A. Wright, p 1.

⁴⁹⁷ See Evidence, Mr Chappel, 5 February 2025, p 51; and Evidence, Councillor Tout, 5 February 2025, p 25. It is noted that Mr Chappel indicates the testing program covered those local water utilities that had not yet tested which may account for 83 local water utilities having conducted testing under the program, rather than the 89 that it is understood exist across the state.

⁴⁹⁸ Evidence, Dr Jeremy McAnulty, Executive Director, Health Protection NSW, NSW Health, 5 February 2025, p 60.

⁴⁹⁹ Evidence, Dr McAnulty, 5 February 2025, p 60.

⁵⁰⁰ Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41.

- 4.54** The NHMRC released updated draft guidelines for public consultation from 21 October – 22 November 2024.⁵⁰¹ The updated ADWG proposed a significant decrease as to what would be counted to be safe levels of PFAS in drinking water, and the NHMRC confirmed they were based on the level of PFAS chemicals people can ingest over a lifetime without an appreciable risk to health.⁵⁰²
- 4.55** As a result of this consultation process, new guideline values were introduced on 25 June 2025.⁵⁰³ The NHMRC advised that the new guideline levels are the same as for those proposed at public consultation except for PFOS where the proposed guideline was 4 nanograms per litre, while the new guideline has revised this to 8 nanograms per litre. In noting that the guidelines are used by states and territories to regulate safe drinking water, the NHMRC further advised that jurisdictions would now determine the timelines with which water providers would have to comply to meet the new guidelines.⁵⁰⁴
- 4.56** Of 83 local water utilities tested in 2024 under the program supported by NSW Health:
- **one**, in Warialda, returned results that did not meet the ADWG **current** at the time of testing
 - a further **two** – Tarcutta and Narrabri – returned results that did not meet the **new proposed** ADWG, and
 - a further **one** returned a result **level** with the new proposed ADWG, with a subsequent result below the new proposed ADWG.⁵⁰⁵

Warialda

- 4.57** Warialda is a town in the North West Slopes region of New South Wales, within Gwydir Shire. Cr Tiffany Galvin, Mayor of Gwydir Shire Council, provided further detail to the committee about the PFAS detections there⁵⁰⁶ and advised that, as a result of these detections, two of the town's water bores had to be turned off:

⁵⁰¹ National Health and Medical Research Council, *Australian Drinking Water Guidelines – Public Consultation on Draft Guidance for Per-and Polyfluoroalkyl Substances (PFAS)*, <https://consultations.nhmrc.gov.au/environmental-health/australian-drinking-water-guidelines-2024-pfas/>

⁵⁰² Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41; and Media release, National Health and Medical Research Council, 'Australian Drinking Water Guidelines: Public Consultation now open', 21 October 2024.

⁵⁰³ Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines' 25 June 2025.

⁵⁰⁴ Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines' 25 June 2025.

⁵⁰⁵ Evidence, Dr McAnulty, 5 February 2025, p 60.

⁵⁰⁶ See NSW Health, *Warialda Multipurpose Service* (2025), [https://www.nsw.gov.au/departments-and-agencies/nsw-health/service-directory/warialda-multipurpose-service#:~:text=Location,%2C%20education%2C%20and%20essential%20services](https://www.nsw.gov.au/departments-and-agencies/nsw-health/service-directory/warialda-multipurpose-service#:~:text=Location,%2C%20education%2C%20and%20essential%20services;); and Evidence, Cr Tiffany Galvin, Mayor Gwydir Shire Council and Country Mayors Association of NSW PFAS contaminated water member representative, 5 February 2025, p 25.

Gwydir Shire Council participated in NSW Health testing for PFAS in local water supplies. Due to some irregularities in the initial samples, there was follow-up testing. On 9 Dec 2024, Gwydir Shire Council was advised that the Warialda water supply recorded positive results for PFAS in excess of the current PFAS guidelines. The council, in conjunction with the relevant State authorities, promptly took the action to sample each of the five operating bores in Warialda to identify the source of the PFAS contamination. The council also sourced bottled water and arranged for its distribution to the Warialda residents...Two of the Warialda town bores are contaminated and are now offline.⁵⁰⁷

4.58 Of the five bores tested, one was already offline owing to low recharge which has left Warialda with just two operating bores.⁵⁰⁸ Cr Galvin emphasised that the situation raises serious water security concerns for Warialda, necessitating the sinking of new bores.⁵⁰⁹

4.59 Mr Alex Eddy, Country Mayors Association of NSW contaminated water member representative, told the committee that any failure in the remaining bores will be an emergency situation:

Now that we are down to two bores, it's absolutely essential that we expand on the network we have. The largest supplier to the town of the two bores we have operating is pumping for 23½ hours on average every day. It has become the most critical piece of infrastructure the town has. A failure in that bore—be it in a pump, be it in electrical supply or be it in the casing—is an emergency situation.⁵¹⁰

4.60 Mr Eddy also commented that another concern was with the number of private bores in the Warialda township. The extent of contamination in private bores and across the aquifer was unknown as the council does not have the resources to be testing private bores:

Not knowing the source is of considerable concern for a few reasons. One is the number of private wells and bores that are in the township of Warialda and the extent of contamination across those bores and throughout the aquifer is unknown. In a sampling that council has done on primarily council-operated bores, it has been identified that it seems to be located largely on the northern side of Warialda, but there does seem to be, or there remains, some concern about private use of water on the northern side of Warialda and indeed the southern side on the large number that have not been tested. Council doesn't have the resources to be privately testing private bores within the township.⁵¹¹

4.61 Mr Eddy indicated that if there is a PFAS contaminated plume moving in the groundwater within Warialda, expensive ongoing monitoring will be needed to ensure contamination has not entered the bores at levels above the thresholds set by the relevant ADWGs, another financial burden that the council does not have the resources to meet.⁵¹²

⁵⁰⁷ Evidence, Cr Galvin, 5 February 2025, p 25.

⁵⁰⁸ Evidence, Mr Alex Eddy, Country Mayors Association of NSW contaminated water member representative, 5 February 2025, p 26.

⁵⁰⁹ Evidence, Cr Galvin, 5 February 2025, pp 25-26.

⁵¹⁰ Evidence, Mr Eddy, 5 February 2025, p 27.

⁵¹¹ Evidence, Mr Eddy, 5 February 2025, p 26.

⁵¹² Evidence, Mr Eddy, 5 February 2025, p 30.

Tarcutta

- 4.62** Tarcutta is a village in the City of Wagga Wagga in south western New South Wales.⁵¹³ On 5 February 2025, the Mayor of Wagga Wagga, Cr Dallas Tout, provided further detail with regard to the PFAS detections there. Cr Tout indicated that, like Warialda, the PFAS detections in Tarcutta raise serious water security issues. He stated that Tarcutta has only two bores and that ongoing testing in early 2025 suggested that both would struggle to meet the new proposed ADWG when they came into play:

There's only two bores that service Tarcutta. One was under the existing but above the proposed, and the second one was okay, in the last couple of weeks. The other bore now is above the proposed but below the existing. So if the new proposed levels come in, at the last readings, both of those bores would be out—if the proposed levels come in...the moving around of the thresholds will change the whole landscape in this space. As the levels drop, then more bores will be reading higher or triggering action. So, there are two bores in one town. If those new thresholds came in, they'd be both out.⁵¹⁴

- 4.63** As the new ADWG came out after Cr Tout gave evidence, it is noted that the two bores that service Tarcutta did not meet these guidelines at the time.

Dubbo

- 4.64** Another location of note where PFAS was found in drinking water supply systems was Dubbo, a regional city in the Orana region of New South Wales.⁵¹⁵ This was detected independent of the 2024 testing initiative supported by NSW Health. Dubbo Regional Council has been carrying out regular testing of its town water supply bores and treated water for Dubbo's water supply scheme since 2020, and monthly sampling of all treated water supply systems – Dubbo, Wellington, Geurie and Mumbil now takes place.⁵¹⁶
- 4.65** The Mayor of Dubbo, Cr Josh Black, stated on 5 February 2025 that PFAS is present in the aquifer around Dubbo and in February 2020 bore sampling detected PFAS in several bores. One had to be turned off and Cr Black warned that another two may have to be turned off in future because of concerns they would not meet the new ADWG when they came into play:

In February 2020, as part of the due diligence process for the expansion of the Dubbo water supply, town water supply bore network, there was sampling of existing bores done then for the first time. All of the tests showed PFAS in several of our bores. One

⁵¹³ See City of Wagga Wagga, *Tarcutta* (2025), <https://haveyoursay.wagga.nsw.gov.au/our-villages/tarcutta>, and Destination NSW, *Wagga Wagga* (2025), <https://www.visitnsw.com/destinations/country-nsw/riverina/wagga-wagga>.

⁵¹⁴ Evidence, Cr Dallas Tout, Mayor of the City of Wagga Wagga and Board Director, Local Government NSW, 5 February 2025, p 29.

⁵¹⁵ See Regional Development Australia, *Dubbo Region* (2025), <https://rdaorana.org.au/orana-region/dubbo-region>, and Destination NSW, *Dubbo* (2025), <https://www.visitnsw.com/destinations/country-nsw/dubbo-area/dubbo#:~:text=Dubbo%20is%20located%20where%20the,Sydney%20is%20around%20five%20hours>.

⁵¹⁶ Answers to questions on notice, Cr Josh Black, Mayor, Dubbo Regional Council and Executive Board Member, Country Mayors Association of NSW, 6 March 2025, p 1.

of the bores, which was a really highly productive bore, had levels that were beyond the current Australian Drinking Water Guidelines values, and that was immediately disconnected from the network. So we know that there's a couple of bores that, with the new guidelines, would probably be just above those or very close to them.⁵¹⁷

4.66 It is understood that the source of contamination was traced back to a section of Ollie Robins Oval, Dubbo, where firefighting training used to take place, next to the Macquarie River.⁵¹⁸

4.67 As with Warialda and Tarcutta, Cr Black indicated the closure of the bore, and potential closure of two more, raises serious water security concerns for Dubbo:

...the Dubbo water treatment plant—we supply the 44,000 residents of Dubbo and there's five surrounding villages... Council were lucky enough to get a \$30 million grant from the State Government, and we've drilled eight new bores, so we've gone from seven up to 15 bores, but we do need more because the current number is not enough to provide full supply with PFAS contamination of some of our bores. We've already turned one really high productive bore off, and with the new proposed thresholds, there's a possibility that another bore or two may have to be turned off as well. In a drought and with changing climate, like 2019, that really does become a catastrophic event for the town and surrounding villages.⁵¹⁹

4.68 Cr Black indicated that PFAS-related water security issues are apparent across New South Wales and that the cost of remediation and other measures to address this in Dubbo and further afield would need to be borne at the state and federal level as councils do not have the necessary resources:

We really need State government assistance and probably Federal government assistance as well in providing some of those units with the reverse osmosis that are able to filter out the PFAS from the bore water. With the bore that is impacted by the Ollie Robins Oval, the Fire and Rescue firefighting foam, we really do need the State Government to step in and pay for the remediation there...

We're looking at a major, major, major investment needed. And this is not just Dubbo; this is replicated throughout, especially western New South Wales. The investment into water infrastructure that's required to futureproof the future drought events is into the many hundreds of millions of dollars. Councils don't have that money, quite frankly. It's going to have to come from the State and Feds. The PFAS issue is something that we really should deal with now in order to not wait until it's in the middle of a drought.⁵²⁰

Action being taken in response to PFAS detections

4.69 In response to the 2024 PFAS detections, Dr McNulty advised that NSW Health is 'proactively engaging' to support LWUs to manage PFAS in their drinking water. As above, resourcing of LWUs to respond to these challenges is an issue, particularly given the advent of new, more

⁵¹⁷ Evidence, Cr Josh Black, Mayor, Dubbo Regional Council and Executive Board Member, Country Mayors Association of NSW, 5 February 2025, p 29.

⁵¹⁸ See Media release, Dubbo Regional Council, 'Statement: Precautionary safety measures in place Ollie Robins Oval', 17 December 2021; and Evidence, Cr Black, 5 February 2025, p 28.

⁵¹⁹ Evidence, Cr Black, 5 February 2025, p 28.

⁵²⁰ Evidence, Cr Black, 5 February 2025, p 28.

stringent, drinking water quality guidelines. Dr McAnulty further advised processes were underway for the government to respond to the NSW Productivity and Equality Commission's review of LWU funding models, which reported on 19 July 2024.⁵²¹

4.70 Mr Chappel of the EPA also advised that following the testing, the EPA was working closely with NSW Health to help identify contamination sources in the communities where the elevated PFAS levels had been detected, and to identify approaches to reduce PFAS risks.⁵²²

4.71 Mr Beaman of the EPA provided further detail about the methodology:

It was three out of the 83 local water utilities...But, for each of those detection sites, we're going through starting the process of identifying and mapping, looking at what other activities are occurring in that water catchment that may be a contributor to it. The obvious things for those catchments, for us, typically, are landfills. I suspect Warialda has a small landfill. Most country towns, as you know, usually have a small landfill or tip on the outside of it. That's where we'll probably start our work. But we're going to map that so we do it systematically and see if we can identify any sources.⁵²³

4.72 Noting that NSW Health had written to the LWUs recommending that the testing take place, NSW Health was asked whether it had recommended, not directed, that the results be published. In response, Dr McAnulty stated that NSW Health had 'strongly recommended' to LWUs that they publish this information, and in all cases where elevated PFAS levels had been detected, public reporting had indeed taken place.⁵²⁴

4.73 Dr McAnulty stressed that NSW Health aims to foster a respectful working relationship with LWUs in this regard, and that the desired results had been achieved:

...the water utilities are the owners of the data and the owners of the responsibility to provide safe water to their communities, and we have a respectful working relationship with local water utilities. We, through our public health units, have regular communications with them. I think part of our approach is to be supportive, to be respectful of their ownership. However, if we were concerned that important information wasn't being made public, we would work with those communities' water utilities to explain why they needed to do that. In fact, the approach was successful in making sure that the testing occurred and that the results were reported where they were above any guideline or proposed guideline.⁵²⁵

4.74 The NSW Water Directorate is the peak body representing the local government-owned LWUs across regional New South Wales.⁵²⁶ When asked whether LWUs should be legally required to report PFAS levels, Mr Brendan Guiney, Executive Officer responded noting that LWUs can currently choose whether to publish PFAS levels and that they are 'actively reporting to their

⁵²¹ Evidence, Dr McAnulty, 5 February 2025, p 52, see also Productivity and Equality Commission, *Review of funding models for local water utilities*, <https://www.productivity.nsw.gov.au/local-water-utilities-funding-models-review>.

⁵²² Evidence, Mr Chappel, 5 February 2025, p 51.

⁵²³ Evidence, Mr Beaman, 5 February 2025, p 56.

⁵²⁴ Evidence, Dr McAnulty, 5 February 2025, p 60.

⁵²⁵ Evidence, Dr McAnulty, 5 February 2025, p 60.

⁵²⁶ Submission 15, Water Directorate, p 1.

communities'.⁵²⁷ However, Mr Guiney further advised that the Water Directorate would not object to legal requirements to report, observing that consideration should be given as to whether further drinking water quality data should be reported routinely, and published.⁵²⁸

- 4.75** There was also an indication that since the PFAS detections in 2024 in Tarcutta and Warialda, LWUs have been conducting frequent, ongoing testing in these localities. Cr Tout stated that in Tarcutta the LWU, Riverina Water County Council, carries out PFAS testing of bores on a bi-monthly basis, and this is necessary for authorities to keep apprised of the situation which can be quite changeable:

I can speak for Riverina Water... We just test all of our bores every couple of months now. It won't stop, because we have that many bores. We have to know what the readings are continually so that we can be aware of what the situation is. It also goes into...being aware of what the situation is, because things change rapidly. We've had a bore change in the last week in Tarcutta.⁵²⁹

- 4.76** Further, Cr Tout informed the committee that this ongoing testing is funded by Riverina Water County Council not NSW Health.⁵³⁰
- 4.77** In the case of Warialda, Cr Galvin confirmed that Gwydir Shire Council now carries out monthly PFAS testing and Mr Eddy confirmed that, as at 5 February 2025, this had been funded by NSW Health.⁵³¹
- 4.78** In the case of Dubbo, as above, Dubbo Regional Council has been carrying out regular testing of its town water supply bores and treated water for Dubbo's water supply scheme since 2020, independent of the 2024 testing initiative supported by NSW Health, and monthly sampling of all treated water supply systems – Dubbo, Wellington, Geurie and Mumbil now takes place.⁵³²
- 4.79** NSW Health did pay for PFAS testing in 2024 for Dubbo Regional Council's previously untested water supply systems - Wellington, Geurie and Mumbil - consistent with its recommendation that all LWUs undertake initial PFAS screening for each treated drinking water supply system where PFAS levels had previously not been tested. However, this was a one-off provision and the council has carried out all other PFAS testing – prior and following – at its own cost.⁵³³

Committee comment

- 4.80** The committee welcomes the action being taken in response to the detections of PFAS in drinking water supply systems in Tarcutta, Warialda, Narrabri and Dubbo, and in particular the

⁵²⁷ Answers to supplementary questions, Mr Brendan Guiney, Executive Officer, Water Directorate, 17 March 2025, p 1.

⁵²⁸ Answers to supplementary questions, Mr Guiney, p 1.

⁵²⁹ Evidence, Cr Tout, 5 February 2025, p 29; see also Evidence, Mr Tim Koschel, Chairperson, Board, Riverina Water County Council, 8 April 2025, p 24.

⁵³⁰ See Evidence, Cr Tout, 5 February 2025, p 27.

⁵³¹ Evidence, Cr Galvin and Mr Eddy, 5 February 2025, p 29.

⁵³² Answers to questions on notice, Cr Black, p 1.

⁵³³ Answers to questions on notice, Cr Black, p 1.

regular PFAS testing it heard is taking place in these locations. However, as identified, local water utilities (LWUs) have limited resources with which to respond to the PFAS challenge and it would be beneficial for the government to fund regular ongoing testing in these PFAS affected areas where possible.

- 4.81** The committee also notes evidence that while NSW Health recommended in 2024 that LWUs that had not yet tested for PFAS in their drinking water supply systems conduct initial screening tests, and that the results be published, it did not mandate this. In addition, the committee notes the evidence of the peak body for regional LWUs, the NSW Water Directorate, that it would not object to legal requirements for LWUs to report PFAS testing results.
- 4.82** As per the committee's recommendations in chapter two, the government should ensure regular, risk-based PFAS testing of raw and drinking water across New South Wales; and public reporting of test results as soon as possible after testing takes place.
- 4.83** There is no point having water quality standards in Australia if there is no regular testing to check that the standards are being met, and, further, the results of any regular testing carried out must be publicly reported so that authorities are kept accountable for managing such an important health and environmental issue. This will prevent a repeat of elevated PFAS levels going undetected as has happened in Tarcutta, Wialda and Narrabri – and other locations discussed earlier in the report including the Blue Mountains and Central West New South Wales, on the Belubula River.

The need for greater federal and state coordination and funding for water quality and security in regional New South Wales

The costly challenges

- 4.84** As discussed already, there was evidence that LWUs do not have the resources to address the water quality and security issues posed by PFAS contamination and state and federal assistance will be needed. The Water Directorate stated:

Local water utilities, which are owned and operated by NSW local government, lack the necessary resources, expertise and capacity to independently address the complex risks posed by PFAS contamination to human health and the environment. Effectively managing these risks will require significant funding, coordination and leadership from responsible NSW government agencies.⁵³⁴

- 4.85** However, the Water Directorate estimated the backlog of water security and water quality investment in New South Wales to be in the order of \$5 billion.⁵³⁵
- 4.86** On water security, as already indicated in the context of elevated PFAS levels in Wialda, Tarcutta and Dubbo, these issues are heightened by the new, more stringent ADWG that have

⁵³⁴ Submission 15, Water Directorate, p 7.

⁵³⁵ Answers to supplementary questions, Mr Guiney, p1.

now been published, on 25 June 2025, that will mean further water sources will need to be turned off for non-compliance.⁵³⁶

- 4.87** Mr Guiney of the Water Directorate detailed the kind of logistical and financial challenges that can arise where a community's only water source becomes contaminated:

We wouldn't necessarily shut water off, because we do need to provide it 24/7, but working with the regulating agencies, Health and EPA, you would switch those communities on to bottled water immediately. That would be difficult and expensive, and there are a lot of challenging situations like schools, aged care and hospitals, where you need to pay close attention in your community to compromised community members. So it is not easy. The larger the inland city or coastal city, the larger the bottled water challenge becomes...we're very fortunate that there are only three to four sites that have challenges with PFAS, because if we had a town that didn't have a second source of water, then those sorts of solutions would have to be implemented.⁵³⁷

- 4.88** As is also discussed above, there was evidence that such issues will necessitate ongoing testing, monitoring, remediation, and the construction of alternative water sources which will in turn require state and federal funding.⁵³⁸

- 4.89** Regarding remediation, Mr Guiney noted that currently only a small number of water treatment plants in New South Wales can filter out PFAS and that increased treatment – or indeed finding new sources of water – will be extremely expensive:

...Gwydir shire and Dubbo, did allude to where some water supplies are compromised and we need to either increase treatment or we need to find new sources of water. That's extremely expensive, and we don't think we can build our way out of trouble easily. It will take a very long-term strategic approach. That's presently mapped out in the Safe and Secure Water program, which has been about \$1 billion every 10 years. Now \$1 billion over 10 years sounds like a lot, but we think we've got a backlog of effort of about in excess of \$5 billion for regional water utilities. We've got significant challenges and we could use a lot of support from the higher levels of government.⁵³⁹

- 4.90** In the circumstances, he counselled a risk-based approach of providing the infrastructure where it is needed because investigations indicate the water quality risk is unacceptable, noting that it is unlikely that all water treatment plants in New South Wales would need to be upgraded for PFAS treatment.⁵⁴⁰

- 4.91** The Independent Pricing and Regulatory Tribunal (IPART) observed that the costs of managing PFAS in regional areas will vary with some facing particularly tough circumstances, and questions raised about the financial viability of some local government authorities altogether.⁵⁴¹

⁵³⁶ Evidence, Cr Black, 5 February 2025, p 29; and Evidence, Mr Eddy, 5 February 2025, p 30. See also Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines', 25 June 2025.

⁵³⁷ Evidence, Mr Brendan Guiney, Executive Officer, Water Directorate, 5 February 2025, p 57.

⁵³⁸ See Evidence, Cr Black, 5 February 2025, p 28; and Evidence, Mr Eddy, 5 February 2025, p 30.

⁵³⁹ Evidence, Mr Guiney, 5 February 2025, p 63.

⁵⁴⁰ Answers to supplementary questions, Mr Guiney, p 1.

⁵⁴¹ Evidence, Mr Andrew Nicholls PSM, Chief Executive Officer, Independent Pricing and Regulatory Tribunal, 5 February 2025, p 46.

- 4.92** For its part, Local Government NSW stated that it had called on the government to commit funding for LWUs to address PFAS contamination.⁵⁴²
- 4.93** The Member for Wagga Wagga, Dr Joe McGirr MP likewise stated on 8 April 2025 that financial and technical support would be essential if the LWU for Wagga Wagga, Riverina Water County Council, were to meet the upcoming revised ADWG.⁵⁴³
- 4.94** With respect to Dubbo and Wialda, the individual LWUs also provided evidence about exactly what they were seeking to deal with PFAS within their communities. As stated above, Cr Black of Dubbo Regional Council said that more bores will need to be drilled to continue to supply enough water to the Dubbo community. Cr Black is also seeking assistance from Fire and Rescue NSW to carry out remediation at Ollie Robins Oval, and an upgraded water treatment plant like the one in the Blue Mountains that can filter out PFAS.⁵⁴⁴
- 4.95** Mr Eddy stated that to address the PFAS contaminated bores in Wialda, Gwydir Shire Council is seeking either a filtration or treatment solution that would entail a capital investment of approximately \$1 million, plus ongoing operational costs; or the drilling of an additional bore the cost of which is estimated to be in the region of half a million dollars.⁵⁴⁵
- 4.96** The Water Directorate and Cr Tout, Mayor of Wagga Wagga, also stressed the importance of source control, noting the limitations of testing, remediation and the construction of new water infrastructure to control PFAS. Cr Tout remarked 'Without regulations to limit the sale and import of products containing PFAS, controlling contamination in water will remain challenging'.⁵⁴⁶
- 4.97** In addition, Dr Ian Wright of Western Sydney University raised concerns about the ability of authorities in regional areas to safeguard water quality given their limited resourcing. He stated:
- I think it's fair to say, based on data that I've seen—I've done some testing—that the further you get away from the coast in any part of Australia, the more challenging it is for water suppliers to provide high-quality drinking water. About eight years ago, Infrastructure Australia did an assessment and noted that it is really hard for regional water suppliers across Australia to have the technology, the rating base—because they've got small populations—and even the expertise of personnel to keep up with the standards that we expect in capital cities...councils that run water supplies [are]... going to need a lot of help to provide and ensure clean and safe drinking water, both in terms of assessing problems but also treating it to achieve that.⁵⁴⁷
- 4.98** Dr Wright also indicated many in regional communities rely on private tank water for drinking but there is no government funded systemic testing of private water tanks.⁵⁴⁸ Further, and as noted above, there is also no government funded testing of private bores.

⁵⁴² Answers to questions on notice, Local Government NSW, 4 March 2025, p 1.

⁵⁴³ Evidence, Dr Joe McGirr MP, Member for Wagga Wagga, 8 April 2025, p 3.

⁵⁴⁴ See Evidence, Cr Black, 5 February 2025, pp 28 and 31.

⁵⁴⁵ Evidence, Mr Eddy, 5 February 2025, p 31.

⁵⁴⁶ Evidence, Cr Tout, 5 February 2025, p 25; and Evidence, Mr Guiney, 5 February 2025, p 53.

⁵⁴⁷ Evidence, Dr Wright, 6 December 2024, pp 7-8.

⁵⁴⁸ Evidence, Dr Wright, 6 December 2025, p 4.

Review work to determine the financial impact of PFAS contamination on local water utilities

- 4.99** Noting that resourcing of LWUs to respond to the challenges of PFAS is an issue, particularly given the advent of new, more stringent, drinking water quality guidelines, Dr McAnulty of NSW Health advised processes were underway for the government to respond to the NSW Productivity and Equality Commission's review of LWU funding models, which reported on 19 July 2024. This review also considered broader challenges faced by LWUs including managing risks from pathogens, cyanobacteria, chemical characteristics and extreme climate events.⁵⁴⁹
- 4.100** Further, IPART was questioned as to whether it had conducted any assessment of the financial impact of PFAS remediation on New South Wales water utilities. As discussed in chapter one, IPART sets maximum prices that Sydney Water, Hunter Water and WaterNSW can charge customers for water and has advised that these prices are to 'reflect the efficient cost of providing safe and efficient services'.⁵⁵⁰
- 4.101** However, IPART noted that it does not regulate LWUs run by local councils which are generally regulated under the *Water Management Act 2000* by the Department of Climate Change, Energy, the Environment and Water. Similarly, IPART does not set prices for water supplied by local councils, with the exception of Central Coast Council.⁵⁵¹
- 4.102** With these functions in mind, IPART stated that it 'stands ready to thoroughly and carefully scrutinise the impact of PFAS in pricing proposals brought forward for IPART's review'.⁵⁵² Further, IPART clarified that the rising costs of managing PFAS have not to date driven proposed prices but that this could change should the cost of complying with the ADWG increase or if other relevant regulatory changes occurred.⁵⁵³
- 4.103** In further clarifying its role, IPART stated that in considering any proposals for price increases as a result of PFAS compliance, it would need to determine what proportion of the efficient costs of addressing PFAS should be borne by customers. In performing its price review function, IPART is required to consider, among other things:
- the cost of providing the services concerned
 - the social impact of the determination
 - the need to maintain ecologically sustainable development and the standards of quality, and
 - reliability and safety.⁵⁵⁴

⁵⁴⁹ Evidence, Dr McAnulty, 5 February 2025, p 52; see also Productivity and Equality Commission, *Review of funding models for local water utilities*, <https://www.productivity.nsw.gov.au/local-water-utilities-funding-models-review>.

⁵⁵⁰ Evidence, Mr Nicholls, 5 February 2025, p 44.

⁵⁵¹ Evidence, Mr Nicholls, 5 February 2025, p 44.

⁵⁵² Answers to supplementary questions, Independent Pricing and Regulatory Tribunal, 6 March 2025, p 1.

⁵⁵³ Answers to supplementary questions, Independent Pricing and Regulatory Tribunal, p 2.

⁵⁵⁴ Answers to supplementary questions, Independent Pricing and Regulatory Tribunal, p 1.

Committee comment

- 4.104** The committee is deeply concerned at evidence that local water utilities (LWUs) are not resourced appropriately to address the PFAS contamination that has been detected in regional New South Wales including Wialda, Tarcutta, Narrabri and Dubbo. This is particularly the case in the face of the new Australian Drinking Water Guidelines (ADWG) which set more stringent water quality standards and the associated water security implications of having water supplies cut off.
- 4.105** It is clear that ongoing testing, monitoring, remediation and provision of alternative water sources will be necessary in some locations to address identified issues. The committee accepts that state government and Australian Government assistance will be necessary to fund and help coordinate these responses. The committee also notes that it agrees with the observations of the Water Directorate and the Independent Pricing and Regulatory Tribunal (IPART) that needs will differ according to locality, and any eventual allocations would need to be risk-based.
- 4.106** In the circumstances, the committee recommends that the government commission a comprehensive review to determine the financial impact of PFAS contamination on LWUs in regional New South Wales, including the costs of:
- increased PFAS testing and monitoring of water
 - PFAS treatment of water, and
 - provision of alternative water supplies where previous sources do not meet required water quality standards
- taking into account the water quality standards under the new ADWG.
- 4.107** The committee considered whether IPART might be a suitable organisation to carry out the review. However, the committee has determined that IPART would not be suitable given its more restricted, but important, role setting the maximum prices that certain water utilities can charge customers for water, based on price proposals. The review should instead be conducted by a suitably qualified independent person or panel of persons, and the committee so recommends.

Recommendation 12

That the NSW Government commission an independent person or panel of persons to conduct a review to determine the financial impact of PFAS contamination on local water utilities in regional New South Wales, including the costs of:

- increased PFAS testing and monitoring of water
- PFAS treatment of water, and
- the provision of alternative water supplies where previous sources do not meet required water quality standards

having regard to water quality standards under the new Australian Drinking Water Guidelines, published in June 2025.

- 4.108** The results of the above review would supplement those of the broader review recently conducted by the NSW Productivity and Equality Commission of LWU funding models. The committee recommends that the results of both be used to inform the urgent allocation of sufficient government funding to LWUs for ongoing PFAS testing, monitoring and treatment of water, and the provision of alternative water supplies where necessary. They could also be used to inform any requests for Australian Government funding.

Recommendation 13

That, drawing on the results of the NSW Productivity and Equality Commission's review of local water utility funding models and any independent review to determine the financial impact of PFAS contamination on local water utilities in regional New South Wales, the NSW Government urgently allocate sufficient funding to local water utilities for:

- ongoing PFAS testing and monitoring of water
- PFAS treatment of water, and
- provision of alternative water supplies where previous sources do not meet required water quality standards.

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- 4.109** In this regard, the committee also notes a recommendation made later in the report – following an examination of PFAS treatment methods – that, consistent with the 'polluter pays' principle in New South Wales, the government consider whether polluting industries should pay a specific levy which would assist to fund PFAS treatment research and PFAS water treatment, especially in regional areas of New South Wales where PFAS contamination has been identified.
- 4.110** In addition, the committee accepts evidence from the Water Directorate and the Mayor of Wagga Wagga, Cr Tout, that in addressing these issues, source control is vital. As mentioned earlier in the report, the committee considers that non-essential PFAS must be phased out of consumer, commercial and industrial products in Australia or it will continue to be very difficult to control and very expensive to treat. In this vein, the committee also makes recommendations concerning source control later in the report.
- 4.111** Finally, the committee notes evidence that there is no government funding to PFAS test the many private drinking water tanks that exist across regional New South Wales, and that LWUs may have insufficient funding to test the many private bores that also exist. This represents a significant knowledge gap and a risk for water quality in regional communities. In the circumstances, the committee recommends that in commissioning a review to determine the financial impact of PFAS contamination on LWUs in regional New South Wales the government request the reviewer/s to specifically factor in the cost of PFAS testing for private water tanks and bores.

Recommendation 14

That in commissioning an independent person or panel of persons to conduct a review to determine the financial impact of PFAS contamination on local water utilities in regional New South Wales, the NSW Government request the reviewer/s to specifically factor in the cost of PFAS testing for private water tanks and bores.

Wagga Wagga – PFAS contamination from Defence bases

Defence related PFAS contamination in Wagga Wagga

- 4.112** In addition to the evidence about PFAS detections in Tarcutta New South Wales, within the City of Wagga Wagga, there were also concerns from some stakeholders about contamination originating from Wagga Wagga's Defence bases.
- 4.113** As noted, Wagga Wagga is located in south western New South Wales. It is in the Riverina region of the state, sitting on the banks of the Murrumbidgee River.⁵⁵⁵ It is home to two Defence bases – the Army Recruit Training Centre, Blamey Barracks approximately 9.5 kilometres south-west of Wagga Wagga in Kapooka⁵⁵⁶ and the RAAF Base Wagga which is approximately 10 kilometres east of Wagga Wagga in Forest Hill.⁵⁵⁷
- 4.114** Both of these Defence bases have been found to contain PFAS, that has spread into surrounding communities.⁵⁵⁸

Army Recruit Training Centre, Blamey Barracks, Kapooka

- 4.115** In June 2021, the Department of Defence completed investigations into PFAS contamination at and around Blamey Barracks, Kapooka. These investigations found that PFAS on the base was mostly concentrated in areas where firefighting foams had been used, stored or disposed of, the 'source areas'. PFAS was found in soil in these locations, and in water flowing through the source areas.⁵⁵⁹
- 4.116** The Member for Wagga Wagga, Dr Joe McGirr MP confirmed that there is PFAS runoff from the base into another suburb of Wagga Wagga called San Isidore, through which the Kapooka Creek runs.⁵⁶⁰
- 4.117** Mr Thomas Hughes, an 87 year old local resident of San Isidore who bought his property 38 years ago, gave an oral history in relation to the matter. He indicated that for at least the last four or five years there have been visible signs of contamination on this property. For example,

⁵⁵⁵ Destination NSW, *Wagga Wagga* (2025), <https://www.visitnsw.com/destinations/country-nsw/riverina/wagga-wagga>.

⁵⁵⁶ Army and Airforce Canteen Service, *Blamey Barracks/ARTC Kapooka* (2021), <https://www.aafcans.gov.au/outlet/blamey-barracks-kapooka/#:~:text=Outlet%20Information,their%20posting%20in%20Wagga%20Wagga>.

⁵⁵⁷ Royal Australian Airforce, *RAAF Base Wagga Heritage Centre*, <https://www.airforce.gov.au/community/visit-and-learn/heritage-centres/raaf-base-wagga-heritage-centre#:~:text=Getting%20there,visitors%20to%20view%20and%20photograph>.

⁵⁵⁸ Evidence, Dr McGirr MP, 8 April 2025, p 2.

⁵⁵⁹ Department of Defence, *Blamey Barracks (Kapooka Military Area)* (3 February 2025), <https://www.defence.gov.au/about/locations-property/pfas/pfas-management-sites/blamey-barracks-kapooka-military-area#:~:text=The%20assessment%20found%20the%20PFAS,sheep%20are%20watered%20from%20dams>.

⁵⁶⁰ Evidence, Dr McGirr MP, 8 April 2025, p 6.

when he bought the property the fish in his dam were plentiful but recently it has been full of dead yabbies:

Now the yabbies and the fish in the dam—as I said, when I brought that property 38 years ago, and it rained, you could drag the carp fish out at a run-off with garden rake. My friends used to put them into 44 gallon drums and took them down to Canberra to make Charlie Carp for your garden out of it. Last summer, or two summers ago or more, with a week of hot weather at 34 or 35 degrees, the dam fell roughly half a metre or more. At every layer of that dam where that water evaporated there were dead yabby shells and claws all the way in the mud, on the dam wall. I found that back four or five years ago at least.⁵⁶¹

4.118 Mr Hughes indicated that in 2018, the Department of Defence arranged for PFAS testing of the dam water and soil on his property. He stated that after that he heard nothing so he made a freedom of information request, the results of which confirmed there was PFAS in his dam and in his soil.⁵⁶²

4.119 Mr Hughes indicated that nobody from the Department of Defence had been back to directly communicate with property owners in the area about the results of the testing that had taken place, and that he was told 'It's all on the computer' and that there would be ongoing monitoring. Mr Hughes further indicated that the lack of direct communication was unsatisfactory as he does not have access to the internet because he does not own a computer.⁵⁶³

4.120 Mr Hughes commented that the possible effect of elevated PFAS levels on property values in the area was a concern for locals.⁵⁶⁴ He also stated that the Department of Defence had offered no compensation to property owners – if he had wanted to obtain compensation he would have had to pay a solicitor to commence proceedings:

The Department of Defence, on at least two occasions, admitted liability... So why did people like me and every other person along Kapooka Creek have to go and get a solicitor when the Federals have admitted liability at least twice?... So why should I have to go—not me; the other people involved—and pay a solicitor a few thousand bucks?... What would you suggest you do? What would you do if I put PFAS... in your swimming pool and PFOS in your front lawn? What would you do, if I was working for the Federal Government?⁵⁶⁵

RAAF Base Wagga

4.121 In 2023, the Department of Defence detected PFAS in two groundwater monitoring wells near the East Wagga Wagga borefield operated by Riverina Water County Council.⁵⁶⁶

⁵⁶¹ Evidence, Mr Thomas Hughes, local resident, 8 April 2025, p 13.

⁵⁶² Evidence, Mr Hughes, 8 April 2025, p 14.

⁵⁶³ Evidence, Mr Hughes, 8 April 2025, p 14.

⁵⁶⁴ Evidence, Mr Hughes, 8 April 2025, p 14.

⁵⁶⁵ Evidence, Mr Hughes, 8 April 2025, p 13.

⁵⁶⁶ Department of Defence, *RAAF Base Wagga Latest Updates PFAS Detections at Wagga Wagga* (4 February 2025), <https://www.defence.gov.au/about/locations-property/pfas/pfas-management-sites/raaf-base-wagga>.

- 4.122** Dr McGirr and Mr Tim Koschel, Chairperson, Board, Riverina Water County Council, noted that these results are linked to a groundwater plume coming from the RAAF Base Wagga.⁵⁶⁷ Mr Koschel stated that this poses a risk to the East Wagga borefield, an important water source for Wagga Wagga, supplying up to 25 megalitres of drinking water a day.⁵⁶⁸
- 4.123** The Department of Defence has confirmed on its website that the results suggest this plume from the RAAF base is more extensive than at first predicted but stated that there is currently no PFAS threat to Wagga Wagga's water supply from the RAAF Base, and there is no PFAS in the East Wagga borefield.⁵⁶⁹
- 4.124** Mr Thompson of Wagga Wagga City Council also indicated that the PFAS issues have affected the way in which the wastewater from the RAAF base is dealt with. The wastewater must now be contained at the relevant wastewater treatment facility and system upgrades will be required including to manage remaining wastewater streams from elsewhere in Forest Hill:

Since the time the issue was first identified and PFAS was identified in that wastewater at elevated levels, we have contained that wastewater at that treatment facility and it is not discharged. Prior to that, it was made available for irrigation or discharged to river.

We currently rely on the second parallel system to treat the other wastewater streams from Forest Hill. Ultimately we will need to augment that system, because we have lost half the system in order to contain the RAAF base wastewater stream. It continues to be contaminated with PFAS, we believe—I think with some level of accuracy—because they are older pipes in the RAAF base. It's not uncommon for older pipes to receive underground stormwater flows into them, because they are normally lined with gravel or a similar permeable structure. That is the ingress point for the PFAS contaminated groundwater into the sewer lines. They will be replaced with the RAAF base upgrade, but that is scheduled for a decade from now.⁵⁷⁰

Concerns about the Defence response to PFAS contamination in Wagga Wagga

- 4.125** There were further concerns that the Department of Defence has not been sufficiently transparent or accountable in respect of the PFAS contamination affecting Wagga Wagga.
- 4.126** As discussed in chapter three, Defence started a Defence Investigation and Management Program in 2015, which focuses on 28 priority sites in Australia of which the RAAF Base Wagga and the Blamey Barracks are two. As noted, Defence advised that it prioritised these sites as they were known sites for storage or use of PFAS-containing legacy firefighting foams.⁵⁷¹
- 4.127** Defence further advised that it investigates and manages PFAS in line with the National Environment Protection (Assessment of Site Contamination) Measure 1999 and the PFAS

⁵⁶⁷ See Evidence, Dr McGirr MP, 8 April 2025, pp 3-4; and Evidence, Mr Koschel, 8 April 2025, p 24.

⁵⁶⁸ Evidence, Mr Koschel, 8 April 2025, p 25; Riverina Water, *Where your water comes from*, Riverina Water, <https://rwcc.nsw.gov.au/your-water/water-supply/yourwater/>.

⁵⁶⁹ Department of Defence, *RAAF Base Wagga Latest Updates PFAS Detections at Wagga Wagga* (4 February 2025), <https://www.defence.gov.au/about/locations-property/pfas/pfas-management-sites/raaf-base-wagga>.

⁵⁷⁰ Evidence, Mr Peter Thompson, General Manager of Wagga Wagga City Council, 8 April 2025, p 27.

⁵⁷¹ Submission 64, Department of Defence, p 2.

National Environmental Management Plan.⁵⁷² Under the Defence Investigation and Management Program, routine sampling of surface water, groundwater and sediment takes place from both on and off base locations at all sites.⁵⁷³

4.128 Regarding remediation at Blamey Barracks, Defence stated it is aligning its PFAS remediation strategy with base redevelopment works to mitigate any potential planning and development conflicts. On community consultation it also advised that it has conducted four community engagements with the most recent in April 2023.⁵⁷⁴

4.129 On remediation at the RAAF Base Wagga, having regard to the 2023 detections of elevated PFAS levels in the two groundwater monitoring wells near the East Wagga borefield, Defence stated that it is working with stakeholders including the Riverina Water County Council, Wagga Wagga City Council, the NSW Department of Planning and Environment and the NSW EPA 'to ensure the integrity of the Wagga [water] supply in connection with PFAS from Defence property'.⁵⁷⁵ In addition, it advised that soil and infrastructure remediation works commenced in 2024 and that it has held eight community engagements related to the RAAF base, with the latest held in April 2023.⁵⁷⁶

4.130 Mr Thompson expressed significant concerns that the Department of Defence is not being sufficiently transparent or accountable with respect to any actions it has undertaken, or is undertaking, to address the PFAS contamination arising from the RAAF base. With regard to the soil remediation works, and despite the above assurances of Defence that it is working with state and local authorities, Mr Thompson stated that he could not get an answer as to whether Defence has removed contaminated soil from the RAAF base:

The single thing that I am most aggrieved about on behalf of our community is that, in any pollution event—in New South Wales certainly and I'd suggest probably Australia—the first actions in that are always containment and removal of the pollutant. In relation to the Wagga PFAS issue, I'm still not aware that the actual polluting contaminated soil at the RAAF base has been removed. It has now been more than seven years. I think that question, which we've raised directly in meetings, is entitled to a much better answer than what we've had so far.⁵⁷⁷

4.131 Mr Thompson further stated that Wagga Wagga City Council was not aware of what Defence is actually doing to clean up, that he was not aware of what had been done to remove the contaminating source at the RAAF base, and that he held concerns it is leaching into the groundwater:

I believe there was a tank at the RAAF base which was still full of PFAS chemical and that has been removed. But, to the extent that the PFAS contaminating material is in or around the surrounds of the RAAF base, I don't believe and I have no knowledge of any attempt yet being made to remove that contaminating source which, in all

⁵⁷² Submission 64, Department of Defence, p 2.

⁵⁷³ Submission 64, Department of Defence, Attachment A, p 1.

⁵⁷⁴ Submission 64, Department of Defence, Attachment A, p 1.

⁵⁷⁵ Submission 64, Department of Defence, Attachment A, p 1.

⁵⁷⁶ Submission 64, Department of Defence, Attachment A, p 1.

⁵⁷⁷ Evidence, Mr Thompson, 8 April 2025, p 25.

likelihood—as a general manager; I'm not an expert—is leaching into the groundwater as we speak.⁵⁷⁸

4.132 Given his abovementioned concerns that test results show the PFAS plume moving from the RAAF base towards the East Wagga borefields, Mr Thompson summed up by stating the local community has reason to be concerned as '...we have a known contaminant discharging a plume of PFAS into a significant groundwater resource in the Riverina, and there doesn't seem to be any answer to what will be done about that'.⁵⁷⁹

4.133 Mr Thompson also commented on the position surrounding contaminated Defence sites more generally. As discussed in chapter three, Defence sites such as the RAAF Base Wagga are Australian Government land and state authorities like the EPA have no power to compel Australian Government authorities to undertake remediation on such land.⁵⁸⁰ As was also discussed in chapter three, Defence was invited to give evidence at the committee's hearings on 4 February 2025 and 8 April 2025 but declined both times. Noting these factors, Mr Thompson argued an alarming situation exists in Australia today whereby Defence is not accountable to state authorities about issues that can majorly impact their communities:

Defence has declined to even appear in front of this inquiry. From an Australian perspective, that's fairly alarming. You've got an entity that is responsible for a dramatic pollutant that is about to have an extraordinary impact on a regional community, and they're not answerable to the New South Wales State Government and they're not answerable to New South Wales State government agencies charged with securing the health and security of its people. That can't be good enough.⁵⁸¹

4.134 For his part, Dr McGirr indicated that Defence communication surrounding the PFAS contamination in Wagga Wagga has improved in recent years – and Defence has conducted drop-in sessions and published written materials on the matter. However, he stated that responses to individual communications, for example, to landowners affected by PFAS, can still be slow, and that the bureaucracy within Defence means even he, as the state Member for Wagga Wagga, can struggle to receive timely responses.⁵⁸²

4.135 In relation to remediation works being undertaken and planned by Defence, Dr McGirr also confirmed that he did not have precise details, though he did understand there are significant building works planned at both the RAAF base and Blamey Barracks. On the RAAF base in particular he stated that he understood contaminated soil had been removed but that he was unsure if plans for upcoming building works were public:

There are building works being planned at both bases in the coming years. In fact, I think there'll be almost a billion dollars spent on building works between the two bases. I am aware that work will be done at the Kapooka army base to try to mitigate run-off from the base, particularly in relation to PFAS. That will involve a range of works, including construction of detention basins. I do not have precise detail on that...I also understand that work has been done at the RAAF base in relation to the runway and

⁵⁷⁸ Evidence, Mr Thompson, 8 April 2025, p 26.

⁵⁷⁹ Evidence, Mr Thompson, 8 April 2025, p 29.

⁵⁸⁰ See Evidence, Mr David Gathercole, Director, Operations, NSW Environment Protection Authority, 4 February 2025, p 37.

⁵⁸¹ Evidence, Mr Thompson, 8 April 2025, pp 29-30.

⁵⁸² Evidence, Dr McGirr MP, 8 April 2025, p 2.

the removal of a large amount of soil there. Again, I'm not sure what's precisely planned to go along with the building works that are being planned there in the next year or two. I don't have the detail on their plans for those works being proposed. I'm not actually sure that the plans for those works are publicly available.⁵⁸³

- 4.136** Dr McGirr also stressed that upfront, accurate, timely and precise communication is needed to manage these issues in the Wagga Wagga community.⁵⁸⁴ Further that there is a need for coordination amongst agencies – if the messaging is not consistent this can lead to confusion – and there needs to be clear agreement on what action is to be taken and who is going to take it.⁵⁸⁵ In addition, consistent with evidence discussed earlier in the chapter, Dr McGirr stated that the LWU cannot be left to deal with the issues alone, there needs to be involvement of all relevant New South Wales authorities⁵⁸⁶ and Defence must be willing to collaborate, which can present challenges unless the right leadership is shown:

... it's important that Defence come in actively and recognise the importance of managing it proactively, and work with those agencies and share information and collaboration. Again, I'm not saying that hasn't happened in the past, but Defence is an organisation that has its own bureaucracy, its own legitimate security concerns and its own protocols around communication, and sometimes that can hinder effective, good communication if there is not the right leadership shown.⁵⁸⁷

- 4.137** In addition, Mr Troy van Berkel, Director, Engineering, Riverina Water County Council stated that in dealing with PFAS contamination a collaborative approach is needed, with clear responsibilities and consistent messaging to communities given this is an 'emotionally charged issue'.⁵⁸⁸

Defence response to a request for further information

- 4.138** Regarding the concerns raised that Defence is not being forthcoming enough about remediation works to do with the RAAF base, and associated concerns about threats to Wagga Wagga's water supply in the face of the PFAS plume, the Chair wrote to Defence, as resolved by the committee, requesting specific details of action being taken.
- 4.139** By letter dated 5 May 2025, Defence responded confirming that PFAS has migrated from the RAAF base via stormwater through the base and council stormwater pipes to Gumly Gumly Wetland and through sewage networks to the sewage treatment plant at Forest Hill.⁵⁸⁹
- 4.140** Regarding PFAS contaminated soil, Defence confirmed that in 2021, it removed approximately 1,500 tonnes of such soil from the Wagga Wagga Airport taxiway extension. Further, with

⁵⁸³ Evidence, Dr McGirr MP, 8 April 2025, p 4.

⁵⁸⁴ Evidence, Dr McGirr MP, 8 April 2025, p 2.

⁵⁸⁵ Evidence, Dr McGirr MP, 8 April 2025, p 5.

⁵⁸⁶ Evidence, Dr McGirr MP, 8 April 2025, p 5.

⁵⁸⁷ Evidence, Dr McGirr MP, 8 April 2025, pp 5-6.

⁵⁸⁸ Evidence, Mr Troy van Berkel, Director, Engineering, Riverina Water County Council, 8 April 2025, p 27.

⁵⁸⁹ Correspondence from Mr Pat Sowry, First Assistant Secretary – Infrastructure Division, Security and Estate Group, Department of Defence, to Chair, 5 May 2025, p 1.

respect to remediation work at the RAAF base, Defence stated that it was in the final stages of remediating PFAS-impacted infrastructure there, including the former fire extinguisher training pad, with works expected to be finished by June 2025. Defence advised that this would help to minimise the amount of PFAS escaping the RAAF base to Gumly Gumly Wetland.⁵⁹⁰

- 4.141** Defence now considers the Gumly Gumly Wetland to be a secondary PFAS source and confirmed that PFAS from the wetland is migrating towards the East Wagga borefield.⁵⁹¹
- 4.142** Defence advised that in 2019, it conducted a remediation options assessment for the Gumly Gumly Wetland, that also considered the installation of hydraulic controls to reduce the risk of PFAS moving into water supply bores. However, the assessment found that these measures would not be viable.⁵⁹²
- 4.143** Defence stated that its monitoring has revealed the plume from the RAAF base to be more extensive than at first thought. Further, Defence stated 'If Riverina Water need to access the East Wagga borefield when it is impacted by PFAS, the remediation will likely involve treating the impacted water at the point of extraction' – presumably a reference to the fact that if the PFAS plume does contaminate the water of the borefield, it will be of a magnitude to require treatment if it is to meet the ADWG.⁵⁹³
- 4.144** Finally, Defence advised that it continues to monitor PFAS in groundwater, surface water and the Riverina Water County Council supply bores, with monitoring reports being shared with relevant NSW Government agencies, Riverina Water County Council, Wagga Wagga City Council and the local community. In addition, Defence participates in a Project Governance Group led by the NSW Government to review PFAS risks to the water supply and conduct contingency planning.⁵⁹⁴

Committee comment

- 4.145** The committee considers that the Department of Defence must continue to improve its communication to the Wagga Wagga community about PFAS contamination issues arising from the RAAF Base Wagga, and the Blamey Barracks, Kapooka. It is unsatisfactory that local community members, and even the state Member for Wagga Wagga, Dr Joe McGirr MP, have observed that responses from Defence to individuals on this important matter are not always timely.
- 4.146** The committee was particularly concerned at the reports from local landholder, Mr Thomas Hughes from San Isidore, that after Defence arranged for PFAS testing on his property in 2018 he received no individual correspondence on the results and had to make a freedom of information application to find that PFAS had been located on his land. The committee further notes Mr Hughes' evidence indicating Defence had published relevant information on the internet following PFAS testing of local properties, rather than contacting individual landholders about it.

⁵⁹⁰ Correspondence from Mr Sowry to Chair, 5 May 2025, p 1.

⁵⁹¹ Correspondence from Mr Sowry to Chair, 5 May 2025, p 1.

⁵⁹² Correspondence from Mr Sowry to Chair, 5 May 2025, p 2.

⁵⁹³ Correspondence from Mr Sowry to Chair, 5 May 2025, p 2.

⁵⁹⁴ Correspondence from Mr Sowry to Chair, 5 May 2025, p 2.

- 4.147** The committee believes that where an individual's private land has been tested by Defence and found to be affected by PFAS, Defence should immediately notify the affected individual about the results and consult with them about any next steps. It is not sufficient to only post such information on the Department's website when some people, Mr Hughes included, do not have access to the internet.
- 4.148** The committee was also concerned at the evidence of Mr Thompson of Wagga Wagga City Council that, despite its assurances that it is working alongside state and local authorities, Defence is not being sufficiently transparent or accountable with respect to any action it is taking to address the PFAS contamination arising from the RAAF base. This is particularly worrying given evidence that PFAS is migrating off the RAAF base in the direction of a very important water source for Wagga Wagga – the East Wagga borefield.
- 4.149** In this regard, the committee is profoundly disappointed that Defence declined two invitations to appear before its inquiry so that Members could ask detailed questions about the serious issues and assertions raised.
- 4.150** While Defence did respond in writing to a request for more information about its remediation works surrounding the RAAF base, the committee notes there are still matters that require clarification. The Defence response indicates that in 2021, it removed approximately 1,500 tonnes of PFAS-impacted soil from the Wagga Wagga Airport taxiway extension. However, it does not address Mr Thompson's concern that Wagga Wagga City Council has still not been made aware as to whether contaminated soil has been removed from the RAAF base itself.
- 4.151** It would appear from the original Defence submission to the committee's inquiry, which notes that soil and infrastructure remediation works commenced in 2024, that work on contaminated soil at the RAAF base is still in progress. The committee's strong preference would have been for more detailed advice to be provided directly by Defence on where this stands.
- 4.152** The committee notes its finding in chapter three that Australian Government entities, particularly the Department of Defence, must cooperate and collaborate more fully with NSW Government authorities to ensure that PFAS-affected sites within the state's borders, that are owned by the Australian Government, are assessed and managed appropriately.
- 4.153** In short, Mr Thompson's evidence, the incomplete information provided by Defence about contaminated soil at the RAAF base, and the failure of Defence to appear before the committee adds further credence to this finding.
- 4.154** Finally, the committee notes evidence discussed earlier in the chapter and in chapter two linking PFAS with serious health effects and indicating that blood testing can be helpful both at an individual level to assist with early intervention, and at the population level to inform further, much needed research into PFAS and its possible health effects.
- 4.155** In the circumstances, the committee recommends that the government support PFAS blood testing for willing participants in Tarcutta, Wyallda, Narrabri and Dubbo given the elevated PFAS levels found in drinking water supply systems in these localities, discussed earlier in the chapter. Similarly, the committee recommends that the government support PFAS blood testing for residents of Wagga Wagga more broadly, having regard to the PFAS contamination emanating from Wagga Wagga's Defence bases. In addition, blood testing should be supported

for people exposed to contaminated sections of the Belubula River (as documented earlier in the chapter).

Recommendation 15

That the NSW Government support PFAS blood testing for willing participants in:

- Tarcutta, Wialda, Narrabri and Dubbo, and in any Local Government Areas where elevated PFAS levels are found in drinking water supply systems
- Wagga Wagga more broadly, having regard to the PFAS contamination emanating from Wagga Wagga's Defence bases
- areas exposed to contaminated sections of the Belubula River

in close collaboration with local councils.

Issues arising under private irrigation scheme – Gumly Gumly

- 4.156** The chapter concludes with a case study regarding issues arising from a private irrigation scheme established under the *Water Management Act 2000 (NSW)* in a suburb of Wagga Wagga called Gumly Gumly.

Case study - Ms Donna Argus⁵⁹⁵

Ms Donna Argus is a resident of Gumly Gumly New South Wales, a suburb of Wagga Wagga, approximately 8 kilometres from the Wagga Wagga central business district, near the RAAF base at Forest Hill. It is a community of hobby farms and market gardens.

Ms Argus advised that Gumly Gumly is not covered by Riverina Water County Council, the local water utility for Wagga Wagga, for its water supply. Rather, the community of 63 households is covered by a private irrigation scheme governed under the *Water Management Act 2000*, and all its water is sourced from a bore, taken directly from the Murrumbidgee River.

Under the scheme, a volunteer committee called the Gumly Gumly Private Irrigation District Committee, made up of community members, runs everything to do with water delivery in Gumly Gumly including infrastructure, testing of water, billing and financial management.

Ms Argus raised concerns about the way in which the volunteer committee is operating the irrigation scheme, and insufficient monitoring by the NSW Government, against a backdrop of further concerns

⁵⁹⁵ Evidence, Ms Donna Argus, local resident, 8 April 2025, pp 16-24. This case study is based on the content of the transcript of evidence. See also See *Gumly Gumly New South Wales facts for kids* (10 June 2025), https://kids.kiddle.co/Gumly_Gumly,_New_South_Wales; and Evidence, Dr McGirr, 8 April 2025, p 6.

about the way in which the Australian Government has managed issues surrounding PFAS in Gumly Gumly.

PFAS testing and loss of a chance to join a class action

Ms Argus advised that there is no mail delivery in Gumly Gumly – residents must go to a local shop to collect their mail.

She further advised that in April 2025 she was made aware that PFAS water testing had been being conducted in Gumly Gumly since 2020. However, Ms Argus stated that the president of Gumly Gumly's private irrigation scheme volunteer committee had never informed community members that there was a concern about PFAS in local water supplies, nor that testing would take place.

In addition, Ms Argus indicated that the Australian Government (presumably a reference to Defence) had not individually notified community members, nor conducted community consultations in Gumly Gumly, about any PFAS concerns and that it had seen fit to notify only the volunteer committee president about these matters.

Ms Argus advised that besides the president, the only PFAS related communication a few community members, including she, had received was a notification from Shine Lawyers that they could be entitled to compensation related to PFAS. However, not all community members received these letters and Ms Argus passed hers off as a scam.

On reflection, Ms Argus indicated this raised serious questions as to why notifications from compensation lawyers were being received prior to government officials getting on the ground and speaking to locals about possible PFAS contamination.

Ms Argus further stated that after these notifications, locals learned via the media that there was no PFAS contamination affecting Gumly Gumly's water. However, it emerged that there were some people in the community, including Ms Argus' neighbour, who were going to receive compensation.

Ms Argus advised that, in response to a freedom of information application, community members discovered that 'the Feds' (presumably another reference to Defence) had solely conducted its communications surrounding PFAS concerns in Gumly Gumly with the volunteer committee president, and that he had signed to confirm that the community had given him permission to speak on community members' behalf. However, community members had not known of this.

Ms Argus further complained that when the community asked questions about this 'the Feds' wrote back to say as they had consulted with the volunteer committee president they had done their due diligence. Ms Argus also indicated the Australian Government told community members that it had conducted community consultations nearby to Gumly Gumly in Forest Hill. However, Ms Argus stated Gumly Gumly residents had not been advised that these were occurring.

Ms Argus also stated that her neighbour, who received \$120,000 compensation as part of a civil class action that she had joined, was allowed to go to Canberra and read information in a locked vault about PFAS contamination. When Ms Argus asked the neighbour how she had received compensation if

there was no PFAS contamination in Gumly Gumly's water, the neighbour replied that she had received the compensation not because there was any PFAS contamination but because of the worry she had been caused.

Chapter 5 Firefighting and PFAS

This chapter explores PFAS-related issues in connection with firefighting. It starts by exploring the Fire and Rescue NSW PFAS Investigation Program including issues surrounding its funding. It then goes on to examine the management of Fire and Rescue NSW sites more generally to deal with legacy PFAS issues and potential future issues. Next it explores the importance of appropriate training, operational guidelines and resourcing to manage firefighting incidents into the future, and to minimise further environmental contamination in New South Wales. The chapter concludes by examining PFAS-related work health and safety issues for firefighters.

Fire and Rescue NSW PFAS Investigation Program

The program

- 5.1** As discussed earlier in the report, particularly chapter one, sites where firefighting has taken place are common sites for PFAS contamination because of the historic use of PFAS-containing firefighting foam. Historically, three types of PFAS chemicals: PFOS, PFOA and PFHxS were included in these foams, with the foams used at airports and several defence bases in New South Wales, as well as by Fire and Rescue NSW (FRNSW) and the Rural Fire Services across the State.⁵⁹⁶
- 5.2** Commissioner Jeremy Fewtrell AFSM Commissioner, Fire and Rescue NSW advised that FRNSW stopped using firefighting foam containing PFOS and PFOA in 2007 and does not use any firefighting foams that contain PFAS. The Commissioner further advised that all FRNSW foams have been independently certified to confirm this.⁵⁹⁷
- 5.3** Conversely, the Fire Brigade Employees' Union of New South Wales (FBEU) stated FRNSW phased out PFAS-containing foams between 2007-2014.⁵⁹⁸
- 5.4** As is also discussed in previous chapters, the government advised that since 2016 it has taken a 'whole of government' approach to investigating legacy PFAS contamination⁵⁹⁹ and consistent with this, since 2016, the NSW Environment Protection Authority (EPA) has led the PFAS investigation program in close partnership with other agencies.⁶⁰⁰
- 5.5** Under this program systematic assessment and triage of sites that have been identified as being contaminated with PFAS takes place. Where sites are found to be contaminated, further investigations are undertaken to determine what management, monitoring and remediation is

⁵⁹⁶ NSW Environment Protection Authority, *PFAS investigation program FAQs*, <https://www.epa.nsw.gov.au/Your-environment/Chemicals/PFAS-in-NSW/nsw-government-pfas-investigation-program/pfas-investigation-faqs>.

⁵⁹⁷ Evidence, Commissioner Jeremy Fewtrell AFSM, Commissioner, Fire and Rescue NSW, 6 December 2024, p 36.

⁵⁹⁸ Submission 40, Fire Brigade Employees Union of New South Wales, p 3.

⁵⁹⁹ Submission 19, NSW Government, p 9.

⁶⁰⁰ See Submission 19, NSW Government, p 9; and Evidence, Mr Tony Chappel, Chief Executive Officer, NSW Environment Protection Authority, 5 February 2025, p 51.

possible to reduce PFAS levels within the environment and to reduce exposure risks to the community.⁶⁰¹

5.6 FRNSW and the Rural Fire Service also conduct PFAS investigative programs given that sites at which there has been legacy use of PFAS-containing fire-fighting foams carry a higher risk of PFAS contamination. The government confirmed that these programs are part of the broader PFAS investigation program led by the EPA and that the EPA oversees investigations under these programs too.⁶⁰²

5.7 Assistant Commissioner Michael Morris JP, CF, FRNSW advised that through the FRNSW PFAS investigation program, FRNSW works closely with the EPA to identify, assess and manage sites with legacy PFAS contamination.⁶⁰³ Further, Commissioner Fewtrell stated that investigations under the program are focussed on:

- FRNSW training sites
- current and former fire stations and
- off-site properties where PFAS has migrated through ground or surface water from a FRNSW site.⁶⁰⁴

5.8 The Commissioner stated that FRNSW prioritises investigations where potentially complete exposure pathways exist, and where there are sensitive land uses, like schools.⁶⁰⁵

5.9 Assistant Commissioner Morris also provided background as to how PFAS contamination can occur at such sites, through use of foam, and residues on equipment:

...in some of the areas that we're responsible for, it's our training facilities, so regular use of those products. In others, it is related to bringing back material, like the hoses et cetera that have been referred to and washing them down at the site; in some circumstances training at particular locations with small amounts of foam...⁶⁰⁶

5.10 As at 6 December 2024, Commissioner Fewtrell stated that FRNSW was managing 35 sites under the program, out of more than 600 sites that had been identified as potentially contaminated following a comprehensive data search and consultation with the FRNSW workforce. Sites are prioritised according to environmental risk, with efforts focussed on areas of the highest concern. Commissioner Fewtrell advised that five sites had been remediated under the program – a combination of private properties and council land.⁶⁰⁷

5.11 Commissioner Fewtrell provided further details about sites of interest under the program. He indicated that sites where PFAS had been deployed in fighting a fire were also of interest – not

⁶⁰¹ See Submission 19, NSW Government, pp 9-10.

⁶⁰² See Submission 19, NSW Government, p 10; and Evidence, Commissioner Fewtrell, 6 December 2024, p 36.

⁶⁰³ Evidence, Assistant Commissioner Michael Morris, JP, CF, Assistant Commissioner Metropolitan Operations, Fire and Rescue NSW, 3 February 2025, p 19.

⁶⁰⁴ Evidence, Commissioner Fewtrell, 6 December 2024, p 36.

⁶⁰⁵ Evidence, Commissioner Fewtrell, 6 December 2024, p 36.

⁶⁰⁶ Evidence, Assistant Commissioner Morris, 3 February 2025, p 23.

⁶⁰⁷ Evidence, Commissioner Fewtrell, 6 December 2024, pp 36-37.

just training locations, current and former fire stations, and properties affected by PFAS migrating from FRNSW properties:

...when we went to our staff, we asked them for a record or an indication of foam use in their station, foam use in any training locations, whether that was Fire and Rescue locations or other ones, and then also any significant incidents where quantities of foam would have been used that they could recall and identify.⁶⁰⁸

5.12 However, in providing further advice as to the over 600 sites that had been identified as potentially contaminated under the program, FRNSW indicated that the following sites were of interest (and did not mention any sites of significant fire incidents at which PFAS had been deployed):

- 304 current fire stations that were operational in the period during which foams containing PFAS were used
- 90 former fire stations
- five training sites
- approximately 304 private properties (based on the assumption that one private property per fire station may have been impacted and subject to revision as investigations continue).⁶⁰⁹

5.13 Commissioner Fewtrell commented that there is ongoing, regular communication between FRNSW and the EPA under the program and whenever FRNSW receives new information it is fed to the EPA for its information and assessment.⁶¹⁰ Further, investigations are carried out by appropriately qualified environmental consultants with results provided to the EPA or an accredited site auditor. The EPA or auditor then reviews the information and makes recommendations around monitoring and mitigating contamination to impacted environments.⁶¹¹

5.14 Site reports are also published on the FRNSW website and updated whenever there is any significant development on a site under the program.⁶¹²

5.15 More broadly, and consistent with the government's stated aim of taking a 'whole of government' approach to investigating legacy PFAS contamination⁶¹³ FRNSW advised that it works with multiple government agencies to explore historical land use activities that may have involved PFAS, including firefighting.⁶¹⁴ This can in turn assist the investigations of these agencies. Assistant Commissioner Morris used the example of FRNSW providing WaterNSW with incident reports for all incidents along the Great Western Highway between Medlow Bath and Blackheath from the mid-1980s to 2007 to assist with investigations into the source of

⁶⁰⁸ Evidence, Commissioner Fewtrell, 6 December 2024, p 40.

⁶⁰⁹ Answers to questions on notice, Fire and Rescue NSW, 14 January 2025, p 2.

⁶¹⁰ Evidence, Commissioner Fewtrell, 6 December 2024, p 43.

⁶¹¹ Evidence, Commissioner Fewtrell, 6 December 2024, p 36.

⁶¹² Evidence, Commissioner Fewtrell, 6 December 2024, p 38.

⁶¹³ See Submission 19, NSW Government, p 9.

⁶¹⁴ Evidence, Assistant Commissioner Morris, 3 February 2025, p 19.

elevated PFAS levels discovered in the Medlow Dam in 2024 as a more recent example of this coordination between government agencies.⁶¹⁵

Funding for the program

5.16 The FBEU is a registered trade union under the *Industrial Relations Act 1996 (NSW)*. It represents over 6000 professional firefighters, with its members conducting emergency response work across the state.⁶¹⁶

5.17 Mr Leighton Drury, FBEU State Secretary, stated there is not enough investment in the FRNSW PFAS investigation program and that there were 400 sites that had been identified as potentially contaminated, with only 23 under active investigation:

There's a further point to this as well. I don't necessarily blame Fire and Rescue to this point but certainly the Government, and I say all governments, certainly the preceding one and the current one—Fire and Rescue has over 400 sites that may or may not have been exposed to PFAS. At this stage, the number of sites that have been under active investigation is 23. The number of sites where investigation has not even started is 358. This is all about money. There's not enough money going into Fire and Rescue to fund—to get the testing done.⁶¹⁷

5.18 Mr Drury further stated that the FBEU had received a briefing from the FRNSW PFAS team and that team was concerned that it would take 50 years to identify all the sites under the program, test them, and assess whether they would be remediated.⁶¹⁸ He also indicated that while training sites are easy to identify as potentially contaminated for the purposes of the program, operational sites are much harder:

Obviously we did things at training sites. We can specify those straight down to an address. That's where the fire station was. But the operational side of things...there are plenty of petrol tankers that have caught on fire. There are plenty of petrol chemical fires that we've attended to as part of our work over the past 130 -odd years—whatever it is—that Fire and Rescue has been around for.⁶¹⁹

5.19 As already noted, FRNSW quoted different numbers – stating that it was managing 35 sites under the program, out of more than 600 sites that had been identified as potentially contaminated, with five sites having been remediated.⁶²⁰ However, Commissioner Fewtrell conceded it was going to take a long time to work through it all.⁶²¹ He also explained that a large number of the 600 identified sites may not actually require any active management – with FRNSW dealing with the higher risk sites first and working its way down:

⁶¹⁵ Evidence, Assistant Commissioner Morris, 3 February 2025, p 19; see also WaterNSW, *Blue Mountains PFAS investigation and raw water testing results*, <https://www.waternsw.com.au/water-services/water-quality/pfas/blue-mountains-investigations>.

⁶¹⁶ Submission 40, Fire Brigade Employees' Union of New South Wales, p 1.

⁶¹⁷ Evidence, Mr Leighton Drury, State Secretary, Fire Brigade Employees Union of New South Wales, 6 December 2024, p 19.

⁶¹⁸ Evidence, Mr Drury, 6 December 2024, p 20.

⁶¹⁹ Evidence, Mr Drury, 6 December 2024, p 22.

⁶²⁰ Evidence, Commissioner Fewtrell, 6 December 2024, p 36.

⁶²¹ Evidence, Commissioner Fewtrell, 6 December 2024, p 38.

[A] large proportion of that 600 may not need active management given their position in the landscape, their land use categorisation and the level or likely level of contamination that may or may not be there. We've sort of done a catch-all, and that's what we've got. We've identified the ones that are of the greatest concern. We're starting from that and working our way down, with the highest priorities getting the attention first.⁶²²

- 5.20** In addition, the Commissioner explained that where sites are actively managed under the program, the time spent on each site varies according to the complexity of the problems but that some can take a number of years:

It's very variable across the complexities of the site. There are some that we've been working on for seven years and we're still working our way through that. They are sites that might have multiple tenures, multiple tenants and multiple contributors to the PFAS contamination beyond Fire and Rescue NSW. Some of them are very complex. It depends on what the environmental concerns are, whether it's purely just soil or whether we're worried about surface water or ground water as well. Amongst all of those, it does vary between sites as to how long.⁶²³

- 5.21** On funding requirements for the program, the Commissioner agreed more funding would be welcome.⁶²⁴ He advised that currently there are only two full-time dedicated staff members for the program, managing a range of sites in conjunction with a number of environmental contractors:

The two staff that we have, one is an expert project manager. She has developed an extensive area of expertise around PFAS over the number of years that she has been working in this field. The other staff member is a specialised environmental contamination expert. He provides the scientific, professional expertise. Their work is more managing the range of sites that we have and then coordinating with a number of different environmental contractors that we will use to go onto sites to take the samples in the field. Those consultants will take the samples, use their testing facilities, maintain the custody of those samples and then know the integrity of the testing that they put them through, rather than our people collecting samples and then trying to pass them on to a third party.⁶²⁵

- 5.22** However, the Commissioner indicated that even if funding were available for a greater number of dedicated staff for the program, in reality it may not be possible to find suitably qualified people, this being a very specialised area of work. The Commissioner cautioned against encouraging unsuitable elements into the market who were only interested in 'making some quick bucks and not adequately remediating'.⁶²⁶ He explained the high level skills that are needed to ensure an appropriate level of remediation:

[I]t's more the environmental contamination consultants being able to guide that work and shape up what is actually required to be done in terms of how the remediation will occur—working out the testing and sampling regime; having an understanding of how PFAS might be engaging between the soil, the groundwater and the surface water; and

⁶²² Evidence, Commissioner Fewtrell, 6 December 2024, p 38.

⁶²³ Evidence, Commissioner Fewtrell, 6 December 2024, p 38.

⁶²⁴ Evidence, Commissioner Fewtrell, 6 December 2024, p 43.

⁶²⁵ Evidence, Commissioner Fewtrell, 6 December 2024, pp 37-38.

⁶²⁶ Evidence, Commissioner Fewtrell, 6 December 2024, p 43.

understanding what the contamination receptors or the pathways that would lead it to receptors further down in the environment are. Having that level of understanding and knowing what actions to recommend in a remediation plan—that's the highly skilled area that's probably the most constrained in the market, I would say.⁶²⁷

5.23 When asked how many people would have the right skills and who the government is competing with to retain them, FRNSW simply stated that it has procured remediation services through an expression of interest process resulting in several providers who could provide the relevant services but that it could not provide any further comment on the availability of remediation services.⁶²⁸

5.24 Finally, when asked who pays to remediate sites under the FRNSW PFAS investigation program, the Commissioner confirmed that FRNSW funds remediation for its sites, while the FRNSW insurance policy provides cover for remediation of any sites not owned by FRNSW.⁶²⁹

Committee comment

5.25 The committee considers it is clear that more funding is needed for the Fire and Rescue NSW (FRNSW) PFAS investigation program. With 600 sites identified as being potentially contaminated, only 35 under active management, and five having been remediated under the program, work on this serious issue must be hastened. This is particularly the case given Fire Brigade Employees Union (FBEU) evidence that it can be difficult to even identify sites for the program's attention – there may be many more sites requiring remediation in New South Wales that are not yet known. Further, more complex sites can take many years to remediate.

5.26 It was of some comfort to hear that higher risk sites are given priority under the program and that many of the 600 identified sites may not need active management. However, it is clear from the above numbers, and the fact that there are only two full time FRNSW staff dedicated to such an extensive program, that more resources are needed.

5.27 Notwithstanding this, it appears from FRNSW evidence that even if there were more funding to staff this important program, there is a limited pool of people upon whom FRNSW could call to do this highly specialised work, ensuring that sites were remediated to the required standard. In short, it seems there is a bottleneck until enough people can be trained with the right skills to safely remediate the many sites that will require this.

5.28 In the circumstances, the committee recommends that the government:

- establish a dedicated fund or program to train environmental contamination consultants, providing them with the high level skills in PFAS remediation that are increasingly in demand across the state
- increase funding for the FRNSW PFAS investigation program to speed up its work, including funding to attract environmental contamination consultants who currently have the required high level skills to steer PFAS remediation works under the program.

⁶²⁷ Evidence, Commissioner Fewtrell, 6 December 2024, p 43.

⁶²⁸ Answers to questions on notice, Fire and Rescue NSW, 4 March 2025, p 2.

⁶²⁹ Evidence, Commissioner Fewtrell, 6 December 2024, p 38.

Recommendation 16

That the NSW Government establish a dedicated fund or program to train environmental contamination consultants, providing them with the high level skills in PFAS remediation that are increasingly in demand across the state.

Recommendation 17

That the NSW Government increase funding for the Fire Rescue NSW PFAS investigation program to speed up its work, including funding to attract environmental contamination consultants who currently have the required high level skills to steer PFAS remediation works under the program.

- 5.29** Historical record keeping is also relevant to the speed of identification of potentially contaminated sites under the program, and this is considered in the next section.

Management of Fire and Rescue NSW sites to deal with legacy PFAS contamination issues and possible emerging issues

Processes to manage Fire and Rescue NSW sites

- 5.30** FRNSW also gave evidence more generally about the management of FRNSW sites to deal with legacy PFAS contamination issues. Assistant Commissioner Morris explained that there are a number of processes and work directions in place to limit ongoing exposure:

We have a number of processes in place and work directions around the land use for our sites, particularly around not growing anything in the soils around the station, not keeping chickens onsite—all of those sorts of things that limit any of that exposure. The reality for most of our stations is that they are hard surface concrete areas so there is limited exposure to the soils. Then, as I said, we have a body of work assessing all of our sites and undertaking remediation work on a prioritised basis.⁶³⁰

- 5.31** Commissioner Fewtrell also stated that before FRNSW sells off a former fire station it is legally required to test for PFAS and to manage and remediate as required according to the land use categorisation of the site:

We have responsibilities under the environmental legislation that we're the polluter for the purposes of any PFAS contamination if it's one of our sites. We can't off-load it and flick that problem to someone else. In the past several years, and probably since that 2018 period where we've had more focus on this, we've instigated processes where before we dispose of the site, part of the due diligence we do before we put it on the market is to test for PFAS and then we manage that and remediate that as is required according to the land use categorisation at that site.⁶³¹

⁶³⁰ Evidence, Assistant Commissioner Morris, 3 February 2025, p 24.

⁶³¹ Evidence, Commissioner Fewtrell, 6 December 2024, p 39.

- 5.32** The Commissioner further explained that under these processes, which are tied to land use categorisation, FRNSW is required to remediate according to the zone within which the relevant site sits. In particular, while a lot of sites sit within commercial-industrial zones, when they instead sit within residential zones a higher standard of remediation is required.⁶³²
- 5.33** FRNSW later advised that the agency had now gone even further and paused all land divestment while it updated its land divestment process around appropriate treatment of PFAS risk, prior to any future disposals of land.⁶³³
- 5.34** However, Mr Drury of the FBEU raised concerns that there are some former FRNSW properties that may be contaminated with PFAS that were not tested for PFAS prior to disposal and that have been converted into very sensitive uses e.g. daycare centres or residential properties:
- We have, I think, 90 sites that may or may not have been affected by PFAS that are now not in Fire and Rescue's hands. We know that some of those are now turned into day cares or they're turned into houses—because it's quite trendy to buy an old fire station as a house—and none of this has been tested. Again, that comes down to a lack of funding that the Government needs to provide to Fire and Rescue to get that done.⁶³⁴
- 5.35** In response, Commissioner Fewtrell confirmed that there are cases of FRNSW properties that had been disposed of before FRNSW instituted its practice of testing for PFAS prior to disposal, and remediating according to the land use categorisation of the site. The Commissioner stated that in such cases, when FRNSW has become aware of this, it has taken steps to manage the sites after the fact, and additional guidance can be provided based on site use. However, he conceded this is not the ideal way in which to proceed.⁶³⁵

The importance of record-keeping

Record keeping for property transactions

- 5.36** Having regard to the above, the Commissioner was questioned as to whether all former FRNSW sites should be remediated to a residential standard prior to any disposal, to better manage risk. In response, the Commissioner indicated that it is appropriate to remediate according to the zone within which the site stands. He expanded by indicating that if a site is within a commercial-industrial area, remediating to a commercial-industrial standard is consistent with the rest of the surrounding land use and he stated it is unlikely, or FRNSW does not foresee, that such a site would become a residential property.⁶³⁶
- 5.37** However, the Commissioner was questioned further about cases where a site has been remediated to a commercial standard, sold for a commercial use, but is later on-sold to someone who seeks to change the land use categorisation to residential. The Commissioner responded that in such case, when the prospective purchaser was going through their due diligence searches

⁶³² Evidence, Commissioner Fewtrell, 6 December 2024, p 40.

⁶³³ Answers to questions on notice, Fire and Rescue NSW, 14 January 2025, p 2.

⁶³⁴ Evidence, Mr Drury, 6 December 2024, p 19.

⁶³⁵ Evidence, Commissioner Fewtrell, 6 December 2024, p 41, see also p 39.

⁶³⁶ Evidence, Commissioner Fewtrell, 6 December 2024, p 41.

on the property, they would be able to identify it had only been remediated to a commercial standard. Further, the relevant council or land use planning authority should also be guided as to what uses to approve by the fact that the property has only been remediated to a certain standard.⁶³⁷

5.38 Mr Howard Waldron, Founding Director of Lotsearch, cast doubt on whether such prospective purchasers would always be able to identify such information in their property searches.⁶³⁸ Lotsearch is a business that provides environmental reports to help clients identify potential contamination risks to land and property in the context of property transactions.⁶³⁹

5.39 Mr Waldron stated that sometimes contaminated properties are remediated to a certain standard but later on, when they are re-used for a new purpose, the records that may have indicated such a use would be ill-advised, have been lost:

There is also something called environmental management plans that will often be used when they've cleaned the site up to a specific level, based on a certain type of use. There is often an environmental management plan associated with that site. Those actually are really quite challenging to access. The EPA doesn't have a register of them and almost defaults to council to keep that, and often council don't have that information either. What's happening is, understandably, there's a lot of investment going on in trying to clean up sites to a certain standard, and they're being used for suitable purposes at that point in time. But, after that, they then may be re-used for other purposes, and that environmental management plan may go missing...⁶⁴⁰

5.40 Mr Waldron also stated that section 10.7 planning certificates – mandatory documents produced by local councils to disclose property and planning information in the context of property transactions – are not adequately informing people about contaminated land issues either. He pointed to a review of contaminated land information on planning certificates, conducted by the EPA in 2022 which found that:

- some councils surveyed did not provide the required contaminated land information nor have a contaminated land policy in place
- many planning certificates showed inconsistencies or had absent or incorrect information related to known contamination issues.⁶⁴¹

5.41 To further illustrate his point, Mr Waldron cited a case where a Lotsearch report had identified that a residential property was within a PFAS management area, whilst the corresponding council certificate had not.⁶⁴²

⁶³⁷ Evidence, Commissioner Fewtrell, 6 December 2024, p 41.

⁶³⁸ Evidence, Mr Howard Waldron, Founding Director, Lotsearch, 5 February 2025, pp 39-40.

⁶³⁹ Evidence, Mr Waldron, 5 February 2025, p 37.

⁶⁴⁰ Evidence, Mr Waldron, 5 February 2025, pp 39-40.

⁶⁴¹ Evidence, Mr Waldron, 5 February 2025, p 37; see also NSW Environment Protection Authority, *Review of Contaminated land information on planning certificates in NSW* (2022), <https://www.epa.nsw.gov.au/sites/default/files/22p3809-contaminated-land-planning-certificate-review.pdf>, p 4.

⁶⁴² Evidence, Mr Waldron, 5 February 2025, p 37.

- 5.42** Professor Denis O'Carroll of the University of New South Wales also indicated that government data sharing on PFAS needs to be improved to aid research and enhance knowledge and informed decision-making, as it is not always in a readily accessible format.⁶⁴³
- 5.43** In short, to overcome the identified issues in the context of property transactions, Mr Waldron recommended that a central, publicly available, register be established recording contaminated land information for every lot.⁶⁴⁴

Record keeping to track storage and use of PFAS and other chemicals

- 5.44** Still on the topic of record keeping, there was also evidence of the importance of emergency services sector tracking of the storage and use of PFAS chemicals, if legacy PFAS contamination is to be managed. However, the FBEU indicated that historically such record keeping was not of a high standard.⁶⁴⁵
- 5.45** The FBEU expressed support for the tracking and registration of similar matters as regards current firefighting foams, on the basis that these might eventually prove to be as problematic as PFAS. When asked whether there should be a publicly available register that lists all foam and hazardous chemicals used by location, in each fire station, Mr Drury stated:

One of the things that we're pushing for in our award is an exposure register...We're asking fires to maintain a register of who attended those fires, what we think was in there, what foams were used and what other things were used as well, because obviously, down the track, the next foam might be the next PFAS...Certainly, we would think it would be appropriate that nearly any chemical that we use across our industry, whether it be for training or not, is put down as an exposure...⁶⁴⁶

- 5.46** Mr Drury also pointed out that such a register as this one – that included who attended each fire (or training exercise) – would be useful for workers' compensation claims.⁶⁴⁷
- 5.47** The Commissioner was asked whether it might be helpful for any future PFAS remediation efforts, to have a register of all dangerous chemicals – where they are stored, and where they have been used in training exercises and to fight fires. He responded that FRNSW keeps much better records than it used to and the desired effect could probably already be achieved, based on those records:

We've certainly got much better records than we did previously, and I think we can pretty much achieve that desired impact from the records that we already have. We're required, from a health and safety perspective, to keep a register of hazardous chemicals that are stored in the workplace. We have that element. We've got our records of what

⁶⁴³ Evidence, Professor Denis O'Carroll, Deputy Head of School (Research), Water Research Laboratory, University of New South Wales, 6 December 2024, p 12; see also Evidence, Mr Stephen Beaman, Executive Director, Regulatory Practice and Services, NSW Environment Protection Authority, 6 December 2024, pp 32-33.

⁶⁴⁴ Evidence, Mr Waldron, 5 February 2025, p 40.

⁶⁴⁵ Evidence, Mr Jonathan Wright, Senior Organiser, Fire Brigade Employees Union of New South Wales, 6 December 2024, p 20; see also Evidence, Mr Drury, 6 December 2024, p 21.

⁶⁴⁶ Evidence, Mr Drury, 6 December 2024, p 21.

⁶⁴⁷ Evidence, Mr Drury, 6 December 2024, p 21.

items or products we're purchasing, and we're keeping a record of those. We also have our incident records of what may have been used at the site of an incident.⁶⁴⁸

- 5.48 The Commissioner also confirmed that for every single incident there is a requirement to record exactly what was used at the site.⁶⁴⁹
- 5.49 On historical records that may assist to pinpoint the locations of firefighting incidents and what was used to fight them, Assistant Commissioner Morris stated that these are harder, and more resource intensive to access than current electronic records.⁶⁵⁰

Committee comment

- 5.50 Thorough record keeping is clearly very important to managing legacy PFAS contamination emanating from Fire and Rescue NSW (FRNSW) sites, and sites more generally, across the state.
- 5.51 The committee notes evidence that sometimes, contaminated properties, like former fire stations, are remediated to a certain standard e.g. a commercial standard, to facilitate a particular use. However, such a property may later be on-sold to a purchaser who wants to use it for a different purpose, e.g. as a residential property.
- 5.52 The committee was concerned to hear that, in such cases, records that may warn a prospective purchaser that the new use would be unwise – such as environmental management plans – can have been lost, there being no central register for such information. The committee was also concerned at evidence that section 10.7 planning certificates, produced by local councils to disclose property and planning information in the context of property transactions, are sometimes not adequately informing people about contaminated land issues either.
- 5.53 In the circumstances, the government should establish a central register of any issues relating to land contamination for each parcel of land in New South Wales, including when land is within a PFAS management area, where a contaminated property has been remediated, and, if so, the standard to which any such remediation has been undertaken.

Recommendation 18

That the NSW Government establish a central register of any issues relating to land contamination for each parcel of land in New South Wales, including when land is within a PFAS management area, when a contaminated property has been remediated, and, if so, the standard to which any such remediation has been undertaken.

- 5.54 The committee also notes emergency services sector tracking of the historical storage and use of PFAS chemicals is very valuable today in assisting to manage legacy PFAS contamination by helping authorities to identify potentially contaminated areas. Whilst noting evidence that such historical record-keeping was not always optimal, the committee also notes historical incident reports that do exist have been helpful in modern investigations e.g. assisting to establish the

⁶⁴⁸ Evidence, Commissioner Fewtrell, 6 December 2024, p 41.

⁶⁴⁹ Evidence, Commissioner Fewtrell, 6 December 2024, p 41.

⁶⁵⁰ Evidence, Assistant Commissioner Morris, 3 February 2025, p 24.

possible source of PFAS contamination in Medlow Dam in the Blue Mountains, New South Wales.

- 5.55** Further, the committee was pleased to hear that such record keeping has improved greatly in recent times, and that FRNSW now keeps records of hazardous chemicals that are stored on FRNSW sites, items and products that FRNSW is purchasing, and incident records of what may have been used at the site of an incident – and that there are actually requirements to record exactly what was used.
- 5.56** In this regard, the committee agrees with evidence from the Fire Brigade Employees Union (FBEU) that a register is needed for current firefighting foams and hazardous chemicals on the basis that they might eventually prove to be problematic like PFAS. If there were a register of such materials stored on FRNSW sites, including what was used at training exercises and incidents and where and by whom, this would assist enquiries in any future contamination or workers' compensation matters.
- 5.57** In the circumstances, the committee recommends that the government establish a register, to be kept by FRNSW, of:
- the firefighting foam and hazardous chemicals purchased and stored by location at each FRNSW site across the state
 - any such materials having been used including the location of use, the circumstances (e.g. at a training exercise or a firefighting incident), the amounts used, and the names of personnel involved, and
- that the register be made available to relevant government agencies.

Recommendation 19

That the NSW Government establish a register, to be kept by Fire and Rescue NSW of:

- the firefighting foam and hazardous chemicals purchased and stored, by location, at each Fire and Rescue NSW site across the state
- any such materials having been used including the location of use, the circumstances (e.g. at a training exercise or firefighting incident), the amounts used, and the names of the personnel involved, and

the register be made available to relevant government agencies.

Training, operational guidelines and resourcing to manage environmental contamination into the future

- 5.58** In another matter important to dealing with any potential emerging contamination issues to do with current firefighting foams, the FBEU was asked how training and operational guidelines regarding the containment of such foams at an incident compare to what may have happened historically.
- 5.59** Mr Drury advised that training and operational guidelines have improved, stating that 15 years ago, containing run-off from an incident was not a priority – the priority was to put out the fire,

then consider the run-off. He stated that nowadays every firefighter graduate is trained on how to block drains and build dams and that 'It's not just about putting the wet stuff on the red stuff but certainly making sure that run-off doesn't go anywhere else, or as little as possible'.⁶⁵¹

- 5.60** However, Mr Drury also noted that appropriate resourcing is essential to minimise the amount of contamination flowing from a firefighting incident. This relates to response times and having big enough crews so that some firefighters can put out the fire while others take necessary measures to prevent run-off:

If you have a petrol tanker alight on the M1 and you only have one fire truck there, you are putting water and foam on it at the start to obviously minimise it. You're not blocking drains. But if you have three appliances there, you can obviously start blocking drains and start containing it but, again, that comes down to how many resources you have on the ground...

But it does [also] go back to...our response times. The quicker we are and we get to these events—it exponentially grows the problems to the environment and the community the longer that we take to get there. It's as simple as that.⁶⁵²

- 5.61** On this point, Mr Drury stated that there were not enough resources to train the number of people needed, and that 300 more permanent firefighters were needed in New South Wales, and 600 more retained firefighters.⁶⁵³

Committee comment

- 5.62** The committee notes Fire Brigade Employees Union evidence that in helping to prevent any potential emerging contamination issues to do with current firefighting foams, there must be sufficient resourcing at all firefighting incidents. The committee agrees – it is self-evident that crews must be able to respond quickly to an incident to minimise impacts to the environment and nearby communities. The bigger a fire gets, the worse damage it can do. Crews must also be large enough so that some members can be assigned to fighting the fire, whilst others can concentrate on minimising any run-off and contamination to surrounding areas. Appropriate training is also essential.
- 5.63** The committee recommends that the government undertake a review to determine workforce, resourcing and training requirements that are needed across New South Wales to optimise the handling of firefighting incidents and to minimise contamination of waterways by firefighting foam and other chemicals, with a view to providing the necessary funding.

⁶⁵¹ Evidence, Mr Drury, 6 December 2024, p 23.

⁶⁵² Evidence, Mr Drury, 6 December 2024, p 23.

⁶⁵³ Evidence, Mr Drury, 6 December 2024, p 23.

Recommendation 20

That the NSW Government undertake a review to determine workforce, resourcing and training requirements that are needed across New South Wales to optimise the handling of firefighting incidents and to minimise contamination of waterways by firefighting foam and other chemicals.

Work health and safety

- 5.64** PFAS poses particular work health and safety issues for firefighters given the historic use of PFAS-containing firefighting foam in New South Wales, as discussed earlier.⁶⁵⁴
- 5.65** Mr Drury of the FBEU pointed to research linking high levels of PFAS in the firefighters' blood with adverse health effects, including cancer, and indicated that firefighters are exposed to large numbers of toxic chemicals more generally in the course of their work.⁶⁵⁵ Indeed, in 2022, the International Agency for Research on Cancer classified occupational exposure as a firefighter as carcinogenic to humans, that is, cancer-causing.⁶⁵⁶
- 5.66** In this context, Mr Drury noted the *Workers Compensation Legislation Amendment (Firefighters) Act 2018*, which amended the *Workers Compensation Act 1987*, to provide that certain cancers in firefighters with qualifying periods of service are presumed to be work-related, making it easier to claim workers' compensation benefits:

As end users of firefighting foams containing PFAS, firefighters have a long history with this forever chemical. PFAS-related foams were used extensively in our job both in training and operations...PFAS has left us a toxic legacy and firefighters have been exposed to the worst of it. There is a significant body of research correlating high levels of PFAS in the blood and adverse health effects in firefighters. This includes high cholesterol and elevated cancer risks. The work of firefighters is dangerous enough. We can be exposed to more than 70,000 different chemicals in a structure fire. It is for this reason that we have presumptive cancer legislation in New South Wales for firefighters so we can have some access to workers comp for work-related cancers.⁶⁵⁷

⁶⁵⁴ Evidence, Mr Drury, 6 December 2024, p 16; see also NSW Environment Protection Authority, *PFAS investigation program FAQs*, <https://www.epa.nsw.gov.au/Your-environment/Chemicals/PFAS-in-NSW/nsw-government-pfas-investigation-program/pfas-investigation-faqs>.

⁶⁵⁵ Evidence, Mr Drury, 6 December 2024, p 16.

⁶⁵⁶ See Evidence, Mr Drury, 6 December 2024, p 16; and International Agency for Research on Cancer, *IARC Monographs evaluate the carcinogenicity of occupational exposure as a firefighter* (1 July 2022), <https://www.iarc.who.int/news-events/iarc-monographs-evaluate-the-carcinogenicity-of-occupational-exposure-as-a-firefighter/#:~:text=The%20International%20Agency%20for%20Research%20on%20Cancer,carcinogenicity%20of%20occupational%20exposure%20as%20a%20firefighter.&text=After%20thoroughly%20reviewing%20the%20available%20scientific%20literature%20C,of%20sufficient%20evidence%20for%20cancer%20in%20humans.>

⁶⁵⁷ Evidence, Mr Drury, 6 December 2024, p 16; see also *Workers Compensation Legislation Amendment (Firefighters) Act 2018*.

5.67 In discussing these changes, made by the *Workers Compensation Legislation Amendment (Firefighters) Act 2018*, the government stated that it 'recognises that some individuals will have had a higher level of exposure to PFAS due to their employment, particularly relating to firefighting'.⁶⁵⁸

5.68 However, Mr Drury argued that this presumptive workers compensation legislation does not go far enough, covering only 12 types of cancer while in Queensland 23 types of cancer are covered. He strongly urged reform in this area so that New South Wales firefighters have the same protections as others doing the same work, in the same perilous conditions.⁶⁵⁹

5.69 As touched upon earlier in the report, the FBEU also confirmed that FRNSW was funding a PFAS blood testing regime for firefighters in New South Wales to foster early identification. FBEU Senior Organiser, Mr Jonathan Wright stated:

Last year we also reached an agreement with Fire and Rescue to undertake PFAS blood tests for firefighters and cancer screening free of charge. The initiative is founded on early identification, monitoring and intervention, and giving firefighters both knowledge of their risks and their options. We consider it to be a very important endeavour.⁶⁶⁰

5.70 However, the FBEU complained that, as at 6 December 2024, the testing was yet to be rolled out, that it was therefore nine months late and that New South Wales was dragging behind most other Australian jurisdictions on this issue.⁶⁶¹ Further, Mr Wright indicated this was illustrative of a reactive approach by FRNSW to firefighters' health, and not consistent with the precautionary approach that should be taken:

Firefighting is an industry where we have always looked at the harm it does to those workers retrospectively. There's always going to be another PFAS, it's a dangerous bit of work, but the precautionary approach and principles aren't being applied to the way that we talk about firefighters' health. That is one of the things that makes our members most frustrated, and it's not difficult to address. It's about providing a level of comfort, about acknowledging the risks of the work, and just putting in some very basic scoping to assist—like the testing regime that we won in the award.⁶⁶²

5.71 Commissioner Fewtrell indicated that until recently FRNSW had hesitated to fund PFAS blood testing for firefighters given the medical guidance and recommendations at the time. However, he stated that subsequent research has facilitated a better understanding meaning FRNSW was now comfortable funding that testing.⁶⁶³ The Commissioner also denied there were any organisational or cultural barriers contributing to delays in addressing the concerns of firefighters:

I'm always open, if people have concerns and they want to raise them either directly with me or other people in my team; I am keen to hear those. I think the biggest challenge, though, has been where the medical recommendations and advice sat for a long time. And then, over the past several years, there has been a much greater understanding, both in terms of the general community's understanding but also the

⁶⁵⁸ Submission 19, NSW Government, p 15.

⁶⁵⁹ Evidence, Mr Drury, 6 December 2024, p 16.

⁶⁶⁰ Evidence, Mr Wright, 6 December 2024, p 16.

⁶⁶¹ Evidence, Mr Drury, 6 December 2024, p 18.

⁶⁶² Evidence, Mr Wright, 6 December 2024, pp 18-19.

⁶⁶³ Evidence, Commissioner Fewtrell, 6 December 2024, p 39.

scientific knowledge and evidence, to help guide us through what will be the next stages. I don't think it's necessarily a cultural impediment in Fire and Rescue.⁶⁶⁴

- 5.72** On the delays in rollout now that testing had been agreed to, the Commissioner stated that he expected testing to commence in the first quarter of 2025 and that FRNSW had needed time to find an appropriate provider. Further, he indicated the testing program had to be properly designed so that firefighters have support and explanation from a medical practitioner around their test results to determine if those results are of concern in their individual case, and best approaches henceforth.⁶⁶⁵
- 5.73** FRNSW also confirmed that the blood testing would test for 28 PFAS analytes including PFOS and PFOA, known components of the firefighting foam the agency used historically.⁶⁶⁶
- 5.74** However, FRNSW was further questioned as to the medical guidance and recommendations it had been relying on up until recently in deciding not to fund PFAS blood testing for firefighters. Assistant Commissioner Morris' response appeared to indicate that FRNSW was relying on the advice of the Environmental Health Standing Committee (enHealth) regarding PFAS, discussed in earlier chapters.⁶⁶⁷ The Assistant Commissioner stated:
- In terms of PFAS and the cancer risk in the medical advice, we follow the Federal department of health advice regarding PFAS, which recommends adopting a precautionary approach and that human exposure to PFAS be minimised. We have adopted this precautionary approach in managing it across the State. The health advice was that PFAS exposure has been associated with a number of health effects and that there are potential associations with two types of cancer, though a causative relationship between those health effects and PFAS exposure has not been established to date.⁶⁶⁸
- 5.75** The enHealth advice is consistent with the Assistant Commissioner's wording, stating that there are reported potential associations between PFAS and the increased risk of two uncommon cancers, testicular and kidney cancer. Further, it emphasises that to date no causative link has been established between PFAS and negative health outcomes but it encourages a precautionary approach, limiting exposure to PFAS wherever possible.⁶⁶⁹ The enHealth advice is not targeted towards high exposure groups such as firefighters who have worked with firefighting foam containing PFAS.
- 5.76** When asked what research FRNSW was now relying on in terms of the potential health impacts of PFAS-containing firefighting foam, they responded that in addition to the 'National Health and Medical Research Council Guidelines'⁶⁷⁰ FRNSW was relying on:

⁶⁶⁴ Evidence, Commissioner Fewtrell, 6 December 2024, p 40.

⁶⁶⁵ Evidence, Commissioner Fewtrell, 6 December 2024, pp 39-40.

⁶⁶⁶ Answers to questions on notice, Fire and Rescue NSW, 4 March 2025, p 1.

⁶⁶⁷ See Evidence, Assistant Commissioner Morris, 3 February 2025, pp 24-25. Note, it appears that in the committee's 3 February 2025 transcript of evidence at the point where the Assistant Commissioner was being questioned the National Health and Medical Research Council guidelines were referred to in error.

⁶⁶⁸ Evidence, Assistant Commissioner Morris, 3 February 2025, pp 24-25.

⁶⁶⁹ Tabled document, *enHealth Factsheet on PFAS*, p 2.

⁶⁷⁰ Note, which appears to refer back to the 3 February 2025 committee transcript and therefore could be a mistaken reference to the abovementioned enHealth advice.

- the Department of Climate Change, Energy, the Environment and Water - PFAS National Environment Management Plan 2.0, and
- the National Environment Protection Council - National Environment Protection (Assessment of Site Contamination) Measure

and that FRNSW continues to monitor international publications for the latest peer reviewed research.⁶⁷¹

5.77 On another issue related to work health and safety for firefighters, the FBEU complained that it had identified historic PFAS on worksites but had to 'drag [FRNSW] kicking and screaming' to audit fire stations to get the matter addressed, through lodging an industrial dispute. Mr Drury stated that even after three audits, 27 of 335 FRNSW work locations still had PFAS-containing foam on them in 2023.⁶⁷² As at 6 December 2024, it was Mr Drury's understanding that FRNSW had picked up all such stored foam and disposed of it, but he stated he could not be entirely certain of this.⁶⁷³

5.78 Assistant Commissioner Morris confirmed that PFAS-containing foam had indeed been found on FRNSW property recently but that he understood it had now been entirely removed:

[I]n 2007 we withdrew all the PFAS foams. There has been a series of ongoing surveys and re-evaluation of that. Unfortunately, we have on occasion found stores of PFAS foam. As late as last year, there was another survey around that particular material. To the best of our knowledge, we should have all of the PFAS-containing foams removed from the sites.⁶⁷⁴

5.79 More generally, Mr Drury stated that significant additional funding is needed to bring FRNSW stations in line with safe working practices, as many are outdated:

We're currently at an \$800 million underfund in regard to what the next 10 years looks like for New South Wales fire stations. The average age is way over what they should be. Obviously, bringing it all in line with safe working practices, not just for firefighters in their clean and dirty areas but around how you store chemicals, how you store fuels, our fire stations have not had any of that upgrade since they were built. So the new ones are fine, but at this rate we will still be having this conversation in 50 years.⁶⁷⁵

Committee comment

5.80 The committee notes the particular work health and safety issues PFAS poses to firefighters given the historic use of PFAS-containing firefighting foam that Fire and Rescue NSW (FRNSW) has seen fit to ban, and the discussion earlier in the report, in particular chapter two, about links between PFAS and certain adverse health effects, including cancer. The committee also notes that the International Agency for Research on Cancer has classified firefighting as a cancer-causing profession.

⁶⁷¹ Answers to questions on notice, Fire and Rescue NSW, 4 March 2025, p 4.

⁶⁷² Evidence, Mr Wright and Mr Drury, 6 December 2024, pp 17-18.

⁶⁷³ Evidence, Mr Drury, 6 December 2024, p 18.

⁶⁷⁴ Evidence, Assistant Commissioner Morris, 3 February 2025, p 21.

⁶⁷⁵ Evidence, Mr Drury, 6 December 2025, p 20.

- 5.81** In this context, the committee welcomes the fact that the *Workers Compensation Legislation Amendment (Firefighters) Act 2018* created a legal framework so that certain cancers in firefighters with qualifying periods of service are presumed to be work-related, making it easier to claim workers' compensation benefits. However, the committee notes Fire Brigade Employees Union (FBEU) evidence that this legislation could go further, recognising, as it does, 12 cancers when comparable legislation in Queensland recognises 23 cancers.
- 5.82** The committee finds persuasive FBEU arguments that New South Wales firefighters should have the same protections as their counterparts in other jurisdictions, doing the same work in the same perilous conditions. Therefore, the committee recommends that the government consider amending the *Workers Compensation Act 1987* to expand the list of cancers presumed to be work-related, where they occur in firefighters with qualifying periods of service.

Recommendation 21

That the NSW Government consider amending the *Workers Compensation Act 1987* to expand the list of cancers presumed to be work-related, where they occur in firefighters with qualifying periods of service.

- 5.83** The committee was also very concerned at evidence that, until recently, FRNSW did not support PFAS blood testing for firefighters and that it appears to have been basing its views on enHealth advice on PFAS, which is general advice, and is not specifically tailored to firefighters. The committee considers it clear that firefighters who worked with PFAS-containing foam are in a much higher risk category than members of the general population when it comes to assessing the potential adverse health effects of PFAS.
- 5.84** In the circumstances, the committee recommends the government commission independent, specialised research on the potential health impacts of historical PFAS use on firefighters in New South Wales. Further, such research should inform the government's consideration as to whether specific guidelines need to be created to manage the possible health effects for firefighters who have worked with PFAS-containing firefighting foam. Generalist advice and guidelines are not sufficient.

Recommendation 22

That the NSW Government commission independent, specialised research on the potential health impacts of historical PFAS use on firefighters in New South Wales; and that such research inform the government's consideration as to whether specific guidelines need to be created to manage the possible health effects for firefighters who have worked with PFAS-containing firefighting foam.

- 5.85** The committee was profoundly disappointed at evidence that there were cases of PFAS-containing foam having been stored at FRNSW stations until as recently as last year, noting reports from the FBEU that it had to lodge an industrial dispute to get the issues addressed. The committee finds that FRNSW took too long to completely remove PFAS-containing firefighting foam that was stored at its fire stations, with evidence that such foam was still being located as late as 2023 or 2024.

Finding 10

Fire and Rescue NSW took too long to completely remove PFAS-containing firefighting foam that was stored at its fire stations, with evidence that such foam was still being located as late as 2023 or 2024.

- 5.86** The committee further notes FBEU evidence that significant additional funding is needed to bring FRNSW stations in line with safe working practices, including with regard to chemical and fuel storage, with many fire stations being outdated. Given the health and safety and broader contamination risks, the committee recommends that the government consider additional funding to upgrade FRNSW fire stations across New South Wales where necessary to bring them into line with safe working practices and to facilitate appropriate storage of chemicals and other hazardous materials.
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Recommendation 23

That the NSW Government consider additional funding to upgrade FRNSW fire stations across New South Wales where necessary to bring them into line with safe working practices and to facilitate appropriate storage of chemicals and other hazardous materials.

Chapter 6 Other matters surrounding the management of PFAS in New South Wales

This final chapter explores further significant matters surrounding the management of PFAS in New South Wales that may have been touched upon in earlier chapters, but have not been discussed in detail, nor concluded upon. It starts by examining the debate surrounding whether water quality guidelines should be stricter in Australia, including whether they should cover more PFAS chemicals.

The chapter then goes on to explore the crucial topic of source control for PFAS and what can be done to stop these chemicals entering the environment in the first place. Next, the chapter examines biosolids and the challenges they present for the management of PFAS in New South Wales, which will entail significant investment into the future; as well as the various treatment methods to deal with PFAS, a necessary complement to source control.

The chapter concludes by discussing work that could be done to better identify PFAS contaminated sites across the state, to help focus remediation efforts discussed earlier in the report, and to feed into the central register of land contamination issues that the committee has recommended in chapter five.

The debate surrounding limits set by the Australian Water Quality Guidelines

The debate

- 6.1 This section explores arguments put by some stakeholders that the limits set by the Australian Drinking Water Guidelines (ADWG) are not strict enough, and that more PFAS chemicals should be covered by water quality guidelines in Australia.

Recent changes to the Australian Drinking Water Guidelines

- 6.2 As noted earlier in the report, there is a framework in place to ensure the safety of drinking water in New South Wales. Under the *Public Health Act 2010* and the *Public Health Regulation 2022* drinking water suppliers must have in place, and comply with, a quality assurance program, or drinking water management system. The management system must address the elements of the *Framework for Management of Drinking Water Quality* set down within the Australian Drinking Water Guidelines (ADWG), managed by the National Health and Medical Research Council that are relevant to the operations of the supplier.⁶⁷⁶
- 6.3 The government indicated that the ADWG values for PFAS are cautious being 'based on the conservative assumption that 10% of an individual's daily intake of PFAS comes from drinking water supply'.⁶⁷⁷

⁶⁷⁶ Submission 19, NSW Government, p 13.

⁶⁷⁷ Submission 19, NSW Government, p 13.

- 6.4** However, as is also noted in earlier chapters, new guideline values were introduced on 25 June 2025 following a public consultation process.⁶⁷⁸ In 2022, the Australian Government's Department of Health and Aged Care asked the NHMRC to conduct a review of the ADWG values for PFAS. As well as reviewing the guideline values for PFOA, PFOS and PFHxS, the NHMRC also considered PFBS and hexafluoropropylene oxide (HFPO) dimer acid and its ammonium salt, known as 'GenX chemicals'.⁶⁷⁹
- 6.5** The NHMRC released updated draft guidelines for public consultation from 21 October – 22 November 2024.⁶⁸⁰ These updated draft guidelines proposed a significant decrease as to what would be counted to be safe levels of PFAS in drinking water, and the NHMRC confirmed they were based on the level of PFAS chemicals people can ingest over a lifetime without an appreciable risk to health.⁶⁸¹
- 6.6** The new ADWG published on 25 June 2025, following this consultation process, are the same as for those proposed at public consultation except for PFOS where the proposed guideline limit was 4 nanograms per litre, while the new guideline has revised this to 8 nanograms per litre. In noting that the guidelines are used by states and territories to regulate safe drinking water, the NHMRC advised that jurisdictions would now determine the timelines within which water providers would have to comply to meet the new guidelines.⁶⁸²
- 6.7** The original guideline limits, updated draft guideline limits that were released for consultation, and the new guideline limits, published 25 June 2025, are outlined in the comparison table below:⁶⁸³

Table 7 Comparison: original, draft consultation, and new guideline limits – Australian Drinking Water Guidelines

Chemical	Original guideline limit	Draft guideline limit released for consultation, 2024	New guideline limit, published 25 June 2025
PFOS	The sum of PFOS and PFHxS in drinking water should not exceed	4 nanograms/litre	8 nanograms/litre

⁶⁷⁸ Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines', 25 June 2025.

⁶⁷⁹ Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41.

⁶⁸⁰ National Health and Medical Research Council, *Australian Drinking Water Guidelines – Public Consultation on Draft Guidance for Per-and Polyfluoroalkyl Substances (PFAS)*, <https://consultations.nhmrc.gov.au/environmental-health/australian-drinking-water-guidelines-2024-pfas/>

⁶⁸¹ Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41 and Media release, National Health and Medical Research Council, 'Australian Drinking Water Guidelines: Public Consultation now open', 21 October 2024.

⁶⁸² Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines', 25 June 2025.

⁶⁸³ See Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41; and Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines', 25 June 2025.

	70 nanograms/litre		
PFHxS	The sum of PFOS and PFHxS in drinking water should not exceed 70 nanograms/litre	30 nanograms/litre	30 nanograms/litre
PFOA	560 nanograms/litre	200 nanograms/litre	200 nanograms/litre
PFBS	No guideline	1,000 nanograms/litre	1,000 nanograms/litre
Gen X Chemicals	No guideline	No guideline	No guideline

Should Australian water quality guidelines be stricter?

- 6.8** As touched upon earlier in the report, some stakeholders noted international developments and research surrounding the management of PFAS and indicated that governments within Australia should be taking more action to align with international standards. One aspect of this argument was that the PFAS limits set under the ADWG are not stringent enough.
- 6.9** For instance, in December 2024, Stop PFAS – Blue Mountains noted that the then proposed changes to the ADWG regarding PFOA and PFHxS levels – subsequently prescribed on 25 June 2025 – did not go far enough and Australia should instead be aligning with the standards that apply in the USA, pointing to the figures outlined in the table below.⁶⁸⁴

Table 8 Comparison of United States drinking water standards and Australian Drinking Water Guidelines – PFOA and PFHxS

Chemical	Safe level as prescribed under USA standards	Safe level as prescribed under the new ADWG, published 25 June 2025	Degree of difference
PFOA	4 nanograms per litre	200 nanograms per litre	Australian standard 50 times higher than the US standard
PFHxS	10 nanograms per litre	30 nanograms per litre	Australian standard 3 times higher than the US standard

- 6.10** As already noted, the new ADWG published on 25 June 2025, are the same as for those proposed at public consultation except for PFOS where the proposed guideline limit was 4 nanograms per litre – which aligned with the US standard for PFOS – while the new guideline has revised this to 8 nanograms per litre.⁶⁸⁵

⁶⁸⁴ See Submission 47, Stop PFAS – Blue Mountains, pp 10-11; see also Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines', 25 June 2025.

⁶⁸⁵ Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines', 25 June 2025, see also United States Environmental Protection Agency, *Per and*

- 6.11** A full table of standards that apply in the USA, compared with the PFAS limits that apply under the new ADWG follows:⁶⁸⁶

Table 9 Comparison of United States drinking water standards and Australian Drinking Water Guidelines

Chemical	Safe level as prescribed under USA standards	Safe level as prescribed under the new ADWG, published 25 June 2025
PFOS	4 nanograms / litre	8 nanograms/litre
PFHxS	10 nanograms /litre	30 nanograms/litre
PFOA	4 nanograms / litre	200 nanograms/litre
PFBS	No individual standard but there is a 'hazard index' of '1' to account for PFAS mixtures containing at least two or more of PFHxS, PFNA, Gen X chemicals, and PFBS	1000 nanograms/litre
Gen X Chemicals	10 nanograms / litre	No guideline
PFNA	10 nanograms / litre	No guideline

- 6.12** Another aspect of the argument that Australian water quality standards are not strict enough, put by some stakeholders, was that they do not cover enough PFAS chemicals. As detailed in chapter one, there are currently more than 14,000 PFAS compounds identified.⁶⁸⁷
- 6.13** For example, Mr Anthony Amis, Land Use Researcher, Friends of the Earth Australia stated on 5 February 2025 that while it was his understanding Sydney Water was testing for 30 PFAS chemicals, it was only publishing results for the three for which there were drinking water guidelines at the time: PFOS, PFHxS and PFOA.⁶⁸⁸ Mr Amis commented:

I think you need to capture the whole host of PFAS chemicals, or at least the 30 that Sydney Water are testing for. Part of the problem with the NHMRC...we might end up with drinking water guidelines for only four or five, but there could be literally up to 50 that have been detected across Australia. So we could be in a scenario in 10 years' time where, yes, we've got drinking water guidelines for the three, four or five chemicals, but it's still going to be missing the majority of PFAS, which might be in the environment and might actually be in tap water.⁶⁸⁹

Polyfluoroalkyl Substances (PFAS) Final PFAS National Primary Drinking Water Regulation (19 February 2025), <https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>.

⁶⁸⁶ See Media release, National Health and Medical Research Council, 'Updated Australian Drinking Water Guidelines', 25 June 2025; United States Environmental Protection Agency, *Per and Polyfluoroalkyl Substances (PFAS) Final PFAS National Primary Drinking Water Regulation* (19 February 2025), <https://www.epa.gov/sdwa/and-polyfluoroalkyl-substances-pfas>; and Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41.

⁶⁸⁷ See Evidence, Dr Brett Molony, Science Director, Environment, CSIRO, 5 February 2025, p 7.

⁶⁸⁸ Evidence, Mr Anthony Amis, Land Use Researcher, Friends of the Earth Australia, 5 February 2025, pp 2-3; see also Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41.

⁶⁸⁹ Evidence, Mr Amis, 5 February 2025, p 3.

- 6.14** Mr Amis noted in particular that Sydney Water does not report on the PFAS chemical PFBA, and the ADWG do not include a guideline limit in respect of it. He indicated he does not understand this after documents he received in early 2025, pursuant to applications under the *Government Information (Public Access) Act 2009*, revealed spikes of this chemical in various water supplies in New South Wales:

What has been interesting with those GIPAA requests is there seems to be spikes in a number of New South Wales water supplies, particularly in Sydney, with the PFAS chemical PFBA. I was first alerted to this—it happened in the Blue Mountains in December. We got a spike of PFBA up there following some rainfall events that happened in the Blue Mountains in December. The GIPAA request from Sydney Water also reveals high levels of PFBA at Macarthur Water Filtration Plant, Illawarra Water Filtration Plant, Woronora Water Filtration Plant and Nepean Water Filtration Plant.⁶⁹⁰

- 6.15** Mr Amis also stated that PFBA 'seems to be the highest frequently detected PFAS chemical, at least in New South Wales'.⁶⁹¹ In addition, in response to questioning he confirmed he had not seen any testing in Australia for the 'Gen X' PFAS chemicals for which there are drinking water standards in the USA, and he said the other PFAS chemical causing him worry was one called TFA – trifluoroacetic acid which he understands Australian laboratories are unable to test for.⁶⁹²
- 6.16** Mr Jon Dee, Founder and Convenor, Stop PFAS – Blue Mountains provided similar evidence, stating on 3 February 2025 that it was his understanding that Sydney Water was testing for 40 PFAS chemicals but only reporting on the three.⁶⁹³
- 6.17** Mr Dee stated that Sydney Water had provided him with results for 40 PFAS chemicals tested in late 2024, and that these results had revealed these elevated PFBA levels, but this information had never been made public:

There was a spike in the PFBA PFAS chemical where that was the majority PFAS chemical of the top five chemicals that are of most concern, and yet they didn't tell anybody... They certainly haven't gone public with that... [W]e have had a spike in the PFBA chemical in our local drinking water and nobody was told. I only found out because I actually analysed all 40 chemicals over a period of four weeks and mapped it and put it in a pie chart... I think that there should be full testing for all PFAS chemicals and I think, certainly, we should also see all those tests being made public.⁶⁹⁴

- 6.18** Mr Dee stressed that all PFAS chemicals should be tested for and reported upon.⁶⁹⁵
- 6.19** Professor Denis O'Carroll, Deputy Head of School (Research), Water Research Laboratory, University of New South Wales, agreed that water utilities should be reporting on a wider range of PFAS chemicals than the few subject to regulation in Australia, noting around 40 are routinely tested for anyway, so costs would probably be similar. He also pointed out this would assist benchmarking with other jurisdictions:

⁶⁹⁰ Evidence, Mr Amis, 5 February 2025, p 2.

⁶⁹¹ Evidence, Mr Amis, 5 February 2025, p 2.

⁶⁹² Evidence, Mr Amis, 5 February 2025, p 3.

⁶⁹³ Evidence, Mr Jon Dee, Founder and Convenor, Stop PFAS – Blue Mountains, 3 February 2025, p 9.

⁶⁹⁴ Evidence, Mr Dee, 3 February 2025, p 9.

⁶⁹⁵ Evidence, Mr Jon Dee, Founder and Convenor, Stop PFAS – Blue Mountains, 3 February 2025, p 9.

PFAS is a group of over 14,000 chemicals, so there's a lot of them. Routinely when you send that out to a commercial lab, you might send that out and get 28 of them measured, or let's say 40—more than that's regulated in Australia. But the utilities are only required, when they do—they only report the ones that are subject to regulation in Australia. That would be currently three PFASs, with a fourth one upcoming. I would suggest that there is no likely difference in cost. They should be reporting the wider suite of PFAS out there, and for a variety of reasons—and also so that we can benchmark how much PFAS is in our water compared to, let's say, the European Union standards, because the European Union standards would have a broader scope of what's subject to regulation.⁶⁹⁶

- 6.20** When asked about these matters, Dr Jens Blotevogel, Team Leader, Contaminants and Mitigation, Environment at the CSIRO, confirmed that at the moment monitoring programs in Australia focus on the few regulated chemicals but it is not clear whether they are actually the most relevant – the research is still unsettled.⁶⁹⁷ For a large number of PFAS chemicals it remains to be seen how closely they should be monitored as little is known about them, and new classes are still being discovered:

...we're still working on identifying PFAS. It's a large group of compounds...We're talking about thousands, possibly tens of thousands, of different compounds. We're finding new classes of PFAS still, and so for all of those, obviously, we would have to look into what's the relevance, what's the bioaccumulation potential and what's the toxicity. But we can certainly say that there are more than three or six of regulated PFAS that occur in the environment. Again, for most of those, we really have no information on their environmental fate and transport.⁶⁹⁸

- 6.21** Dr Jason Kirby, Group Leader, Contaminants and Mitigation, Environment, CSIRO agreed that there are a lot of PFAS chemicals about which little is known as to their potential risk in the environment. He further stated that the CSIRO has been developing methods over the last five or 10 years to help it identify these unknowns, which can act as an 'early warning system'.⁶⁹⁹
- 6.22** Dr Jackie Wright, Director/Principal, Environmental Risk Sciences Pty Ltd (enRiskS) counselled that the science around PFAS is still emerging and there is a need for further research to accurately assess what the appropriate standards and limits might be. In response to a question as to why the ecological water quality guidelines do not incorporate a guideline value for PFHxS⁷⁰⁰ even though the drinking water guidelines do, Dr Wright responded that this was not unusual.⁷⁰¹ Dr Wright stated that there must be sufficient data, and robust studies about the effects of a specific chemical before a guideline can be set:

⁶⁹⁶ Evidence, Professor Denis O'Carroll, Deputy Head of School (Research), Water Research Laboratory, University of New South Wales, 6 December 2025, p 11.

⁶⁹⁷ Evidence, Dr Jens Blotevogel, Team Leader, Remediation Technologies, Environment, CSIRO, 5 February 2025, p 11.

⁶⁹⁸ Evidence, Dr Blotevogel, 5 February 2025, p 8.

⁶⁹⁹ Evidence, Dr Jason Kirby, Group Leader, Contaminants and Mitigation, Environment, CSIRO, 5 February 2025, p 8.

⁷⁰⁰ See Heads of EPA, Australia and New Zealand, *PFAS National Environmental Management Plan 3.0* (Department of Climate Change, Energy, the Environment and Water, 2025) p 59.

⁷⁰¹ Evidence, Dr Jackie Wright, Director/Principal, Environmental Risk Sciences Pty Ltd (enRiskS), 5 February 2025, p 24.

The Commonwealth process for developing guidelines has a very robust process that it goes through. It does take time to do that. It also relies on having good, robust studies on the effects of those specific chemicals in the various different species that they need to look at. If that data is not available, it does limit what they can do. I suppose it comes down to whether they have been asked to add that to their list of chemicals that they need to establish a guideline for and if they've done that detailed review.⁷⁰²

- 6.23** Dr Wright also indicated that a site-specific risk assessment can still be done for a PFAS chemical, even where a guideline does not exist:

Certainly I can say when we do risk assessments, and if we're required to look at PFHxS in the environment, we would go back and look at what studies are available to look at can we assess the effects? That's from a site-specific, risk-assessment perspective. That's part of our guidance that we follow. We have guidance that says if we don't have a guideline value we still would do an assessment of that chemical in the environment to see if there's potential for adverse effects to those species. It's part of our normal process that we would normally follow even if we don't have a guideline, so it would be assessed.⁷⁰³

- 6.24** Dr Shiwen Li, of the Keck School of Medicine at the University of Southern California was also questioned about whether authorities in Australia should be regulating a broader suite of PFAS chemicals. As noted in chapter two, Dr Li and his colleague Dr Max Aung spoke of studies they had conducted in the USA that they said added to 'an emerging body of scientific evidence that PFAS causes cancer and that reducing PFAS water concentrations could potentially reduce the incidence of cancer' – at the same time acknowledging that their study of cancers has some limitations.⁷⁰⁴
- 6.25** Dr Li noted that the United States Environmental Protection Agency adopts a method that tests for 70 different PFAS chemicals – though it does not regulate that many chemicals – and he indicated that, if resourcing allows, authorities should adopt the most current testing technology or miss out on data useful for research.⁷⁰⁵
- 6.26** Noting the PFAS chemicals regulated in Australia, he further stated that PFOS and PFOA are still some of the most highly prevalent PFAS chemicals, so it is important to test for them, but if the resources are available to test further chemicals, this should be done 'to catch up with everyone else'.⁷⁰⁶
- 6.27** Dr Li was also asked whether the PFOA limit of 560 nanograms per litre that existed under the ADWG until the recent changes was too high, and whether the 200 nanograms per litre limit that now exists is also too high, given the 4 nanograms per litre limit that applies in the USA. Dr Li expressed doubt as to whether he had ever found PFOA levels as high as 200-560 nanograms per litre in his studies, stating that he thought the average he had found was about 10 nanograms per litre. He noted: '...it's very rare to find a water system that has that much at

⁷⁰² Evidence, Dr Wright, 5 February 2025, p 24.

⁷⁰³ Evidence, Dr Wright, 5 February 2025, p 24.

⁷⁰⁴ Evidence, Dr Shiwen Li, Post-Doctoral Research Scholar, Department of Population and Public Health Sciences, Keck School of Medicine, University of Southern California, 20 May 2025, p 2.

⁷⁰⁵ Evidence, Dr Li, 20 May 2025, p 8.

⁷⁰⁶ Evidence, Dr Li, 20 May 2025, p 9.

higher levels. I don't think it's practical to set a limit that no water system can reach that high ever'.⁷⁰⁷

The response of Sydney Water and NSW Health

- 6.28** As touched upon in chapter two, when asked about how many PFAS chemicals Sydney Water tests for, Dr Kaye Power, Principal Water and Public Health Advisor stated on 5 February 2025 that Sydney Water tested for 45, and reported against the three covered by the ADWG current at the time (that is, PFOS, PFHxS and PFOA).⁷⁰⁸ Dr Power indicated that the reason for only publishing the results for PFAS chemicals that have limits against them relates to 'sharing information in a way that the community can actually understand'.⁷⁰⁹
- 6.29** As discussed in chapter two, Dr Jackie Wright cautioned that PFAS test results must be published in context to avoid unnecessarily alarming the public as 'There are a lot of people who think any value more than zero is a problem'.⁷¹⁰
- 6.30** In response to questions about recently recorded spikes of PFBA in water testing results for the Blue Mountains in late 2024, following Mr Dee's and Mr Amis' concerns that these results had not been published, Dr Power denied the levels in question were high, stating that they 'went up a little bit' and she indicated fluctuations are normal and that test results are 'not dead straight'.⁷¹¹
- 6.31** Sydney Water was also asked what it does with the test results for PFAS chemicals on which it does not report, and whether these are shared with other agencies like NSW Health and the NHMRC, especially if there are spikes, so that consideration can be given as to whether the list of PFAS chemicals being regulated should be expanded. In response, Dr Power stated that such results are reviewed internally, and Sydney Water has weekly meetings with NSW Health and WaterNSW to discuss them. However, she further stated that not all the data is shared with those agencies – for example, excel spreadsheets of data are not handed over – because 'all of it is sitting at very low concentrations' and Sydney Water does not want to unnecessarily overwhelm these agencies with information.⁷¹²
- 6.32** In addition, Dr Power confirmed that the chemicals actually focussed on at the weekly meetings are the ones regulated under the ADWG but that Sydney Water would hand over any data NSW Health asked for.⁷¹³
- 6.33** On 4 February 2025, Dr Tony Merritt, Public Health Physician, Hunter New England Local Health District was also asked about the appropriateness of limits under the then proposed ADWG. The fact that the International Agency for Research on Cancer (IARC) has classified

⁷⁰⁷ Evidence, Dr Li, 20 May 2025, p 9.

⁷⁰⁸ Evidence, Dr Kaye Power, Principal Water and Public Health Advisor, Sydney Water, 5 February 2025, p 47; see also Select Committee on PFAS (Per and Polyfluoroalkyl Substances), Australian Senate, *Interim Report* (2025), p 41.

⁷⁰⁹ Evidence, Dr Power, 5 February 2025, p 47.

⁷¹⁰ Evidence, Dr Wright, 5 February 2025, p 23.

⁷¹¹ Evidence, Dr Power, 5 February 2025, p 47.

⁷¹² Evidence, Dr Power, 5 February 2025, p 48.

⁷¹³ Evidence, Dr Power, 5 February 2025, p 48.

PFOA as 'carcinogenic to humans' and PFOS as 'possibly carcinogenic to humans'⁷¹⁴ was noted in this context. Dr Merritt indicated that, in releasing the proposed ADWG, the NHMRC had taken the IARC's findings into account, although at that stage, more detail on the IARC's findings was awaited:

The NHMRC is the peak national body of experts who provide us with their guidance in the Australian Drinking Water Guidelines, amongst other things. As you refer to, there's the established current drinking water guidelines and then, towards the end of last year—as I say, in October—they announced proposed revision to those guidelines based on a renewed look at the evidence. Those are living documents and they get updated from time to time in the light of other evidence. I've looked at the documents that NHMRC released accompanying those proposed guidelines. They make specific reference to and acknowledge the IARC findings in relation to PFOA and PFOS. They note that they await the detailed monographs that will provide the background thinking in terms of both of those things...[The]NHMRC, in releasing their proposed documents, were aware of IARC's findings and, as I say, await the detailed content that is behind those.⁷¹⁵

- 6.34** Questions were also asked of Dr Merritt about whether the PFOA limit of 200 nanograms per litre under the ADWG was appropriate having regard to the US standard of 4 nanograms per litre. Whilst Dr Merritt stated that this question was more appropriately directed to other agency colleagues, and was not a consideration for the local health district he did point to the fact that there are differing approaches to guideline limits from one jurisdiction to another:

....there's a different approach to water guidelines in many different agencies around the world. There are valid considerations and decisions to be made about how guidelines are put together and developed. There are generally different approaches in different jurisdictions. I'll leave the comment on the more technical aspects, if that's acceptable, to my colleagues at the State level.⁷¹⁶

- 6.35** As discussed in earlier chapters, in April 2025, after NSW Health had given evidence to the inquiry, Dr Kerry Chant AO PSM, Chief Health Officer and Deputy Secretary, Population and Public Health, also convened the NSW Health Expert Advisory Panel on PFAS to provide independent advice on the available evidence on PFAS.⁷¹⁷ The Panel's report, published 12 August 2025, discussed the ADWG and indicated that in setting appropriate PFAS limits ('threshold levels') under such guidelines, regulators across international jurisdictions use varying scientific approaches. The Panel stated that in setting levels under the ADWG, the NHMRC's practice is based on animal studies with appropriate safety factors. Unlike some other international agencies, the NHMRC does not consider the available studies in humans to be reliable or appropriate for this purpose. The Panel agreed with the approach of the NHMRC and found that authorities should avoid using the currently available human epidemiological studies to derive threshold levels owing to the higher risk of bias and confounding.⁷¹⁸

⁷¹⁴ See Submission 47, Stop PFAS – Blue Mountains, p 11.

⁷¹⁵ Evidence, Dr Tony Merritt, Public Health Physician, Hunter New England Local Area Health District, 4 February 2025, p 30.

⁷¹⁶ Evidence, Dr Merritt, 4 February 2025, p 30.

⁷¹⁷ Correspondence from Dr Kerry Chant AO PSM, Chief Health Officer and Deputy Secretary, Population and Public Health to committee, 11 August 2025.

⁷¹⁸ NSW Health Expert Advisory Panel on PFAS, *Recommendations – August 2025*, 12 August 2025, p 4.

Committee comment

- 6.36** The committee considers arguments that the limits set by the Australian Drinking Water Guidelines (ADWG) are not strict enough may have some merit, noting the evidence discussed earlier in the report linking PFAS with adverse health effects, including cancer. In this context, it is unclear why the limits prescribed under the newly published ADWG for three very prominent PFAS chemicals – PFOS, PFHxS and PFOA are all higher than those that apply in the USA.
- 6.37** The Australian guideline limit for PFOA of 200 nanograms per litre is particularly concerning – 50 times higher than the US standard for PFOA of 4 nanograms per litre, especially given the International Agency for Research on Cancer has classified this chemical as carcinogenic to humans. The committee also notes the evidence of Dr Li of the University of Southern California that the 200 nanogram limit may be somewhat nonsensical given his recollection that PFOA concentrations in water he has studied have been far lower on average, at around 10 nanograms per litre.
- 6.38** While the committee notes the comments of the NSW Health Expert Advisory Panel on PFAS that guideline limits have been set using a different scientific approach from the one adopted in some international jurisdictions, given the health risks, the less stringent limits that have resulted would not appear to be consistent with the precautionary principle. This is particularly the case in respect of the radically different standard for PFOA in Australia versus the USA. Guideline limits in Australia should align with international best practice.
- 6.39** Regarding arguments about whether a larger suite of PFAS chemicals should be regulated under Australian water quality guidelines, the committee accepts evidence from the CSIRO and enRiskS that the science around PFAS is still emerging and there is a need for further research to accurately assess what the appropriate standards and limits for many of these chemicals should be. However, this shouldn't mean that the precautionary principle shouldn't apply.
- 6.40** It is not clear why there are some PFAS chemicals, such as Gen X chemicals, that the USA has considered concerning enough to set a limit against, but for which there are no limits in Australia. The committee is convinced that the Australian Government should regularly review the available evidence on PFAS and incorporate other relevant chemicals in the ADWG when appropriate.

Finding 11

The revised Australian Drinking Water Guidelines continue to permit higher levels of key PFAS chemicals—PFOS, PFHxS and PFOA—than comparable international standards, despite evidence of their adverse health effects, particularly for PFOA, which is 50 times higher than the US standard, despite PFOA being classified as carcinogenic to humans.

- 6.41** The committee does not accept evidence from Sydney Water that water testing results should only be published for PFAS chemicals for which there are guideline limits, because doing so may cause unnecessary alarm. One of Sydney Water's core objectives is to protect the public's health and, given that it took the investigative work of a newspaper journalist to bring to light PFAS contamination in the drinking water of Blue Mountains residents, the public's faith in them to do this is perhaps not as strong as it used to be.

- 6.42** Finally, the committee is concerned at evidence that Sydney Water is testing water supplies for 45 PFAS chemicals but, with the exception of chemicals covered by the ADWG, there is no oversight of the results. Sydney Water is not providing the testing results for the unregulated PFAS chemicals to any other agencies, and even though it has advised it has weekly meetings with NSW Health and WaterNSW, at which the results can be discussed, it is understood these meetings focus on the small number of PFAS chemicals covered by the ADWG.
- 6.43** This gives rise to the possibility that there could be a spike in a PFAS chemical not regulated in Australia – but that another jurisdiction like the USA may have considered concerning enough to set a limit against – where there is no requirement for such information to be released to any third party with public health expertise for consideration as to whether regulatory standards need to change. Indeed, whilst not a chemical regulated in the USA, both Mr Dee and Mr Amis gave evidence about recently recorded spikes of PFBA in New South Wales, so spikes do occur.

Finding 12

There is no requirement for water utilities to report testing data for PFAS chemicals not currently covered by Australian Drinking Water Guideline limits, despite evidence that spikes in these chemicals can and do occur. This limits the ability of public health agencies to evaluate whether additional PFAS chemicals should be subject to regulatory standards.

- 6.44** In the circumstances, the committee makes the following recommendations:
- That the NSW Government call on the Australian Government to regularly review the available evidence on PFAS and incorporate other relevant chemicals in the ADWG when appropriate.
 - That the NSW Government call on the NHMRC to conduct more regular reviews of the ADWG, for PFAS, ensuring these align more closely with international best practice and are informed by the latest toxicological evidence.
 - That the NSW Government require all water utilities in New South Wales to provide complete PFAS testing data to NSW Health and the NHMRC, and to notify those bodies of any spikes or emerging trends and continue to keep the community up to date.

Recommendation 24

That the NSW Government call on the Australian Government to regularly review the available evidence on PFAS and incorporate other relevant chemicals in the Australian Drinking Water Guidelines when appropriate.

Recommendation 25

That the NSW Government call on the National Health and Medical Research Council to conduct more regular reviews of the Australian Drinking Water Guidelines, for PFAS, ensuring these align more closely with international best practice and are informed by the latest toxicological evidence.

Recommendation 26

That the NSW Government require all water utilities in New South Wales to provide complete PFAS testing data to NSW Health and the National Health and Medical Research Council, and to notify those bodies of any spikes or emerging trends and continue to keep the community up to date.

Source control**Calls for source control**

- 6.45** A number of stakeholders provided evidence that controlling PFAS at its source is crucial if PFAS is to be appropriately managed in New South Wales to stop it from entering the environment in the first place and causing harm, and obviating the need for expensive remediation and treatment.
- 6.46** Professor Ravi Naidu, Managing Director, Cooperative Research Centre for Contamination, Assessment and Remediation of the Environment (crcCARE) noted the ubiquity of PFAS chemicals discussed earlier in the report, indicating that PFAS contamination is difficult to control because it is found in so many products that people use everyday including pharmaceuticals, clothing, eating utensils and carpets.⁷¹⁹ In this context he noted that source control must be a priority and that, if PFAS can be reduced at the source, then concentrations in waterways will start to decline.⁷²⁰
- 6.47** Mr Amis of Friends of the Earth Australia noted the wide range of products PFAS chemicals are found in, causing an unsustainable level of contamination for the water industry to remediate. In these circumstances, he called for a staged ban on products containing PFAS as the only solution:

I think it needs to be banned... It's not a sustainable outcome that the water industry has to deal with this problem, which they haven't created... It won't happen overnight, that's for sure. This stuff is entwined in the very fabric of our society... I think what you really need to do is look strategically at what are the biggest uses of PFAS chemicals. We need to maybe start looking at it industry by industry, but also looking at easier

⁷¹⁹ See Evidence, Professor Ravi Naidu, Managing Director, Cooperative Research Centre for Contamination, Assessment and Remediation of the Environment (crcCARE), 4 February 2025, pp 11-12.

⁷²⁰ Evidence, Professor Naidu, 4 February 2025, p 10.

options like if it's found in cosmetics or items that can be easily banned. I think there should be a ban enacted, but what we really need to get at is the breadth of where the PFAS chemicals are and then look strategically at what are the easiest ways to stop this stuff from entering, at least, wastewater streams?⁷²¹

- 6.48** Professor O'Carroll of the University of New South Wales was another stakeholder who stated that source control should be a priority area in policy making around PFAS in New South Wales.⁷²²

Source control and wastewater

- 6.49** One major way in which PFAS from consumer products enters the environment is through wastewater. As discussed in chapter one, one of the important roles of Sydney Water, Hunter Water and local water utilities in New South Wales, besides providing treated drinking water to customers is managing wastewater.⁷²³ According to Sydney Water, wastewater is water that has been used in homes, schools, businesses and industries. It enters drains from sinks, baths, showers, laundries and toilets and other drains inside buildings. It is 99 per cent water and the remainder is made up of things added to the water as it has been used e.g. soap, detergents, human waste and food scraps.⁷²⁴

- 6.50** Sydney Water further advised that wastewater is treated so that clean water can be safely returned to the environment or re-used. Treated wastewater can be used:

- in homes and businesses to water gardens and flush toilets
- in industry
- to fight fires
- to irrigate parks, farms and sports fields

and, importantly, some treated wastewater is also returned to creeks, rivers and oceans.⁷²⁵

- 6.51** Against a background of some treated wastewater being returned to creeks, rivers and oceans – and being used to irrigate, thereby entering soils – Mr David Gathercole, Director, Operations,

⁷²¹ Evidence, Mr Amis, 5 February 2025, pp 4-5.

⁷²² Evidence, Professor O'Carroll, 6 December 2024, p 13.

⁷²³ See Evidence, Mr Roch Theroux, Managing Director, Sydney Water, 5 February 2025 p 43; Evidence, Mr Darren Cleary, Managing Director, Hunter Water, 4 February 2025, pp 24-25; and Department of Planning, Industry and Environment, *Utilities that carry out water supply and sewerage services*, <https://water.dpie.nsw.gov.au/our-work/local-water-utilities/entities-that-carry-out-water-supply-functions>.

⁷²⁴ Sydney Water, *Wastewater Treatment*, <https://www.sydneywater.com.au/education/wastewater-recycling/wastewater-treatment.html#:~:text=Wastewater%20is%20the%20water%20you,Where%20does%20wastewater%20come%20from?>

⁷²⁵ Sydney Water, *Wastewater Treatment*, <https://www.sydneywater.com.au/education/wastewater-recycling/wastewater-treatment.html#:~:text=Wastewater%20is%20the%20water%20you,Where%20does%20wastewater%20come%20from?>

NSW Environment Protection Authority (EPA), explained that PFAS from consumer products gets washed down drains, ending up at the sewage treatment plant:

But we do know products have come into Australia, in everyday life, that we've used for decades— toothpaste, shaving creams, shampoos, soaps, frypans et cetera, scotchgard, carpets. What happens—that goes down the drain when we're having a shower and things, and that goes to a sewage treatment plant or a septic tank... So there are other sources of PFAS that can get into society. We have benefited from those products for some decades, and what really needs to happen is for those to be phased out as well.⁷²⁶

6.52 Mr Roch Cheroux, Managing Director, Sydney Water also explained Sydney Water manages wastewater from industrial customers and that this too can contain PFAS. Mr Cheroux further noted that managing PFAS in wastewater is complex because treatment systems have not been designed to manage PFAS. He stated 'Wastewater systems were originally designed to address a fundamental public health challenge by treating water to remove microorganisms and nutrients, but they were not designed to handle persistent synthetic chemicals like PFAS'.⁷²⁷

6.53 Given this problem, like other stakeholders noted earlier, Mr Cheroux emphasised that source control is the most effective solution to PFAS contamination, and he indicated he supported a ban of PFAS in non-essential consumer products:

Treating PFAS at the end of the cycle, whether in water filtration plants, wastewater systems or biosolids, is far more expensive and less effective than preventing it from entering the system in the first place. This is why Sydney Water strongly urges decisive action to address PFAS at its sources. Banning or severely restricting its use in non-essential consumer products is the most effective and equitable solution. Avoidance is always more cost effective than treatment, and it would significantly reduce the burden on water utilities and, by extension, on our communities.⁷²⁸

6.54 In discussing its responsibilities treating wastewater and releasing it back into the environment, Hunter Water stressed the importance of source control, noting that existing treatment methods are not effective in removing PFAS.⁷²⁹ Mr Darren Cleary, Managing Director, stated that Hunter Water is working with commercial and industrial customers to prevent PFAS being discharged into the wastewater network but that this can be difficult.⁷³⁰ He further noted that residential customers cannot control the amount of PFAS they are discharging given the prevalence of PFAS in consumer products and he stated '...the approach of trying to minimise the use of PFAS in products is, in our view, critical'.⁷³¹

⁷²⁶ Evidence, Mr David Gathercole, Director, Operations, NSW Environment Protection Authority, 4 February 2025, p 40.

⁷²⁷ Evidence, Mr Cheroux, Managing Director, Sydney Water, 5 February 2025, p 43.

⁷²⁸ Evidence, Mr Cheroux, 5 February 2025, p 43.

⁷²⁹ See Evidence, Mr Darren Cleary, Managing Director, Hunter Water, 4 February 2025, p 21.

⁷³⁰ Evidence, Mr Cleary, 4 February 2025, pp 21 and 25.

⁷³¹ Evidence, Mr Cleary, 4 February 2025, p 25.

Source control and waste management

- 6.55** Mr Gathercole of the EPA also noted that solid wastes put into landfills are another way through which PFAS can enter the environment, citing the everyday example of a muesli bar wrapper.⁷³²
- 6.56** In this regard, evidence discussed in chapter three from organisations that are receiving solid waste is notable. As identified in that chapter, owing to the ubiquity of PFAS in industrial, commercial and consumer products, these organisations indicated they found government requirements for them to manage PFAS unrealistic and extremely costly.⁷³³
- 6.57** For example, Ms Gayle Sloan, Chief Executive Office of the Waste Management and Resource Recovery Association of Australia (WMRR) stated that the government imposes unrealistic limits on the amount of PFAS the industry is to manage on its sites, which cannot be policed given PFAS is so common in consumer products.⁷³⁴
- 6.58** Blayney Shire Council, which operates the Blayney Waste Facility, is another example. The council complained that the costs that it must now pay to investigate, monitor and treat the PFAS associated with the facility are crippling, in circumstances where products containing PFAS have been freely available on the market for over 50 years. They also stressed that this runs counter to the 'polluter pays' principle.⁷³⁵

Achieving source control

- 6.59** Consistent with the above calls for the promotion of source control and stopping PFAS from entering the environment in the first place, Mr Tony Chappel, Chief Executive Officer of the EPA confirmed that following the recent passage of the *Environmental Legislation Amendment (Hazardous Chemicals) Act 2024*, New South Wales has adopted the Industrial Chemicals and Environmental Management Standard (IChEMS).⁷³⁶
- 6.60** As touched upon in chapter one, IChEMS sets out national standards for industrial chemical risk management including industrial chemical use, storage, handling and disposal.⁷³⁷ Mr Chappel advised that under the new IChEMS framework, PFOA, PFOS and PFHxS would be prohibited from being imported, manufactured, exported or used from 1 July 2025.⁷³⁸
- 6.61** The IChEMS register sets out prohibitions where these PFAS chemicals (either by themselves or contained in a mixture, or in an article) are imported, exported, manufactured or used. There are exemptions if the PFAS is only present as an unintentional trace contaminant at certain defined levels of concentration stated in schedule 7 of the IChEMS register. There are also

⁷³² Evidence, Mr Gathercole, 4 February 2025, p 40.

⁷³³ See Evidence, Ms Gayle Sloan, Chief Executive Officer, Waste Management and Resource Recovery Association of Australia, 5 February 2025, p 14; and Submission 68, Blayney Shire Council, pp 3-4.

⁷³⁴ Evidence, Ms Sloan, 5 February 2025, p 14.

⁷³⁵ Submission 68, Blayney Shire Council, pp 3-4.

⁷³⁶ Evidence, Mr Tony Chappel, Chief Executive Officer, NSW Environment Protection Authority, 5 February 2025, p 51.

⁷³⁷ Submission 19, NSW Government, p 8.

⁷³⁸ Evidence, Mr Chappel, 5 February 2025, p 51.

exemptions where the PFAS is for a research or laboratory purpose, imported under a hazardous waste permit, or where it is in an article that was in use on or before 1 July 2025.⁷³⁹

6.62 Similarly, and as detailed in chapter one, Mr Chappel stated that the EPA is focussing on stopping PFAS being used in everyday products and packaging, by providing guidance as to how to test and report on PFAS in fibre-based (i.e. compostable) food packaging, because of the risk it poses to water streams.⁷⁴⁰

6.63 However, Ms Sloane of WMRR stated that the approach being adopted by IChEMS was 'wholly inadequate' because it did not include labelling requirements so that consumers are aware they are purchasing products containing PFAS.⁷⁴¹ She indicated that in Europe there is a consumer labelling program, and a register of what is going into products so that, relevant to her industry, if there is a desire to recycle them in the future it is clear what they contain:

Europe has, under the waste directives, both the REACH and CLP programs, which have a registration of what goes in products, because you're designing it, placing it on market and if we want to recycle it for future times, we need to know what's in there. You also have a consumer labelling program so you know what you're buying.⁷⁴²

6.64 Similarly, in adopting controls to stop PFAS being imported and used, Dr Kirby of the CSIRO cautioned that there is a need to better coordinate the approach to contamination research and funding across jurisdictions because at present there is a poor understanding of what is entering the country:

But I will say, from my scientific understanding, our knowledge of what's coming into Australia is very lacking, and that's across the world. We do not understand a lot of time if PFAS has been introduced into a lot of products, or is it actually a contaminant associated with a lot of products coming into Australia. It doesn't mean every product has got PFAS in it, but I think our understanding of what is coming into Australia is limited at this point in time, I would have thought. We know it's associated with certain products, but we haven't got an understanding at the moment of a lot of things that have PFAS in them.⁷⁴³

6.65 Dr Kirby also indicated that international standards will become increasingly important for Australia in its considerations about phasing out PFAS chemicals in various products, as important trading partners like the EU and the USA are likely to tighten requirements in this area:

⁷³⁹ Karen Trainor, Claire Smith, Megan Duane and Will Golinelli, *Reminder: New PFAS ban commences on 1 July 2025* (9 April 2025), <https://www.claytonutz.com/insights/2025/april/reminder-new-pfas-ban-commences-on-1-july-2025#:~:text=Karen%20Trainor%2C%20Claire%20Smith%2C%20Megan,irreversible%20harm%20to%20the%20environment.>

⁷⁴⁰ Evidence, Mr Chappel, 5 February 2025, p 51; see also Submission 19, NSW Government, p 9; and NSW Environment Protection Authority, *NSW Plastics: The Way Forward*, <https://yoursay.epa.nsw.gov.au/nsw-plastics-way-forward>.

⁷⁴¹ Evidence, Ms Sloane, 5 February 2025, p 14.

⁷⁴² Evidence, Ms Sloane, 5 February 2025, p 15.

⁷⁴³ Evidence, Dr Kirby, 5 February 2025, p 10.

I think being pushed by the EU and also by the US is going to set pretty much the standards for how we have to move forward around this PFAS and fluorinated chemicals. They're a large trading partner, of course. Products coming in the US and also into the EU, I assume, are going to start being looked at for PFAS chemicals. So Australia will have to go along the pathway of the international area around PFAS, I would assume.⁷⁴⁴

6.66 Indeed, two witnesses from Minnesota in the USA – Senator Judy Seeberger, a Minnesota State Senator, and Ms Avonna Starck, Director Clean Water Action Minnesota – provided evidence highly relevant to PFAS source control measures. As noted in chapter two, Senator Seeberger authored a 2023 Bill, now law, banning PFAS in consumer products from Minnesota. Under the law, which is called 'Amara's law':

- intentionally added PFAS was banned from 11 consumer product ranges, starting 1 January 2025
- manufacturers will have to disclose their use of PFAS in any items sold in Minnesota from 1 January 2026, and
- by 2032 there will be a ban on the use of all non-essential PFAS in Minnesota.⁷⁴⁵

6.67 Ms Starck confirmed that under the law, PFAS is classified as a class of chemicals rather than calling out individual PFAS chemicals (such as PFOA, PFOS and PFHxS) for the ban.⁷⁴⁶

6.68 In speaking to the rationale for the legislation, Senator Seeberger emphasised consumer rights, noting that many people did not even know PFAS was in the products they were using everyday:

In having conversations with constituents and members of my family, I learned that the vast majority of the population was just like me. We had no idea how widely this chemical was found throughout everything we use in our everyday lives. That really spoke to me. As consumers, we should know what we're putting in our food or applying to our face, or what is in the textiles around us. To the extent that we've been surrounded by this for so long, it just made sense to initiate this ban on everyday consumer products that we use as a normal part of our everyday lives.⁷⁴⁷

6.69 In a similar vein, Ms Starck noted that as the legislation was developed the list of products to be banned kept growing as knowledge increased about just how prevalent PFAS was in everyday items:

One of the reasons the list kept growing was that, as the word got out that we were moving forward with this legislation, we kept having manufacturers reach out and ask for exemptions. For example, dental floss was not originally on the list. When they reached out for an exemption, we were really startled and shocked, frankly, that PFAS was so prevalent in dental floss. So we added that to the list. We added menstrual

⁷⁴⁴ Evidence, Dr Kirby, 5 February 2025, p 12.

⁷⁴⁵ See Evidence, Senator Judy Seeberger, Minnesota State Senator, Representing Senate District 41, p 10; and Evidence, Ms Avonna Starck, State Director, Clean Water Action Minnesota, 20 May 2025, p 10.

⁷⁴⁶ Evidence, Ms Starck, 20 May 2025, p 15.

⁷⁴⁷ Evidence, Senator Seeberger, 20 May 2025, p 11.

products to the list as well, by the request of another legislator who was really passionate about reproductive health.⁷⁴⁸

- 6.70** The Minnesota witnesses also provided evidence about how the legislation managed to differentiate between essential and non-essential uses of PFAS, to pinpoint the essential uses that would not be banned. Senator Seeberger indicated this was a fairly straightforward process, with certain medical equipment amongst the essential use items:

Some of the essential uses that we learned of during the course of drafting this legislation had to do with certain medical equipment, implantable devices and things that, because of the nature of the product and the use of the PFAS within it, were convincingly necessary uses of the product—for example, in the orthotics industry, certain prosthetics and things like that. We had to differentiate between those particular uses and, for example, a bag of microwave popcorn. It was fairly easy to put in one column the uses that are non-essential and, for the other column, we really didn't want to be putting health or lives at risk by interrupting that product viability prematurely.⁷⁴⁹

- 6.71** In addition, Ms Starck advised that under the legislation, manufacturers wanting to gain an exemption so that their product is declared an essential use product and is not caught by the legislation's bans must apply to Minnesota Pollution Control Agency.⁷⁵⁰

- 6.72** Finally, in commenting on the roll out of the bans following the passage of the legislation, Senator Seeberger stated that this was relatively smooth, noting that she had observed no lack of product availability as a result – product alternatives are readily obtainable – and manufacturers had been given almost two years notice before the bans were instituted:

To be frank, I have not seen empty shelves or lack of product availability based on the bans that went into effect on 1 January. Companies were well aware of what we were doing in 2023. They had almost two years to make any changes that were necessary to keep continuity with regard to products. The way I look at it is that the introduction of PFAS in these products has happened over time. Yet we've been able to exist as a society and a species for thousands of years. There are alternatives. There always have been alternatives. There are products that don't rely on PFAS. That technology is out there. I was expecting a bigger pushback from product manufacturers, and I really haven't heard a thing. From my perspective, it has rolled out very smoothly.⁷⁵¹

Committee comment

- 6.73** The committee finds arguments in favour of source control around PFAS exceptionally compelling. By stopping PFAS entering the environment in the first place, the significant costs of remediation and treatment can be avoided, as can environmental contamination and risks to human health. In particular, the committee accepts evidence from water utilities and those in the waste industry that if PFAS continues to be widely used in consumer, commercial and industrial products it will be incredibly difficult and expensive to manage.

⁷⁴⁸ Evidence, Ms Starck, 20 May 2025, p 11.

⁷⁴⁹ Evidence, Senator Seeberger, 20 May 2025, p 12.

⁷⁵⁰ Evidence, Ms Starck, 20 May 2025, p 12.

⁷⁵¹ Evidence, Senator Seeberger, 20 May 2025, p 12.

Finding 13

Preventing PFAS chemicals from entering the environment in the first place is essential to averting harm and, as far as possible, avoiding the need for expensive remediation and treatment of PFAS in New South Wales.

- 6.74** The committee is pleased to see the adoption by the Australian Government of the Industrial Chemicals Environmental Management Standard (IChEMS), thereby banning the import, manufacture, export or use of PFOA, PFOS and PFHxS from 1 July 2025. These three PFAS chemicals will be banned from future import, export and manufacture, and new limits have been set for disposal.⁷⁵² It is understood this ban will apply to these PFAS chemicals by themselves, in a mixture or in an article. This is no doubt a positive development for PFAS source control within New South Wales.
- 6.75** However, the committee notes that products in use before 1 July 2025 are exempted from these bans, and evidence from Ms Sloane of the Waste Management and Resource Recovery Association of Australia that under the IChEMS system there is, and has been, no register of what products contain. This presents problems for source control in the waste and resource recovery industry because when recycling existing products it is very difficult to track what they contain.
- 6.76** The committee has also considered broader evidence from Dr Kirby of the CSIRO that in adopting controls to stop PFAS being imported and used, there is a need to better coordinate the approach to contamination research and funding across jurisdictions because at present there is a poor understanding of what is entering the country. Banning the import of certain PFAS chemicals is a very welcome measure, and this should be accompanied by appropriate resourcing to ensure the bans can be enforced, noting that imports and exports are a matter for the Australian Government.
- 6.77** Further, the committee notes the ‘Amara’s law’ legislation in Minnesota in the USA, which phases out the non-essential use of PFAS in consumer products, and that covers PFAS as a class – unlike the IChEMS requirements it does not single out particular PFAS chemicals for bans. The committee accepts evidence that international standards will become increasingly important for Australia in its considerations about phasing out PFAS chemicals, if it is to remain in step with its trading partners.
- 6.78** Finally, the committee notes Ms Sloane's evidence that under IChEMS there are no requirements to label consumer products. Hence, whilst the IChEMS bans will provide some protection, consumers would not be aware if something they bought contained a PFAS chemical not subject to the 1 July 2025 bans. This is concerning from a consumer rights and source control perspective – many consumers may well choose a product that did not contain PFAS if they had more information.
- 6.79** In the circumstances, the committee recommends that the NSW Government advocate for and support the introduction of mandatory labelling of PFAS in consumer products at the national

⁷⁵² NSW EPA, *Three PFAS chemicals banned this week* (4 July 2025), NSW EPA, <https://www.epa.nsw.gov.au/news/epamedia/250704-three-pfas-chemicals-banned-this-week>.

level, and push for the establishment of a comprehensive national PFAS product register to improve transparency and traceability across supply chains.

Recommendation 27

That the NSW Government advocate for and support the introduction of mandatory labelling of PFAS in consumer products at the national level, and push for the establishment of a comprehensive national PFAS product register to improve transparency and traceability across supply chains.

- 6.80** It is clear from the experience of international jurisdictions, such as Minnesota in the United States where more comprehensive PFAS bans and consumer disclosure laws have been implemented, that phasing out non-essential PFAS in everyday products is both feasible and effective.

Finding 14

International jurisdictions, such as Minnesota in the United States, have implemented comprehensive PFAS bans and consumer disclosure laws, demonstrating that phasing out non-essential PFAS in everyday products is both feasible and effective. New South Wales, in partnership with the Australian Government, has now banned three PFAS chemicals: PFOA, PFOS and PFHxS for use or import into New South Wales, under the Industrial Chemicals Environmental Management Standard (IChEMS), which came into force on 1 July 2025.

- 6.81** Given the IChEMS bans only cover PFOA, PFOS and PFHxS, the committee recommends that the NSW Government work via National Cabinet on a plan to phase out all non-essential uses of PFAS in consumer, commercial, and industrial products by 2030, in line with emerging international best practice, and work with other jurisdictions to establish clear criteria for defining essential uses.

Recommendation 28

That the NSW Government work via National Cabinet on a plan to phase out all non-essential uses of PFAS in consumer, commercial, and industrial products by 2030, in line with emerging international best practice, and work with other jurisdictions to establish clear criteria for defining essential uses.

Biosolids

6.82 Another way through which PFAS can enter the environment is through biosolids⁷⁵³ – and they are a major by-product of the wastewater treatment process discussed above. Biosolids come from wastewater sludge, primarily a mixture of water and organic materials that are a by-product of the sewage treatment process.⁷⁵⁴

6.83 Biosolids normally contain between 15 and 90 per cent solids and through treatment they can be converted to beneficial use e.g. as fertiliser, as bricks in construction material, as road base, or for land rehabilitation including at mine sites and landfill capping.⁷⁵⁵

6.84 Like wastewater, biosolids raise important issues in terms of PFAS source control – and treatment of PFAS. Professor Naidu of crcCARE advised of a study he had conducted on vegetables sourced from the Sydney markets and a supermarket which contained PFAS that may have been linked to biosolids – and treated wastewater – if either of these had been used to grow them:

Our concern was that market vegetables that we have, we actually did not know what sort of nutrients they were applying and the water as well, because parts of Australia is dry country, and we also use secondary treated water as well. We wanted to know whether we could detect PFAS presence in vegetables. We went to Sydney Markets, for instance, to get vegetables, and also to the supermarket. We were not too surprised that we did find PFAS in a number of vegetables.⁷⁵⁶

6.85 Professor Naidu further explained that even where PFAS concentrations in biosolids – and wastewater – are low there are concerns because plants bioaccumulate, that is, the chemicals accumulate in the plants over time:

It's absolutely very concerning....That's the kind of approach that we need to take here...to see which farms have been receiving, for example, biosolids, and where we have also been using secondary treated water. Even that would have low doses of PFAS. The challenge is that plants bioaccumulate, so even if the concentrations are very low, plants bioaccumulate, and the concentration could exceed the threshold parameters.⁷⁵⁷

6.86 Mr Amis of Friends of the Earth Australia has undertaken extensive research on the spread of PFAS through the application of biosolids on agricultural land in particular. He noted the PFAS National Environment Plan (NEMP) Version 3.0, which has now come into force and introduces new and additional guidance and standards on priority areas including risk-based

⁷⁵³ Evidence, Professor Naidu, 4 February 2025, p 10.

⁷⁵⁴ Australian Water Association, Australian & New Zealand Biosolids Partnership, *What are Biosolids?* (2020) <https://www.biosolids.com.au/info/what-are-biosolids/>

⁷⁵⁵ Australian Water Association, Australian & New Zealand Biosolids Partnership, *What are Biosolids?* (2020) <https://www.biosolids.com.au/info/what-are-biosolids/>

⁷⁵⁶ Evidence, Professor Naidu, 4 February 2025, pp 9-10.

⁷⁵⁷ Evidence, Professor Naidu, 4 February 2025, p 10; see also ScienceDirect, *Bioaccumulation* (2025), [https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/bioaccumulation#:~:text=Bioaccumulation%20\(increase%20of%20chemicals%20concentration\)%20is%20defined,only%20when%20the%20uptake%20exceeds%20elimination%20\(Eq.](https://www.sciencedirect.com/topics/pharmacology-toxicology-and-pharmaceutical-science/bioaccumulation#:~:text=Bioaccumulation%20(increase%20of%20chemicals%20concentration)%20is%20defined,only%20when%20the%20uptake%20exceeds%20elimination%20(Eq.)

criteria for re-use of biosolids contaminated with PFAS.⁷⁵⁸ Mr Amis questioned whether authorities would be able to meet revised guideline values for biosolids imposed under this new version of the NEMP:

In terms of Sydney Water biosolids, I did a GIPAA request back in June last year. What I found in that was about a quarter of all the biosolids produced by Sydney Water are above the restricted guideline level that has been proposed by NEMP. My question was what happens to that 25 per cent of Sydney Water biosolids that exceed the guideline levels.⁷⁵⁹

6.87 In addition, Mr Amis expressed disquiet about the application of biosolids in the past, urging the government to do an audit to see if there has been resulting PFAS contamination, and he provided examples of possible areas of concern:

I've heard anecdotally that there have been biosolids from Sydney Water applied on pine plantations. Well, which ones and where are they located? Are they located in water supply catchments? Mine remediation. What mines around the State have had these biosolids applied to them? I want the Committee to know that these biosolids are problems for 50, 60 years.

...I've also got an issue with farms where these biosolids are being applied. I don't think there's any monitoring going on downstream or even monitoring of the soil for PFAS...I think it's quite a serious issue that no-one has been paying much attention to. Are PFAS from biosolids ending up in waterways? I think the issue at Blayney is a really interesting one. There's a big composting facility west of Blayney. Highest levels of PFOS in the Belubula River seem to be coming from the creek, which is very close to a biosolids facility.⁷⁶⁰

6.88 Indeed, as discussed in chapter four, recent investigations by the EPA have found that the Blayney composting facility, Australian Native Landscapes compost site, is the most likely source of PFAS contamination that has affected the Belubula River. A December 2024 round of sampling revealed the highest levels of PFAS were within Cowriga Creek, downstream of the compost site, and within Mackenzies Waterhole Creek, near the landfill. Both of these creeks are tributaries of the Belubula River.⁷⁶¹ Amongst other things, this facility manages biosolids.⁷⁶²

6.89 Hunter Water was asked about its strategy to meet revised guideline values for biosolids imposed under NEMP Version 3.0. Ms Emma Berry, Executive Manager Strategy and Engagement responded that Hunter Water produces around 40,000 to 50,000 wet tonnes of biosolids each

⁷⁵⁸ Australian Government Department of Climate Change, Energy, the Environment and Water, *PFAS National Environmental Management Plan 3.0* (4 March 2025), <https://www.dcceew.gov.au/environment/protection/publications/pfas-nemp-3>.

⁷⁵⁹ Evidence, Mr Amis, 5 February 2025, p 3.

⁷⁶⁰ Evidence, Mr Amis, 5 February 2025, p 3.

⁷⁶¹ Xanthe Gregory and Joanna Woodburn, *NSW EPA traces Belubula River PFAS contamination to composting facility*, 10 April 2025, ABC News website, <https://www.abc.net.au/news/2025-04-10/nsw-epa-traces-belubula-river-pfas-contamination/105159960>.

⁷⁶² Australian Native Landscapes, *Organics Recycling* (2025), <https://anlscape.com.au/environmental-products-services/organics-recycling#:~:text=Our%20Land%20Application%20Division%20based,a%2030tonne%20agricultural%20compost%20spreader>.

year and that, based on its analysis, about 25 per cent of its current biosolids could no longer be applied as fertiliser to agricultural land because they may not meet the new guideline.⁷⁶³

6.90 Ms Berry further advised that Hunter Water had been working on a business case in anticipation of the revised guidelines, and that Hunter Water was investing around \$500 million over the coming years to meet new guideline values through treatment technologies that would address PFAS and other contaminants. In addition, she advised that Hunter Water was examining interim measures to comply with the new guidelines in the short to medium term.⁷⁶⁴

6.91 Mr Cheroux stated that Sydney Water was adapting as guidelines evolve and was designing its first thermal treatment facility to convert biosolids into biochar, which he advised can destroy PFAS. However, he noted the significant expense of a project such as this and that the cost of managing PFAS is ultimately borne by Sydney Water's customers.⁷⁶⁵

6.92 Professor Naidu indicated he is conducting various research projects into biosolids including one sponsored by water utilities to assess whether biochar from biosolids still contains PFAS and, if so, whether it is of a type to become available to plants:

My team has been working on biosolids, and the research that we do has been sponsored by utilities—water industries...[W]hat the utilities have come up with is that you can convert biosolids into biochar and, during that process, they said that PFAS is eliminated from biosolids. They're doing that at about 600 degrees Celsius, which is different from what we all knew—that you needed about 1,000 degrees Celsius for PFAS mineralisation. Therefore, they have provided us a project where we are looking at biochar derived from biosolids to see whether the biochar still has PFAS. If it has, then what is the form of PFAS and does it become available to plants, because biosolids can be a very rich source of nutrients as well.⁷⁶⁶

6.93 Professor Naidu also advised he is conducting research into biosolid-amended soils, whether there is PFAS in them, and transfer of PFAS from soil to vegetables; as well as studies into effluent-amended soils, again examining PFAS presence in soil.⁷⁶⁷ Professor Naidu stressed the complexity of PFAS contamination problems advising that there are no quick solutions and that investment in research is essential.⁷⁶⁸

Committee comment

6.94 The committee recognises the challenges that biosolids present for the management of PFAS in New South Wales, in particular, the significant monetary investment that water utilities will need to make to meet new guideline values around biosolids imposed under the PFAS National Environmental Management Plan 3.0. In this context, the committee re-iterates the key importance of source control in managing PFAS in New South Wales and accepts Sydney

⁷⁶³ Evidence, Ms Emma Berry, Executive Manager, Strategy and Engagement, Hunter Water, 4 February 2025, pp 23 and 26.

⁷⁶⁴ Evidence, Ms Berry, 4 February 2025, pp 22 and 26.

⁷⁶⁵ Evidence, Mr Cheroux, 5 February 2025, p 43.

⁷⁶⁶ Evidence, Professor Naidu, 4 February 2025, p 13.

⁷⁶⁷ Evidence, Professor Naidu, 4 February 2025, p 13.

⁷⁶⁸ Evidence, Professor Naidu, 4 February 2025, p 10.

Water's evidence that treating PFAS at the end of the cycle in biosolids – and wastewater – is much more costly and less effective than stopping it from entering the system in the first place.

- 6.95** This said, the committee also accepts Professor Naidu's evidence about the vital need for investment in research to manage PFAS in New South Wales, both in the context of biosolids and more broadly. Given its ubiquity, it is clear PFAS cannot be managed through source control alone and these are complex problems requiring sophisticated solutions. This point is taken up again below in an exploration of PFAS treatment methods.
- 6.96** Finally, the committee found persuasive Mr Amis' argument that there should be an audit of areas where biosolids were applied in the past to check for PFAS contamination, particularly given evidence potentially linking recently discovered contamination in the Belubula River in central west New South Wales partly to a compost facility at Blayney that handles biosolids. Indeed, biosolids should be an active consideration in the PFAS investigation program, the government's program to investigate legacy PFAS contamination in New South Wales, led by the EPA and discussed throughout the report.
- 6.97** It was clear to the committee that there is a lack of transparency and adequate regulation around the historical application of biosolids in New South Wales. This includes insufficient monitoring of downstream impacts on soil and water quality, despite evidence linking biosolid use to PFAS contamination in waterways such as the Belubula River.
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Finding 15

There is a lack of transparency and adequate regulation around the historical application of biosolids in New South Wales. This includes insufficient monitoring of downstream impacts on soil and water quality, despite evidence linking biosolid use to PFAS contamination in waterways such as the Belubula River.

- 6.98** In recognising the challenges that the revised standards under the PFAS National Environmental Management Plan Version 3.0 present, the committee finds that these could render a significant proportion of biosolids produced by New South Wales water utilities unsuitable for agricultural reuse. This highlights the urgent need for phasing out PFAS chemicals, investment in treatment technologies and improved monitoring and compliance systems.
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Finding 16

The revised standards under the PFAS National Environmental Management Plan Version 3.0 could render a significant proportion of biosolids produced by New South Wales water utilities unsuitable for agricultural reuse. This highlights the urgent need for phasing out PFAS chemicals, investment in treatment technologies and improved monitoring and compliance systems.

- 6.99** Further to Mr Amis' argument that there should be an audit of areas where biosolids were applied in the past to check for PFAS contamination, the committee recommends that the government urgently undertake such a state-wide audit, including agricultural lands, forests, mine remediation sites and composting facilities, to identify and monitor potential PFAS contamination.

Recommendation 29

That the NSW Government urgently undertake a comprehensive, state-wide audit of past and current sites where biosolids have been applied, including agricultural land, forests, mine remediation sites and composting facilities, to identify and monitor potential PFAS contamination.

- 6.100** As above, it is apparent the government should expand the PFAS Investigation Program to include biosolids as a focus area, ensuring monitoring occurs downstream from biosolid application sites, including testing of soil, groundwater and adjacent waterways.

Recommendation 30

That the NSW Government expand the PFAS Investigation Program to specifically include biosolids as a focus area, and ensure monitoring occurs downstream from biosolid application sites, including testing of soil, groundwater, and adjacent waterways.

Treatment methods for PFAS

Expert evidence

- 6.101** While a lot of the chapter has focussed on PFAS source control, treatment methods are obviously another vital aspect to managing PFAS in New South Wales – where PFAS has entered the environment there must be reliable and cost-effective methods to deal with this.
- 6.102** There was evidence from experts that while a number of different PFAS treatment methods exist, this is an area still very much in the development stages with a significant amount of research being undertaken and that, for now, the research, and the treatment methods themselves, are very expensive.
- 6.103** The CSIRO explained that in treating PFAS there are two types of technologies: destructive and non-destructive. Destructive technologies, such as incineration, aim to break down PFAS into small, naturally occurring molecules such as carbon dioxide, fluoride and water. However, these technologies are extremely expensive and not yet widely available.⁷⁶⁹

⁷⁶⁹ Submission 45, CSIRO, p 13.

6.104 In contrast, non-destructive technologies focus on removing PFAS from another medium, such as water and the CSIRO advised these technologies are well established and widely available. However, once removed the resulting concentrated waste stream needs to be dealt with – again, through destruction or through putting it into landfill.⁷⁷⁰ The CSIRO stated that a combination of non-destructive PFAS removal followed by PFAS destruction in the concentrated waste stream is often the most sustainable and cost-effective approach to deal with PFAS.⁷⁷¹

6.105 There was also evidence that treatment methods need to be tailored to the circumstances – what works in one case will not necessarily work in another and in some cases a very expensive method will need to be used if treatment is to be effective – at least until further research is done to refine methods. For example, Dr Blotevogel of the CSIRO stated that whilst certain removal technologies will work well to remove certain PFAS chemicals from water so they comply with guidelines, they will not work on others:

For the PFAS that we are currently targeting—we talked about this list of 20 or 30 PFAS roughly. Those are somewhat larger molecules...that we can remove quite reliably from water, treat down to current guidelines and supply people with safe drinking water, if you will, going by those concentrations. There is a lot of talk right now about TFA.... Trifluoroacetate is one of the very short ones—the TFA represents the largest mass of PFAS in the environment.

For several of the removal technologies—adsorption, like through filtration; activated carbon; ion exchange; dissolved air flotation; or foam fractionation—those processes appear to not work very well or very reliably for TFA for that. At the moment there is one technology that we can apparently reliably use, and that is reverse osmosis, or membrane filtration, with very tiny pores. This technology is available at large scale but, as always, the more challenging a problem gets the more expensive it gets. It's doable, but we certainly need to learn more about how to remove these very, very tiny molecules—the ultra-short-chain PFAS.⁷⁷²

6.106 Professor O'Carroll of the University of New South Wales agreed that one treatment method will not suit all needs, stating that there needs to be a range of technologies: 'For example, if you go to the Blue Mountains, inlet concentrations are probably pretty low, whereas if you go to a landfill or, let's say, a RAAF base where concentration is really high, you probably would adopt maybe a different technology'.⁷⁷³

6.107 With regard to destructive technologies, both Dr Blotevogel and Professor O'Carroll indicated that there are not yet enough incineration facilities in Australia, with Dr Blotevogel remarking that, in fact, 'there is probably no country in the world that has enough incineration facilities to deal with all the PFAS and PFAS-impacted materials that are being produced'.⁷⁷⁴ Dr Blotevogel also spoke of other destructive technologies that are still in the stages of development:

There are a lot of demonstrations going on for destructive technology. You mentioned electrochemical treatment. That's something that you can get at the moment, let's say,

⁷⁷⁰ Submission 45, CSIRO, p 13.

⁷⁷¹ Submission 45, CSIRO, p 13.

⁷⁷² Evidence, Dr Blotevogel, 5 February 2025, pp 10-11.

⁷⁷³ Evidence, Professor O'Carroll, 6 December 2024, p 13.

⁷⁷⁴ Evidence, Dr Blotevogel, 5 February 2025, p 10; and Evidence, Professor O'Carroll, 6 December 2024, p 13.

on a trailer base, and doing maybe thousands of cubic metres a day on that order. There is sonolysis. There is plasma treatment. There are other temperature-reliant processes too. But everything, I'd say, is at a pilot scale. Most of them are being demonstrated through the US DOD in North America at the moment, some of which, at the smaller scale, you can order tomorrow. Others will probably take another two, three or four years until they become commercially available.⁷⁷⁵

- 6.108** In addition, Dr Blotevogel noted that another issue with destructive technologies is that they can produce harmful by-products and he indicated that a lot of research is currently being conducted to manage this too:

Any time you destroy something, you will likely not just generate what you want—so the much less harmful degradation products—but there are often intermediates that are being generated. When you develop these processes, you don't just look at removal of the parent and generation of the end product—which, in the case of PFAS, is CO₂ and HF or fluoride—but you need to have the analytical support to make sure that you're not generating intermediates that may be more toxic than the parent. There's a lot of research being done in incineration and thermal processes because there's potential for that, but that is true for all destructive technologies.⁷⁷⁶

- 6.109** Professor Naidu of crcCARE noted that the aim with PFAS treatment technologies is to mineralise PFAS into non-toxic forms because otherwise there will be toxic by-products to deal with:

First and foremost, the target is always to come up with a technology that can mineralise PFAS into non-toxic forms. There are not many available right now. That said, high-temperature incineration is something that people are talking about. But, in some countries, they are not going that way because, when you start to incinerate, there'll be fumes that'll come out, and you need to capture those fumes as well, and one of the constituents could be HF, which is quite toxic, as well.⁷⁷⁷

- 6.110** Professor Naidu also spoke about PFAS treatment methods for soil, indicating that while there are well developed methods to remove PFAS from water, removing it from soil is much more difficult and expensive:

To remove PFAS from water, largely it's a filter system that you use. It just soaks up PFAS, and what comes out would be clean water. But, once it is present in soil, you could extract it, but that's very expensive, for example, but you can't degrade it in soil.⁷⁷⁸

- 6.111** As touched upon above, Professor Naidu highlighted the need for investment in research to come up with suitable solutions, indicating these are complex issues and that what might work in another country will not necessarily work in Australia owing to significant variations in the soil from one country to another.⁷⁷⁹

- 6.112** Professor Naidu also stressed that removing PFAS from wastewater is particularly important to prevent it progressing through the food chain and causing widespread issues, and he noted that

⁷⁷⁵ Evidence, Dr Blotevogel, 5 February 2025, p 10.

⁷⁷⁶ Evidence, Dr Blotevogel, 5 February 2025, p 10.

⁷⁷⁷ Evidence, Professor Naidu, 4 February 2025, p 11.

⁷⁷⁸ Evidence, Professor Naidu, 4 February 2025, p 11.

⁷⁷⁹ Evidence, Professor Naidu, 4 February 2025, p 10.

crcCARE was globally the first to develop technology to remediate PFAS-contaminated wastewater.⁷⁸⁰ Professor Naidu explained:

I also chair the United Nations Food and Agriculture Organization's international network on pollution, and the Food and Agriculture Organization has this One Health approach where soil health, for example, plays a very significant role where animal and human health are concerned. Where soil is concerned, for example, moisture is quite important, whatever you grow. Australia being a dry continent, for example, we tend to use the secondary-treated water...[I]f we are able to remove these potential pollutants from that water, we won't be increasing the loading of soils and hence reducing uptake of pasture, for example, but plants as well.⁷⁸¹

- 6.113** Professor O'Carroll stated that investment in research on PFAS treatment technologies is key⁷⁸² and Dr Blotevogel noted that once treatments are further developed costs will come down and treatment will be more achievable. He stated: 'The advancements that we can make are to develop these treatment trains to make the overall treatment costs cheaper and more achievable. With that, we don't need large plants anymore; we can use smaller plants, mobile plants and different technologies'.⁷⁸³

The experience in Minnesota, USA

- 6.114** As noted in chapter two, Minnesota is home to the headquarters of the 3M Company, a prominent producer of PFAS products since the mid-1900s⁷⁸⁴ although 3M advised that it has not manufactured aqueous film-forming foam, which contains long-chain PFAS, for approximately 20 years and that it is on track to stop manufacturing all forms of PFAS by the end of 2025.⁷⁸⁵
- 6.115** 3M chemical waste disposed of in the east metro of the Minneapolis-Saint Paul area of Minnesota caused a large, underground PFAS plume that has contaminated groundwater over a 150 square mile radius thereby affecting the drinking water of 140,000 people in Minnesota.⁷⁸⁶
- 6.116** In 2018, the State of Minnesota settled a lawsuit against the 3M Company for \$850 million⁷⁸⁷ and Minnesota State Senator Judy Seeberger stated that one of the things that these funds pay for is for PFAS filtration systems for private homes in certain areas. However, the Senator

⁷⁸⁰ Evidence, Professor Naidu, 4 February 2025, pp 9 and 11-12.

⁷⁸¹ Evidence, Professor Naidu, 4 February 2025, p 12.

⁷⁸² Evidence, Professor O'Carroll, 6 December 2024, p 13.

⁷⁸³ Evidence, Dr Blotevogel, 5 February 2025, p 10.

⁷⁸⁴ Rachel Salvidge and Leana Hosea, '3M knew firefighting foams containing PFAS were toxic documents show', *The Guardian*, 16 January 2025.

⁷⁸⁵ Submission 50, 3M Company, p 1.

⁷⁸⁶ Minnesota Center for Environmental Advocacy, *Defending Minnesotans' Health from "forever chemicals"*, [⁷⁸⁷ Minnesota Pollution Control Agency and Department of Natural Resources, *Minnesota 3M PFAS Settlement*, <https://3msettlement.state.mn.us/>](https://www.mncenter.org/defending-minnesotans-health-forever-chemicals#:~:text=Minnesota%20is%20home%20to%20one,Matt%20Norris%2C%20Sen; see also Evidence, Ms Starck, 20 May 2025, p 10.</p>
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further advised that, despite the magnitude of the settlement sum 'That is running out much sooner and much quicker than was projected when it was set up'.⁷⁸⁸

Committee comment

- 6.117** The committee notes the detailed evidence provided by Professor Naidu, Professor O'Carroll and Dr Blotvogel concerning PFAS treatment methods and thanks them for sharing their considerable expertise.
- 6.118** Having reliable and cost-effective treatment methods is clearly another vital aspect to manage PFAS in New South Wales, and the committee accepts that it is an area very much still in the development stages, presenting complex issues for resolution. The development of destructive technologies and managing any harmful by-products of such technologies, as well as the development of effective methods to treat PFAS in soil are areas about which much work and ongoing research is needed. In the circumstances, the committee agrees wholeheartedly with the evidence given that continuing investment in research into PFAS treatment technologies must be a strong priority.
- 6.119** In this regard, the committee also notes evidence from witnesses from Minnesota in the USA that settlement funds from a major PFAS polluter in that state, the 3M Company, are being used to fund certain treatment technologies, namely water filtration systems in private homes affected by contamination. The committee identifies that this arrangement is consistent with the 'polluter pays' principle and considers that this principle should be honoured wherever possible in New South Wales. Therefore, the committee recommends that the government consider whether polluting industries in this state should pay a specific levy to help fund much needed research into PFAS treatment technologies.
- 6.120** Noting the discussions in chapter four concerning the funding required for PFAS water treatment in certain regional areas of New South Wales including Tarcutta, Wialda, Narrabri and Dubbo, the government should also consider whether such a levy should extend to help fund PFAS water treatment in addition to research into treatment technologies.

Recommendation 31

That in keeping with the 'polluter pays' principle in New South Wales, the NSW Government investigate the imposition of a specific levy on polluting industries to fund:

- PFAS treatment research
- PFAS water treatment, especially in regional areas of New South Wales where PFAS contamination has been identified.

-
- 6.121** In addition, the committee accepts Professor Naidu's evidence that treating PFAS in wastewater is a particularly important priority, preventing its progression through the food chain, causing widespread issues.

⁷⁸⁸ Evidence, Senator Seeberger, 20 May 2025, p 13.

Better identification of PFAS contaminated sites

6.122 The chapter concludes with a discussion of work that could be done to better identify PFAS contaminated sites across the state. This would help focus remediation efforts, and feed into the central register of land contamination issues that the committee has recommended in chapter five, to better inform people about land contamination in the context of property transactions.

6.123 In this regard, Lotsearch provided useful evidence. As discussed in chapter five, Lotsearch is a business that provides environmental reports to help clients identify potential contamination risks to land and property in the context of property transactions.⁷⁸⁹ Mr Howard Waldron, Founding Director stated that as part of its business, Lotsearch has developed a far-reaching database of contamination sources in Australia, identifying 75,000 sites in New South Wales as contaminated or potentially contaminated. He stated that in contrast, only 2,000 sites have been notified to the EPA as contaminated.⁷⁹⁰

6.124 Mr Peter Rodgers, also Founding Director, explained that Lotsearch examines old data to identify potentially contaminated sites, then hires environmental consultants to test these sites so that Lotsearch can accurately advise its clients as to whether contamination exists on a property they want to purchase. He also indicated Lotsearch is currently identifying which of the sites that it has pinpointed as potentially contaminated could involve PFAS:

The old phone books that we've taken data from go back to the early 1900s in some States. In New South Wales the data we've got goes back to the 1950s. We've taken all of the historical business activities. We've identified from all of those directories that we've captured 40,000 potentially contaminating activities. What we're currently undertaking is linking which ones of those could also be a source of PFAS... We raise the flag and the environmental consultants will do the testing.⁷⁹¹

6.125 For its part, the EPA provided evidence about how it identifies potentially contaminated sites under the PFAS investigation program that it leads in concert with other agencies, discussed throughout the report.⁷⁹² Mr Stephen Beaman, Executive Director, Regulatory Practice and Services indicated this was an ongoing piece of work and that the EPA had started with RAAF bases and Defence sites, as well as working with fire authorities on sites that they had triaged for investigation. He further indicated that the EPA was now moving onto more 'ambient' work – trying to build more of a picture of PFAS across the state:

The other part to this—where we're sort of moving to next, and have been planning for for a little while—is around a type of ambient work, a little bit like the Victorians have done...Part of this is starting to build that picture. We get work in from NSW Health. We get our own work when we require others to do work, like the Department of Defence. We're starting to develop up that database of information across the State and just seeing what that looks like, and is there a particular story we can tell?⁷⁹³

⁷⁸⁹ Evidence, Mr Howard Waldron, Founding Director, Lotsearch, 5 February 2025, p 37.

⁷⁹⁰ Evidence, Mr Waldron, 5 February 2025, p 37.

⁷⁹¹ Evidence, Mr Peter Rodgers, Founding Director, Lotsearch, 5 February 2025, p 38.

⁷⁹² See Submission 19, NSW Government, p 9; and Evidence, Mr Chappel, 5 February 2025, p 51.

⁷⁹³ Evidence, Mr Stephen Beaman, Executive Director, Regulatory Practice and Services, NSW Environment Protection Authority, 5 February 2025, p 59.

6.126 However, under questioning, Mr Waldron and Mr Rodgers agreed that there are many potentially contaminating activities that the government is missing, with its initial focus having been on Defence and firefighting sites, and that manufacturing is one example of this.⁷⁹⁴

6.127 In short, Lotsearch argued that its services could help government to focus PFAS testing a lot more across New South Wales, ultimately reducing risks to communities. Mr Rodgers indicated that in addition to an extensive listing of potential contamination sources across the state, the Lotsearch database also contains information about environmentally sensitive receptors. Speaking of the database he stated:

It could help in understanding the location of potential PFAS sources. Then our database also contains information around environmental sensitive receptors, such as the waterways or water bodies. That's where the consultants come in or government come in to do the analysis of how the contamination may travel from the source to environmental sensitive receptors.⁷⁹⁵

6.128 As a start, in assisting government to address PFAS contamination, Mr Waldron confirmed that Lotsearch could establish how many of the 75,000 known and potentially contaminated sites it has identified may be PFAS contaminated, and how many of those have been notified to the EPA. However, he also indicated that it would be helpful to rate sites according to risk, so that government would have an idea of which sites to prioritise for testing:

Of course, PFAS could be used at low levels. Again, there might need to be some sort of risk matrix of different types of activities and which ones an agency then chooses to look at—a bit like has happened to date, where it's the firefighting that has been the main priority. [M]anufacturing, I think we all know, is arguably one of the next ones that could be looked at—maybe should be looked at.⁷⁹⁶

6.129 Consistent with the above, CSIRO witnesses emphasised that in appropriately focussing PFAS testing it is important to know where contaminated sites are likely to be, and where communities are likely to be at risk.⁷⁹⁷ In this regard, Dr Kirby stated that technologies are being developed to detect PFAS in the environment, and he emphasised how important early detection is, so that something can be done in response:

There is a lot in the last couple of years around high-resolution fingerprinting or profiling of contaminants. It has taken significant step changes around the detection of a range of different PFAS within the environment or of a range of other contaminants within the environment. The technology is rapidly advancing around that opportunity to profile better within the environment. CSIRO has just invested a large amount of money into one of the largest high-resolution instruments in the world to actually do that. We know that's about PFAS, but also about that early response and early management of contaminants. Once you know they're there, you can actually do something about them. We're investing heavily into that.⁷⁹⁸

⁷⁹⁴ Evidence, Mr Waldron and Mr Rodgers, 5 February 2025, pp 38 and 41.

⁷⁹⁵ Evidence, Mr Rodgers, 5 February 2025, p 40.

⁷⁹⁶ Evidence, Mr Waldron, 5 February 2025, p 41.

⁷⁹⁷ Evidence, Dr Molony, 5 February 2025, p 9.

⁷⁹⁸ Evidence, Dr Kirby, 5 February 2025, p 11.

Committee comment

- 6.130** The committee was very interested in the evidence of Lotsearch that the gap between known contaminated sites within New South Wales, and what is potentially contaminated, is so large. It also supports the positions of Lotsearch and the CSIRO that it is important, in appropriately targeting PFAS testing, to know where contamination is likely to be, and where communities are likely to be at risk. This in turn assists to target finite resources for remediation efforts.
- 6.131** However, the committee observes that there may, in fact, be disincentives for government to locate areas of possible PFAS contamination in New South Wales, given the cost involved if contamination is ultimately confirmed. If there are third parties who have built up databases of potentially contaminated sites, and information about environmentally sensitive receptors, this may be a very useful tool in assessing where to target PFAS testing.
- 6.132** The committee believes it would be beneficial for the government to work with third parties, with the appropriate tools and expertise, to ensure potentially contaminated sites are captured and remediated wherever possible. Therefore, the committee recommends the government open a tender calling for experts to provide advice about:
- how many potentially contaminated sites there are in New South Wales
 - the number of potentially contaminated sites in New South Wales that may be PFAS contaminated
 - how many of the potentially PFAS contaminated sites are known to the NSW Environment Protection Authority
 - which of the potentially PFAS contaminated sites should be prioritised for testing.
- 6.133** The committee also notes that in chapter five it has recommended that the government establish a central register of land contamination issues to better inform people about land contamination in the context of property transactions in New South Wales. If steps were taken in concert with the successful tenderer to better identify PFAS contaminated sites in this state, this could feed into such a central register.

Recommendation 32

That the NSW Government consider opening a tender calling for experts to provide advice about:

- how many potentially contaminated sites there are in New South Wales
 - the number of potentially contaminated sites in New South Wales that may be PFAS contaminated
 - how many of the potentially PFAS contaminated sites are known to the NSW Environment Protection Authority
 - which of the potentially PFAS contaminated sites should be prioritised for testing.
-

Appendix 1 Submissions

No.	Author
1	Dr Joe McGirr
2	Professor Denis O'Carroll
3	Confidential
4	Name suppressed
5	Independent Pricing and Regulatory Tribunal
6	The Water and Carbon Group
7	Name suppressed
8	Australian Academy of Technological Sciences and Engineering (ATSE)
9	Mr Paul Rooms and Dr Michael Walton
9a	Mr Paul Rooms and Dr Michael Walton
10	Dr Ian A. Wright
11	MyEco Group
12	Local Government NSW
13	Blue Mountains City Council
14	Mr Anthony Amis
15	Water Directorate
16	Environmental Risk Sciences Pty Ltd (enRiskS)
17	Georges Riverkeeper
18	Dr Effie Ablett
19	NSW Government
20	Sydney Coastal Councils Group (SCCG)
21	MidCoast Council
22	Environmental Defenders Office (EDO)
23	Shellharbour City Council
24	Central NSW Joint Organisation
25	Riverina Water County Council
26	Murrumbidgee Council
27	Water Services Association of Australia
28	Name suppressed
29	Ms Lynda Newnam
30	Communities Against the Tarago Incinerator

No.	Author
31	Goulburn Mulwaree Council
32	Long Water Agricultural Association
33	Clarence Valley Council
34	Narrabri Shire Council
35	Sutherland Shire Council
36	Waste Management and Resource Recovery Association of Australia
37	Name suppressed
38	Macciza Macpherson
39	Randwick City Council
40	Fire Brigade Employees' Union of New South Wales
41	WinZero
42	Natural Turf Alliance
42a	Natural Turf Alliance
43	Mr Ian McDonald
44	Blacktown City Council
45	CSIRO
46	Name suppressed
47	Stop PFAS - Blue Mountains
48	SORR
48a	SORR
49	3M Australia
50	3M Company
51	Rainforest Reserves Australia
52	Lynette LaBlack
53	Save Our Surroundings Riverina
54	Cadia Community Sustainability Network
55	Lotsearch Pty Ltd
56	Brad Withyman
57	Carol-Ann Fletcher
58	Carole Stanford
59	Bob King
60	Annie Hare
61	Professor Gill H. Boehringer
62	Gary Blaschke OAM
63	Ms Jacqui Scruby MP

No.	Author
64	Department of Defence
65	Friends of Callan Park
66	Confidential
67	Name suppressed
68	Blayney Shire Council
69	Tweed Shire Council
70	Confidential

Appendix 2 Witnesses at hearings

Date	Name	Position and Organisation
Friday, 6 December 2024 Macquarie Room Parliament House, Sydney	Dr Ian A. Wright	Associate Professor, Environmental Science, Western Sydney University
	Professor Denis M. O'Carroll	Deputy Head of School (Research), Water Research Laboratory, School of Civil Engineering, University of New South Wales
	Mr Leighton Drury	FBEU State Secretary, Fire Brigade Employees Union of New South Wales
	Mr Jonathon Wright	FBEU Senior Organiser, Fire Brigade Employees Union of New South Wales
	Mr Tony Chappel	Chief Executive Officer, NSW Environment Protection Authority
	Mr Stephen Beaman	Executive Director, Regulatory Practice and Services, NSW Environment Protection Authority
	Commissioner Jeremy Fewtrell AFSM	Commissioner, Fire and Rescue NSW
Monday 3 February 2025 Blue Mountains Cultural Centre Katoomba	Mr Jon Dee	Founder and Convenor, Stop PFAS – Blue Mountains
	Mr Will Langevad	Director Environment and Planning Services, Blue Mountains City Council
	Ms Emma Kennedy	Program Leader Healthy Waterways, Blue Mountains City Council
	Assistant Commissioner Michael Morris JP, CF	Assistant Commissioner Metropolitan Operations, Fire and Rescue NSW
	Ms Gem Green	Chair, Cadia Community Sustainability Network
	Mrs Frances Retallack	Vice Chair, Cadia Community Sustainability Network

Date	Name	Position and Organisation
Tuesday 4 February 2025 Q Building, The University of Newcastle Campus Newcastle	Mr Paul Rooms	Local resident
	Dr Michael Walton	Local resident
	Professor Ravi Naidu	Managing Director, Cooperative Research Centre for Contamination, Assessment, and Remediation of the Environment (crcCARE)
	Mr Rob Manning	Managing Director, SORR
	Mr Darren Cleary	Managing Director, Hunter Water
	Ms Emma Berry	Executive Manager Strategy and Engagement, Hunter Water
	Dr Tony Merritt	Public Health Physician, Hunter New England Local Health District
Wednesday 5 February 2025 Jubilee Room Parliament House, Sydney	Mr David Gathercole	Director, Operations, NSW Environment Protection Authority
	Ms Corrie Ford	Manager Operations, NSW Environment Protection Authority
	Mr Anthony Amis	Land Use Researcher, Friends of the Earth Australia
	Dr Brett Molony	Science Director, Environment, CSIRO
	Dr Jason Kirby	Group Leader, Contaminants and Mitigation, Environment, CSIRO
	Dr Jens Blotevogel	Team Leader, Remediation Technologies, Environment, CSIRO
	Ms Gayle Sloan	CEO, Waste Management and Resource Recovery Association of Australia
	Dr Jackie Wright	Director/Principal, Environmental Risk Sciences Pty Ltd (enRiskS)
	Ms Therese Manning	Principal, Environmental Risk Sciences Pty Ltd (enRiskS)

Date	Name	Position and Organisation
	Mr David Reynolds	Chief Executive, Local Government NSW
	Cr Dallas Tout	Board Director, Local Government NSW
	Cr Tiffany Galvin	Country Mayors Association of NSW PFAS contaminated water Member Representative (Mayor, Gwydir Shire Council)
	Mr Alex Eddy	Country Mayors Association of NSW PFAS contaminated water Member Representative (General Manager, Gwydir Shire Council)
	Cr Josh Black	Executive Board Member, Country Mayors Association of NSW (Mayor, Dubbo Regional Council)
	Mr Brad Withyman	Founder, River Guardians
	Mr Howard Waldron	Founding Director, Lotsearch
	Mr Peter Rodgers	Founding Director, Lotsearch
	Mr Andrews Nicholls PSM	Chief Executive Officer, Independent Pricing and Regulatory Tribunal
	Ms Christine Allen	Director, Regulation and Compliance, Independent Pricing and Regulatory Tribunal
	Mr Roch Cheroux	Managing Director, Sydney Water
	Dr Kaye Power	Principal Water & Public Health Advisor, Sydney Water
	Ms Fiona Smith	Executive Manager, Strategy & Performance, WaterNSW
	Mr Ronan Magaharan	Executive Manager, Operations, WaterNSW
	Mr Brendan Guiney	Executive Officer, Water Directorate

Date	Name	Position and Organisation
	Dr Jeremy McAnulty	Executive Director, Health Protection NSW, NSW Health
	Dr Stephen Conaty	Director, Environmental Health Branch, Health Protection NSW Health
	Mr Tony Chappel	Chief Executive Officer, Environment Protection Authority
	Mr Stephen Beaman	Executive Director Regulatory Practice and Services, Environment Protection Authority.
Tuesday 8 April 2025 Mirage Room Wagga Wagga RSL Club	Dr Joe McGirr MP	Member for Wagga Wagga
	Mr Thomas Hughes	Local resident
	Ms Donna Argus	Local resident
	Mr Peter Thompson	General Manager, Wagga Wagga City Council
	Mr Tim Koschel	Chairperson Board, Riverina Water County Council
	Mr Troy van Berkel	Director Engineering, Riverina Water County Council
Tuesday 20 May 2025 Macquarie Room Parliament House, Sydney	Dr Shiwen Li	Post-Doctoral Research Scholar, Department of Population and Public Health Sciences, Keck School of Medicine, University of Southern California
	Dr Max Aung	Assistant Professor, Division of Environmental Health, Department of Population and Public Health Sciences, Keck School of Medicine, University of Southern California
	Senator Judy Seeberger	Minnesota State Senator, representing Senate District 41
	Ms Avonna Starck	State Director, Clean Water Action Minnesota

Appendix 3 - Minutes

Minutes no. 1

Wednesday 16 October 2024

Select Committee on PFAS contamination in waterways and drinking water supplies throughout New South Wales

Room 1043, Parliament House, 12.40 pm

1. Members present

Ms Fachrmann, *Chair*

Mr Martin, *Deputy Chair*

Mr Barrett

Mr Donnelly

Mrs MacDonald

Mr Murphy

2. Tabling of resolution establishing the committee

The Chair tabled the resolution of the House establishing the committee, which reads as follows:

1. That a select committee be established to inquire into and report on PFAS (per and polyfluoroalkyl substances) contamination in waterways and drinking water supplies throughout New South Wales, and in particular:
 - a. the adequacy and extent of monitoring and data collection on PFAS levels in waterways and drinking water sources
 - b. the adequacy of the reporting and disclosure requirements to the public of monitoring and findings on PFAS contamination of water
 - c. the identification of communities at risk from PFAS contamination
 - d. the adequacy and effectiveness of government engagement with and support for communities disproportionately affected by PFAS contamination, including First Nations communities
 - e. sources of exposure to PFAS, including through historic and current firefighting practices
 - f. the health, environmental, social, cultural and economic impacts of PFAS
 - g. the impacts, monitoring and mitigation of contamination on livestock, domestic animals and wildlife, including water birds, fish and other aquatic life
 - h. the structure, capacity, capability and resourcing of New South Wales Government agencies and water utilities to detect, monitor, report on, respond to and mitigate against PFAS contamination of water supplies, including the adequacy of infrastructure and resources
 - i. the adequacy and effectiveness of New South Wales's legislative and regulatory framework in testing for, monitoring, mitigating and responding to PFAS contamination, including the adequacy of health-based guidance values, as compared to the standards and practices of other Australian and international jurisdictions
 - j. public sector resourcing and coordination amongst relevant agencies in preventing controlling and managing the risks of PFAS to human health and the environment
 - k. international best practices for water treatment and filtration, and the environmentally sound management and safe disposal of PFAS
 - l. the effectiveness of remediation works on specific sites and international best practices for remediation and management of contaminated sites
 - m. areas for reform, including legislative, regulatory, public health and other policy measures to prevent, control and manage the risks of PFAS in water supplies Resolution – Select Committee on PFAS contamination in waterways and drinking water supplies throughout New South Wales
 - n. the impact of taking contaminated water sources offline on water security, including the effects of diverting water between communities; the social, economic and logistical implications of such diversions, and the challenges posed by PFAS contamination to water availability, drought

- management and emergency supply planning, and
- o. any other related matters.
2. That, notwithstanding anything to the contrary in the standing orders, the committee consist of seven members comprising:
 - a. three government members
 - b. two opposition members, and
 - c. two crossbench members, being Ms Faehrmann and Mr Martin.
 3. That the Chair of the committee be Ms Faehrmann and the Deputy Chair be Mr Martin.
 4. That, unless the committee decides otherwise:
 - a. all inquiries are to be advertised via social media, stakeholder emails and a media release distributed to all media outlets in New South Wales
 - b. submissions to inquiries are to be published, subject to the Committee Clerk checking for confidentiality and adverse mention and, where those issues arise, bringing them to the attention of the committee for consideration
 - c. attachments to submissions are to remain confidential
 - d. the Chair's proposed witness list is to be circulated to provide members with an opportunity to amend the list, with the witness list agreed to by email, unless a member requests the Chair to convene a meeting to resolve any disagreement
 - e. the sequence of questions to be asked at hearings alternate between Opposition, crossbench and Government members, in that order, with equal time allocated to each
 - f. transcripts of evidence taken at public hearings are to be published
 - g. supplementary questions are to be lodged with the Committee Clerk within two business days following the receipt of the hearing transcript, with witnesses requested to return answers to questions on notice and supplementary questions within 21 calendar days of the date on which questions are forwarded to the witness
 - h. answers to questions on notice and supplementary questions are to be published, subject to the Committee Clerk checking for confidentiality and adverse mention and, where those issues arise, bringing them to the attention of the committee for consideration, and
 - i. media statements on behalf of the committee are to be made only by the Chair.
- (5) That the committee report by 20 June 2025.

[Resolved 25 September 2024, Minutes No 72, Item 36]

3. Correspondence

The committee noted the following item of correspondence:

Received:

- 27 September 2024 – Letter from Dr Joe McGirr MP, Member for Wagga Wagga, inviting the PFAS Select Committee to Wagga Wagga as part of its inquiry.

Resolved, on the motion of Mr Donnelly: That the Chair respond to Dr Joe McGirr MP on behalf of the committee thanking him for his invitation to Wagga Wagga dated 27 September 2024, and noting that the committee will consider site visits for its inquiry following the receipt of written submissions.

4. Conduct of committee proceedings

4.1 Media

Committee to note the Broadcast of Proceedings resolution (as amended by the Legislative Council on 19 October 2022), in particular the provisions relating to the filming, broadcasting, rebroadcasting and photography of committee proceedings, including:

(4) That unless resolved otherwise by a committee, this House authorises:

(a) the filming, broadcasting and photography of members and witnesses in committee proceedings:

(i) by representatives of media organisations, including from around the committee meeting table,

(ii) by any member of the public, from the position of the audience, and

(b) the rebroadcasting of committee proceedings on the Legislative Council and Parliament's social media channels.

5. Conduct of inquiry into PFAS Contamination in Waterways and Drinking Water Supplies Throughout New South Wales

5.1 Closing date for submissions

Resolved, on the motion of Mrs MacDonald: That the closing date for submissions be Wednesday 27 November 2024.

5.2 Stakeholder list

Resolved, on the motion of Mr Martin: That:

- the secretariat circulate to members the Chair's proposed list of stakeholders to be invited to make a submission
- members have two days from when the Chair's proposed list is circulated to make amendments or nominate additional stakeholders
- the committee agree to the stakeholder list by email unless a meeting of the committee is required to resolve any disagreement.

5.3 Approach to submissions

Resolved, on the motion of Mr Murphy: That, to enable significant efficiencies for members and the secretariat while maintaining the integrity of the way in which submissions are treated, if 50 or more individual submissions are received, the committee may adopt the following approach to processing short submissions:

- All submissions from individuals 250 words or less in length will:
 - have an individual submission number, and be published with the author's name or as name suppressed, or kept confidential, according to the author's request
 - be reviewed by the secretariat for adverse mention and sensitive/identifying information, in accordance with practice
 - be channelled into one single document to be published on the inquiry website
- All other submissions will be processed and published as normal.

5.4 Hearing dates

Resolved, on the motion of Mrs MacDonald: That, the secretariat canvass dates with members for:

- one full day of hearings for the inquiry in Sydney in November or December 2024
- three full days of hearings before the end of February 2025.

5.5 Site visits

Resolved, on the motion of Mr Martin: That the committee consider whether to conduct site visits following the receipt of submissions.

6. Adjournment

The committee adjourned at 1.01 pm, *sine die*.

Elspeth Dyer
Committee Clerk

Minutes no. 2

Friday 6 December 2024

Select Committee on PFAS contamination in waterways and drinking water supplies throughout New South Wales

Macquarie Room, Parliament House, 8.46 am

1. Members present

Ms Faehrmann, *Chair*

Mr Martin, Deputy Chair (from 8.50 am until 11.19 am and from 11.39 am until 12.30 pm)

Mr Barrett

Mr Donnelly

Mr Lawrence

Mrs MacDonald

Mr Murphy

2. Previous minutes

Resolved, on the motion of Mrs MacDonald: That draft minutes no. 1 be confirmed.

3. Correspondence

The committee noted the following items of correspondence:

Received

- 26 November 2024 – Email from Mr Daniel Rindfleish, Government Relations Advisor, Sydney Water requesting that Sydney Water representatives be invited to give evidence at a February 2025 hearing for the PFAS inquiry instead of the 6 December 2024 hearing
- 26 November 2024 – Email from Mr Jonathon Wright, Senior Organiser, Fire Brigade Employees Union advising of the union's availability to appear at PFAS inquiry hearing on 6 December 2024 and asking for a 30 minute morning spot
- 28 November 2024 – Email from Ms Carrie Fellner, Investigative Journalist, Sydney Morning Herald, declining invitation to appear at PFAS inquiry hearing on 6 December 2024.
- 1 December 2024 – Email from Doctor Mariann Lloyd-Smith, Senior Advisor, National Toxics Network Inc. declining invitation to appear at PFAS inquiry hearing 6 December 2024 but advising that she may be interested in appearing at a hearing at a later date.

Sent

- 16 October 2024 – Letter to Dr Joe McGirr MP, Member for Wagga Wagga, responding to his invitation to the committee to visit Wagga Wagga as part of its inquiry.

4. Submissions

4.1 Public submissions

The Committee noted the following submissions were published by the committee clerk under the authorisation of the resolution appointing the committee: submissions nos: 1, 2, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 22, 23, 25, 26, 27, 30, 38, 39 and 40.

4.2 Partially confidential submissions

Resolved, on the motion of Mr Murphy: That the committee keep the following information confidential, as per the request of the author: names of individuals in submissions no. 4, 6 and 7.

Resolved, on the motion of Mr Martin: That the committee keep the following information confidential, as per the request of the author: the name of the individual author in submission no. 31.

4.3 Confidential submissions

Resolved, on the motion of Mrs MacDonald: That the committee keep submission no. 3 confidential, as per the request of the author.

Resolved, on the motion of Mr Donnelly: That the committee secretariat contact the author of submission 34 to request a reason as to why they wish their submission to be kept confidential.

5. February 2025 hearings/site visits

The committee agreed to hold over consideration of the agenda item until later in the day.

6. Public hearing

Sequence of questions

Resolved, on the motion of Mr Barrett: That the allocation of questions to be asked at the hearing be left in the hands of the Chair.

Revised timeframes for the return of answers to questions on notice and supplementary questions

Resolved, on the motion of Mr Barrett: That witnesses be required to provide answers to questions on notice/supplementary questions within 21 calendar days of the date on which the questions are forwarded to the witnesses excluding the Parliament's Christmas Closedown period of 21 December 2024 to 5 January 2025 inclusive.

Witnesses, the public and the media were admitted at 9.00 am.

The Chair made an opening statement regarding the broadcasting of the proceedings and other matters.

The following witness was sworn and examined:

- Dr Ian A. Wright, Associate Professor, Environmental Science, Western Sydney University.

The evidence concluded and the witness withdrew.

The following witness was sworn and examined:

- Professor Denis M. O'Carroll (via videoconference) Deputy Head of School (Research), Water Research Laboratory, School of Civil Engineering, University of New South Wales.

The evidence concluded and the witness withdrew.

The following witnesses were sworn and examined:

- Mr Leighton Drury, FBEU State Secretary, Fire Brigade Employees Union of New South Wales
- Mr Jonathon Wright, FBEU Senior Organiser, Fire Brigade Employees Union of New South Wales.

The evidence concluded and the witnesses withdrew.

The following witnesses were sworn and examined:

- Mr Tony Chappel, Chief Executive Officer, NSW Environment Protection Authority
- Mr Stephen Beaman, Executive Director, Regulatory Practice and Services, NSW Environment Protection Authority.

The evidence concluded and the witnesses withdrew.

7. February 2025 hearings and site visits

Resolved, on the motion of Mr Martin: That the committee conduct hearings/site visits in the following locations:

- Blue Mountains, New South Wales on 3 February 2025
- Williamtown, New South Wales on 4 February 2025
- Sydney, New South Wales on 5 February 2025.

8. Public hearing

The following witness was sworn and examined: Commissioner Jeremy Fewtrell AFSM, Commissioner, Fire and Rescue NSW.

The evidence concluded and the witness withdrew.

The public hearing concluded at 2.04 pm. The public and the media withdrew.

9. Adjournment

The committee adjourned at 2.04 pm, *sine die*.

Elspeth Dyer
Committee Clerk

Minutes no. 3

Monday 3 February 2024

Select Committee on PFAS contamination in waterways and drinking water supplies throughout New South Wales

Blue Mountains Cultural Centre, Katoomba, 9.30 am

1. Members present

Ms Faehrmann, *Chair*
Mr Martin, *Deputy Chair* (from 9.45 am)
Mr Barrett (from 9.55 am)
Mr Donnelly
Mrs MacDonald
Mr Murphy

2. Apologies

Mr Lawrence

3. Previous minutes

Resolved, on the motion of Mrs MacDonald: That draft minutes no. 2 be confirmed.

4. Correspondence

The committee noted the following items of correspondence:

Received

- 6 December 2024 – Email from Ms Maree Duffy-Moon raising concerns about PFAS contamination at Albion Park
- 9 December 2024 – Email from Narrabri Shire Council to secretariat providing reasons for the council's request that its submission (submission no. 34) to the committee's inquiry remain confidential
- 9 December 2024 – Email from Josephine Burn -Spoljaric, Policy Officer, Department of Defence providing a link to the Australian Government's response to the independent review of land uses around key Defence bases impacted by PFAS contamination
- 15 December 2024 – Email from Narrabri Shire Council to secretariat advising that it is now comfortable with its submission (submission no. 34) to the committee's inquiry being published on the committee's webpage
- 19 December 2024 – Letter from Mr Richard Lord, Head of Government Relations, 3M Australia Pty Ltd advising that given the overlap in timing between the committee's inquiry and the inquiry of the Australian Senate Select Committee on PFAS, 3M has provided the committee with a copy of its submissions to the Senate inquiry.
- December 2024 and January 2025 – Emails from Mr Paul Rooms attaching research by the Nordic Council of Ministers on the costs of PFAS
- 20 January 2025 – Email from Mr Ivan Mills, Senior Government Relations Officer, Office of the Commissioner, Fire and Rescue NSW (FRNSW) initially declining invitation for FRNSW to appear at Blue Mountains hearing on 3 February 2025 for the inquiry
- 22 January 2025 – Email from Dr Mariann Lloyd-Smith, Senior Advisor, National Toxics Network, declining invitation to appear at Sydney hearing on 5 February 2025 for the inquiry
- 22 January 2025 – Email from Ms Nell Graham, Program Manager, Georges Riverkeeper, declining invitation to appear at Sydney hearing on 5 February 2025 for the inquiry
- 22 January 2025 – Email from Mr Jasper Brown, Solicitor, Environmental Defenders Office (EDO) declining invitation for EDO to appear at Sydney hearing on 5 February 2025 for the inquiry
- 23 January 2025 – Email from Mr David Ongkili, Coordinator Strategic Planning, Randwick City Council, declining invitation for Randwick City Council to appear at Sydney hearing on 5 February 2025 for the inquiry
- 28 January 2025 – Email from Mr Grant Rayner, Acting Senior Manager – Health and Building Regulations Planning and Growth, Sutherland Shire Council, declining invitation for Sutherland Shire Council to appear at Sydney hearing on 5 February 2025 for the inquiry
- 30 January 2025 – Email from Mr Pat Sowry, Acting Deputy Secretary Security and Estate Group, Department of Defence declining invitation for Department of Defence to appear at the PFAS inquiry hearing 4 February 2025 in Newcastle and advising of the Department's intention to make a written submission to the inquiry.

Sent

- 9 December 2024 – Email from the secretariat to Narrabri Shire Council seeking reasons for the council's request that its submission (submission no. 34) to the committee's inquiry remain confidential
- 10 January 2025 – Letter to Hon Penny Sharpe MLC, Minister for Climate Change, Minister for Energy, Minister for the Environment, Minister for Heritage, Leader of the Government in the Legislative Council seeking nomination of witnesses from the Williamstown Community Reference Group to appear at the committee's hearing on Tuesday 4 February in the Williamstown area
- 23 January 2025 – Letter to Commissioner Jeremy Fewtrell AFSM, Commissioner, Fire and Rescue NSW (FRNSW) re-issuing invitation for FRNSW to appear at Blue Mountains hearing on 3 February 2025 for the inquiry
- 23 January 2025 – Letter to Ms Trish Doyle MP, Member for Blue Mountains, advising of the committee's Blue Mountains public hearing and site visit on Monday 3 February 2025
- 23 January 2025 – Letter to Mr Tim Crakanthorp MP, Member for Newcastle, advising of the committee's Newcastle public hearing and site visit on Tuesday 4 February 2025

- 23 January 2025 – Letter to Hon Kate Washington MP, Member for Port Stephens, advising of the committee's Newcastle public hearing and site visit on Tuesday 4 February 2025
- 28 January 2025 – Letter to Hon Penny Sharpe MLC, Minister for Climate Change, Minister for Energy, Minister for the Environment, Minister for Heritage, Leader of the Government in the Legislative Council seeking nomination of witness from the NSW Environment Protection Authority to appear at the committee's hearing on Tuesday 4 February in Newcastle.

Resolved, on the motion of Mr Murphy: that the following correspondence be kept confidential as per the recommendation of the secretariat as it contains sensitive information:

- email from secretariat to Narrabri Shire Council requesting reasons for the council's request that its submission (submission no. 34) to the committee's inquiry
- email from Narrabri Shire Council to secretariat providing reasons for the council's request that its submission (submission no. 34) to the committee's inquiry
- email from Narrabri Shire Council to secretariat advising that it is now comfortable with its submission (submission no. 34) to the committee's inquiry being published on the committee's webpage.

5. Submissions

5.1 Public submissions

The committee noted the following submissions were published by the committee clerk under the authorisation of the resolution appointing the committee submissions nos. 9A, 32, 33, 34, 35, 36, 41, 42, 43, 44, 45, 47, 48, 48A, 49, 50, 51, 52, 54, 55 and 56.

5.2 Partially confidential submissions

The committee noted the following submissions were partially published by the committee clerk under the authorisation of the resolution appointing the committee: submission nos. 21, 24, 28 and 37.

Resolved, on the motion of Mr Donnelly: That the committee keep the following information confidential, as per the request of the author:

- names in submission nos. 28 and 37
- names of individuals in submissions nos. 21 and 24.

Resolved, on the motion of Mrs MacDonald: that the committee authorise the publication of:

- submissions no. 29 and 53, with the exception of potential adverse mention which is to remain confidential, as per the recommendation of the secretariat
- submission 46 with the exception of identifying information which is to remain confidential as per the request of the author.

5.3 Attachments to submission

Resolved, on the motion of Mr Donnelly: That the committee authorise the publication of the following attachments to submission no. 24:

- Appendix 1a
- Appendix 1b
- Appendix 1c
- Appendix 1d
- Appendix – '27.06.2024 EPA Response Letter'
- Appendix 2a
- Appendix 2b
- Appendix 2c
- Appendix 2d
- Appendix 3
- Appendix 4

- Appendix 5a
- Appendix 5b
- Appendix 5c
- Appendix 5d
- Appendix 5e
- Appendix 5f
- Appendix 5g
- Appendix 5h
- Appendix 5i.

6. Answers to questions on notice and supplementary questions

The committee noted the following answers to questions on notice and supplementary questions were published by the committee clerk under the authorisation of the resolution appointing the committee:

- answers to questions on notice from Fire and Rescue NSW, received 14 January 2025
- answer to question on notice from NSW Environment Protection Authority, received 17 January 2025.

7. Public hearings – Katoomba, 3 February 2025 and Newcastle, 4 February 2025 – sequence of questions

Resolved, on the motion of Mr Donnelly: That the allocation of questions to be asked at the hearing on 3 February, Katoomba and 4 February, Newcastle, be left in the hands of the Chair.

8. Public hearing – Katoomba, 3 February 2025

Witnesses, the public and the media were admitted at 9.45 am.

The Chair made an opening statement regarding the broadcasting of the proceedings and other matters.

The following witness was sworn and examined:

- Mr Jon Dee, Founder and Convenor, Stop PFAS – Blue Mountains.

The evidence concluded and the witness withdrew.

The following witnesses were sworn and examined:

- Mr Will Langevad, Director Environment and Planning Services, Blue Mountains City Council
- Ms Emma Kennedy, Program Leader Healthy Waterways, Blue Mountains City Council.

Ms Kennedy tendered the following documents:

- Letter dated 9 December 2024 from Ms Rosemary Dillon, Chief Executive Officer, Blue Mountains City Council to Hon Mark Butler MP, Commonwealth Minister for Health and Aged Care regarding PFAS detected in Medlow Bath Dam
- Letter dated 9 December 2024 from Ms Rosemary Dillon, Chief Executive Officer, Blue Mountains City Council, to Hon Rose Jackson MLC, NSW Minister for Water regarding PFAS detected in Medlow Bath Dam.

The evidence concluded and the witnesses withdrew.

The following witness was sworn and examined:

- Assistant Commissioner Michael Morris JP, CF, Assistant Commissioner Metropolitan Operations, Fire and Rescue NSW.

The evidence concluded and the witness withdrew.

The following witnesses were sworn and examined:

- Ms Gem Green (via teleconference) Chair, Cadia Community Sustainability Network
- Mrs Frances Retallack, Vice Chair, Cadia Community Sustainability Network.

The evidence concluded and the witnesses withdrew.

The public hearing concluded at 12.51 pm. The public and the media withdrew.

9. Site visit to Cascade Water Filtration Plant, Katoomba

The Committee visited the Cascade Water Filtration Plant, Katoomba, and met with:

- Mr Stuart Wallace, General Manager of Customer and Stakeholder Engagement, Sydney Water
- Mr Paul Plowman, Executive General Manager of Water & Environment Services, Sydney Water
- Mr Darren Azzopardi, Western Water Hub Manager & Cascade WFP Manager, Sydney Water.

The committee received a conducted tour of the Plant.

10. Adjournment

The committee adjourned at 2.45 pm, until Tuesday 4 February 2025 (public hearing and site visit, Newcastle).

Elspeth Dyer
Committee Clerk

Minutes no. 4

Tuesday 4 February 2025

Select Committee on PFAS contamination in waterways and drinking water supplies throughout New South Wales

Q Building, The University of Newcastle Campus, Newcastle, 9.15 am

1. Members present

Ms Faehrmann, *Chair*
Mr Barrett
Mr Donnelly (from 9:22 am)
Mrs MacDonald
Mr Murphy

2. Apologies

Mr Martin, Deputy Chair
Mr Lawrence

3. Public hearing – Newcastle, 4 February 2025

Witnesses, the public and the media were admitted at 9.15 am.

The Chair made an opening statement regarding the broadcasting of the proceedings and other matters.

The following witnesses were sworn and examined:

- Mr Paul Rooms, Local resident
- Dr Michael Walton, Local resident.

The evidence concluded and the witnesses withdrew.

The following witness was sworn and examined:

- Professor Ravi Naidu, Managing Director, Cooperative Research Centre for Contamination, Assessment, and Remediation of the Environment (crcCARE).

The evidence concluded and the witness withdrew.

The following witness was sworn and examined:

- Mr Rob Manning, Managing Director, SORR.

The evidence concluded and the witness withdrew.

The following witnesses were sworn and examined:

- Mr Darren Cleary, Managing Director, Hunter Water
- Ms Emma Berry, Executive Manager Strategy and Engagement, Hunter Water.

The evidence concluded and the witnesses withdrew.

The following witness was sworn and examined:

- Dr Tony Merritt, Public Health Physician, Hunter New England Local Health District.

Dr Merritt tendered a document entitled: 'enHealth Factsheet on PFAS'.

The evidence concluded and the witness withdrew.

The following witnesses were sworn and examined:

- Mr David Gathercole, Director, Operations, NSW Environment Protection Authority
- Ms Corrie Ford, Manager, Operations, NSW Environment Protection Authority.

The evidence concluded and the witnesses withdrew.

The public hearing concluded at 1.16 pm. The public and the media withdrew.

4. Site visit to Cooperative Research Centre for Contamination, Assessment and Remediation of the Environment (crcCARE), The University of Newcastle

The Committee visited the Cooperative Research Centre for Contamination, Assessment and Remediation of the Environment (crcCARE); met with Professor Ravi Naidu, Managing Director; and received a conducted tour of the Centre.

5. Adjournment

The committee adjourned at 3.30 pm until Wednesday 6 February 2024 (public hearing, Sydney).

Elspeth Dyer
Committee Clerk

Minutes no. 5

Wednesday 5 February 2025

Select Committee on PFAS contamination in waterways and drinking water supplies throughout New South Wales

Jubilee Room, Parliament House, 8:56 am

1. Members present

Ms Faehrmann, *Chair*
Mr Martin, *Deputy Chair* (from 11:19 am)
Mr Barrett (via videoconference)
Mr Donnelly
Mrs MacDonald (from 8:59 am)
Mr Murphy

2. Public hearing

Sequence of questions

Resolved, on the motion of Mr Murphy: That the allocation of questions to be asked at the hearing be left in the hands of the Chair.

Witnesses, the public and the media were admitted at 9.00 am.

The Chair made an opening statement regarding the broadcasting of the proceedings and other matters.

The following witness was sworn and examined:

- Mr Anthony Amis (via videoconference) Land Use Researcher, Friends of the Earth Australia.

The evidence concluded and the witness withdrew.

The following witnesses were sworn and examined:

- Dr Brett Molony (via videoconference) Science Director, Environment, CSIRO
- Dr Jason Kirby (via videoconference) Group Leader, Contaminants and Mitigation, Environment, CSIRO
- Dr Jens Blotevogel (via videoconference) Team Leader, Remediation Technologies, Environment, CSIRO.

The evidence concluded and the witnesses withdrew.

The following witness was sworn and examined:

- Ms Gayle Sloan, CEO, Waste Management and Resource Recovery Association of Australia.

The evidence concluded and the witness withdrew.

The following witnesses were sworn and examined:

- Dr Jackie Wright, Director/Principal, Environmental Risk Sciences Pty Ltd (enRiskS)
- Ms Therese Manning PSM, Principal, Environmental Risk Sciences Pty Ltd (enRiskS).

Dr Wright tendered a document entitled 'Draft PFAS Drinking Water Guidelines – Comments'.

The evidence concluded and the witnesses withdrew.

The following witnesses were sworn and examined:

- Mr David Reynolds, Chief Executive, Local Government NSW
- Cr Dallas Tout, Board Director, Local Government NSW
- Cr Tiffany Galvin (via videoconference) Country Mayors Association of NSW PFAS contaminated water Member Representative (Mayor, Gwydir Shire Council)
- Mr Alex Eddy (via videoconference) Country Mayors Association of NSW PFAS contaminated water Member Representative (General Manager, Gwydir Shire Council)

- Cr Josh Black (via videoconference) Executive Board Member, Country Mayors Association of NSW (Mayor, Dubbo Regional Council).

The evidence concluded and the witnesses withdrew.

The following witness was sworn and examined:

- Mr Brad Withyman (via videoconference) Founder, River Guardians.

The evidence concluded and the witness withdrew.

The following witnesses were sworn and examined:

- Mr Howard Waldron, Founding Director, Lotsearch
- Mr Peter Rodgers, Founding Director, Lotsearch.

Mr Waldron tendered a package of documents entitled 'Information Pack'.

The evidence concluded and the witnesses withdrew.

The following witnesses were sworn and examined:

- Mr Andrews Nicholls PSM (via videoconference) Chief Executive Officer, Independent Pricing and Regulatory Tribunal
- Ms Christine Allen (via videoconference) Director, Regulation and Compliance, Independent Pricing and Regulatory Tribunal
- Mr Roch Cheroux, Managing Director, Sydney Water
- Dr Kaye Power, Principal Water & Public Health Advisor, Sydney Water.

The evidence concluded and the witnesses withdrew.

The following witnesses were sworn and examined:

- Ms Fiona Smith, Executive Manager, Strategy & Performance, Water NSW
- Mr Ronan Magaharan, Executive Manager, Operations, Water NSW
- Mr Brendan Guiney, Executive Officer, Water Directorate
- Dr Jeremy McNulty, Executive Director, Health Protection NSW, NSW Health
- Dr Stephen Conaty, Director, Environmental Health Branch, Health Protection NSW, NSW Health
- Mr Tony Chappel, Chief Executive Officer, Environment Protection Authority
- Mr Stephen Beaman, Executive Director Regulatory Practice and Services, Environment Protection Authority.

The evidence concluded and the witnesses withdrew.

3. Tendered documents – public hearings 3-5 February 2025

The committee had previously agreed to defer consideration of publication of tendered documents from the 3 February 2025 public hearing (Katoomba) and 4 February 2025 public hearing (Newcastle).

Resolved, on the motion of Mr Donnelly: That the committee accept and publish the following documents:

- Document tendered during the 3 February public hearing by Ms Emma Kennedy – Letter dated 9 December 2024 from Ms Rosemary Dillon, Chief Executive Officer, Blue Mountains City Council to Hon Mark Butler MP, Commonwealth Minister for Health and Aged Care regarding PFAS detected in Medlow Bath Dam
- Document tendered during the 3 February public hearing by Ms Emma Kennedy – Letter dated 9 December 2024 from Ms Rosemary Dillon, Chief Executive Officer, Blue Mountains City Council, to Hon Rose Jackson MLC, NSW Minister for Water regarding PFAS detected in Medlow Bath Dam

- Document tendered during the 4 February public hearing by Dr Tony Merritt entitled 'enHealth Factsheet on PFAS'
- Document tendered during the 5 February public hearing by Dr Jackie Wright entitled 'Draft PFAS Drinking Water Guidelines – Comments'
- Package of documents tendered during the 5 February public hearing by Mr Howard Waldron entitled 'Information Pack'.

4. Other business

Resolved, on the motion of Mr Martin: That:

- the committee conduct two additional days of committee activity in April or May 2025 with the exact dates to be determined by the Chair subject to member availability, and
- the Chair seek a resolution from the House to extend the report tabling date to 20 August 2025.

5. Adjournment

The committee adjourned at 5.02 pm, *sine die*.

Arizona Hart and Gerard Rajakariar
Committee Clerks

Minutes no. 6

Tuesday 8 April 2025

Select Committee on PFAS contamination in waterways and drinking water supplies throughout New South Wales

Mirage Room, Wagga Wagga RSL Club, Wagga Wagga, 11.19 am

1. Members present

Ms Faehrmann *Chair*
Mr Barrett
Mr Donnelly
Mrs MacDonald
Mr Murphy (until 2.49 pm)

2. Apologies

Mr Martin

3. Previous minutes

Resolved, on the motion of Mr Barrett: That draft minutes nos. 3, 4 and 5 be confirmed.

4. Correspondence

The committee noted the following items of correspondence:

Received

Received:

- 11 February 2025 – Email from Ms Annabel Kent, Government Engagement, CSIRO, providing an article from *The Conversation* entitled 'Taking the "forever" out of "forever chemicals": we worked out how to destroy PFAS in batteries'
- 13 February 2025 – Letter from Professor Ravi Naidu, CEO and Managing Director, Cooperative Research Centre for Contamination, Assessment and Remediation of the Environment (crcCARE) concerning the Committee's visit to crcCARE 4 February 2025 and offering the Committee any necessary further assistance with its inquiry

- 10 March 2025 – Email from Dr Michael Walton regarding e-coli and coliforms detection at Pacific Dunes, Medowie
- 14 March 2025 – Email from Dr Michael Walton regarding the Department of Defence submission to the inquiry
- 20 March 2025 – Email from Ms Susie Leeds, Environmental Health Officer, Murrumbidgee Council declining invitation for the Council to appear at the Committee's 8 April 2025 hearing in Wagga Wagga
- 25 March 2025 – Email from Dr Michael Walton concerning further PFAS test results for water samples from Pacific Dunes, Medowie.

Sent:

- 7 February 2025 – Letter from Chair to Mr Daniel Rindfleish, Government Relations Advisor, Government, Stakeholder and Community, Sydney Water thanking Sydney Water for hosting the Committee at a site visit to Cascade Filtration Plant, Katoomba on Monday 3 February 2025
- 7 February 2025 – Letter from Chair to Professor Ravi Naidu, Managing Director and CEO, Cooperative Research Centre for Contamination, Assessment and Remediation of the Environment (crcCARE), thanking him for hosting the Committee at a site visit to crcCARE on Tuesday 4 February 2025.

Resolved, on the motion of Mrs MacDonald: That the committee authorise the publication of correspondence from Dr Michael Walton, regarding further PFAS test results for water samples from Pacific Dunes, Medowie, dated 25 March 2025.

5. Submissions**5.1 Public submissions**

The committee noted the following submissions were published by the committee clerk under the authorisation of the resolution appointing the committee: submission nos. 42A, 57, 58, 59, 60, 61, 62, 63, 64 and 65.

5.2 Attachments to submissions

Resolved, on the motion of Mrs MacDonald: That the committee authorise the publication of the attachment to submission no. 64.

6. Answers to questions on notice and supplementary questions

The committee noted the following answers questions on notice arising from the hearing on 3 February 2025 were published by the committee clerk under the authorisation of the resolution appointing the committee:

- answers to questions on notice from Blue Mountains City Council, received 26 February 2025
- answers to questions on notice from Fire and Rescue NSW, received 4 March 2025
- answers to questions on notice from Cadia Community Sustainability Network, received 10 March 2025.

The committee noted the following answers to questions on notice arising from the hearing on 4 February 2025 were published by the committee clerk under the authorisation of the resolution appointing the committee:

- answers to questions on notice from the NSW Environment Protection Authority, received 19 February 2025
- answer to question on notice from Dr Tony Merritt, Public Health Physician, Hunter New England Local Health District, NSW Health, received 20 February 2025
- answers to questions on notice from Dr Michael Walton and Mr Paul Rooms, local residents, received 25 February 2025
- answers to questions on notice from Hunter Water, received 4 March 2025.

The committee noted the following answers to questions on notice and supplementary questions, arising from the hearing on 5 February 2025 were published by the committee clerk under the authorisation of the resolution appointing the committee:

- answers to questions on notice from Lotsearch, received 13 February 2025
- answers to supplementary questions from Dr Jeremy McNulty, Executive Director, Health Protection NSW, NSW Health received 20 February 2025
- answers to questions on notice and supplementary questions from Water NSW, received 28 February 2025
- answers to questions on notice and supplementary questions from Local Government NSW, received 4 March 2025
- answers to supplementary questions from the CSIRO, received 4 March 2025
- answers to questions on notice from the CSIRO, received 5 March 2025
- answers to supplementary questions from Friends of the Earth Australia, received 5 March 2025
- answers to questions on notice from Mr Tony Chappel, Chief Executive Officer, NSW Environment Protection Authority, received 6 March 2025
- answers to questions on notice from Mr Stephen Beaman PSM, Executive Director Regulatory Practice and Services, NSW Environment Protection Authority, received 6 March 2025
- answers to supplementary questions, NSW Environment Protection Authority, received 6 March 2025
- answers to supplementary questions from EnRiskS, received 6 March 2025
- answers to supplementary questions from the Independent Pricing and Regulatory Tribunal, received 6 March 2025
- answers to supplementary questions from Sydney Water, received 6 March 2025
- answers to questions on notice and supplementary questions from Cr Josh Black, Executive Board Member, Country Mayors Association of NSW, received 6 March 2025 (*the committee also noted that answers to supplementary questions 13 and 14 have not yet been provided*)
- answer to question on notice from Mr Alex Eddy, Country Mayors Association of NSW PFAS contaminated water Member Representative, received 7 March 2025
- answers to questions on notice and supplementary questions from the Waste Management and Resource Recovery Association of Australia, received 12 March 2025
- answers to supplementary questions from the Water Directorate, received 17 March 2025.

7. Clarification of evidence

Resolved, on the motion of Mr Murphy: That:

- The letter from Mr David Gathercole, Director Operations, NSW Environment Protection Authority, dated 14 February 2025 clarifying his evidence given at the committee's hearing, 4 February 2025, be published and his evidence clarified by inserting explanatory footnotes in the transcript of evidence
- The email from Dr Michael Walton, local resident, dated 25 February 2025, correcting evidence he and Mr Paul Rooms gave at the committee's hearing 4 February 2025 be published, their evidence clarified by inserting explanatory footnotes in the transcript of evidence, and the corrections made within the transcript.

8. Transcript of proceedings and YouTube video – 4 February 2025 Hearing – Newcastle

The committee noted the following email received by the committee secretariat:

- 10 March 2025 – Email from Professor Ravi Naidu, Managing Director, Cooperative Research Centre for Contamination, Assessment and Remediation of the Environment (crcCARE) requesting a redaction to transcript of evidence and YouTube video arising from the committee's 4 February 2025 public hearing.

Resolved, on the motion of Mrs MacDonald: That the institution named in the last paragraph of Professor Ravi Naidu's evidence in the transcript of proceedings for the committee's 4 February 2025 be redacted from the transcript and the YouTube video of the public hearing as per the request of the witness.

9. Circulation of Chair's draft report to committee members

Resolved, on the motion of Mr Donnelly: That the Chair's draft report for the inquiry be circulated to members 14 calendar days before the confirmed report deliberative date of Tuesday 12 August 2025.

10. Election of Deputy Chair for 8 April hearing, Wagga Wagga

The Chair called for nominations for a Deputy Chair for the duration of the meeting.

Mrs MacDonald moved: That Mr Barrett be elected Deputy Chair for the duration of the meeting.

There being no further nominations, the Chair declared Mr Barrett elected Deputy Chair for the duration of the meeting.

11. Public hearing

Sequence of questions

Resolved, on the motion of Mrs MacDonald: That the allocation of questions to be asked at the hearing be left in the hands of the Chair.

Witnesses, the public, and the media were admitted at 11.32 am.

The Chair made an opening statement regarding the broadcasting of the proceedings and other matters.

The Chair noted that Members of Parliament swear an oath to their office, and therefore do not need to be sworn prior to giving evidence before a committee.

Dr Joe McGirr MP, Member for Wagga Wagga, was admitted and examined.

The evidence concluded and the witness withdrew.

The following witness was sworn and examined:

- Mr Thomas Hughes, Local resident.

Mr Thomas Hughes tendered two photographs.

The evidence concluded and the witness withdrew.

The following witness was sworn and examined:

- Ms Donna Argus, Local resident.

Ms Argus tendered correspondence from the Department of Defence to a third party concerning PFAS related activity in Wagga Wagga including monitoring, testing and consultation.

The evidence concluded and the witness withdrew.

The following witnesses were sworn and examined:

- Mr Peter Thompson, General Manager, Wagga Wagga City Council
- Mr Tim Koschel, Chairperson Board, Riverina Water County Council
- Mr Troy van Berkel, Director Engineering, Riverina Water County Council.

The evidence concluded and the witnesses withdrew.

The public hearing concluded at 3.16 pm.

12. Tendered documents

Resolved, on the motion of Mrs MacDonald: That the committee accept and publish the following documents tendered at the public hearing on 8 April 2025:

- Two photographs tendered by Mr Thomas Hughes.

Resolved, on the motion of Mrs MacDonald: That the committee accept the following document tendered at the public hearing on 8 April 2025 and that it remain confidential:

- Document tendered by Ms Donna Argus - correspondence from the Department of Defence to a third party concerning PFAS related activity in Wagga Wagga including monitoring, testing and consultation.

13. Other business

13.1 Transcript – 8 April 2025 hearing, Wagga Wagga

Resolved, on the motion of Mr Barrett: That the secretariat review the transcript of the 8 April 2025 hearing in Wagga Wagga and recommend any redaction of names or other sensitive content before the transcript is published.

13.2 Correspondence to the Department of Defence and Senate Committee

Resolved, on the motion of Mrs MacDonald:

- That the secretariat draft a letter to the Department of Defence requesting specific details of the action it is taking to clean up the groundwater plume in Wagga Wagga, for circulation to the committee for approval prior to being sent.
- That the secretariat draft a letter to the Chair of the Commonwealth Senate Select Committee on PFAS requesting details of the action the Department of Defence has advised the Senate Committee it is taking to clean up the groundwater plume in Wagga Wagga, for circulation to the committee for approval prior to being sent.

14. Adjournment

The committee adjourned at 3.22 pm, *sine die*.

Elspeth Dyer
Committee Clerk

Minutes no. 7

Tuesday 20 May 2025

Select Committee on PFAS contamination in waterways and drinking water supplies throughout New South Wales

Macquarie Room, Parliament House, Sydney, 9.01 am

1. Members present

Ms Faehrmann, *Chair*
Mr Martin, *Deputy Chair*
Mr Barrett (via videoconference)
Mr Donnelly
Mr Lawrence (via videoconference)
Mrs MacDonald (via videoconference)
Mr Murphy

2. Previous minutes

Resolved, on the motion of Mr Murphy: That draft minutes no.6 be confirmed.

3. Correspondence

The committee noted the following items of correspondence:

Received

- 1 April 2025 – Email from Dr Michael Walton to secretariat regarding NSW Environment Protection Authority (EPA) PFAS testing at Pacific Dunes Golf Course, Medowie, NSW
- 1 April 2025 – Further Email from Dr Michael Walton to secretariat regarding EPA PFAS testing at Pacific Dunes Golf Course, Medowie, NSW
- 4 April 2025 – Email from Dr Michael Walton to secretariat complaining about an email sent by Pacific Dunes Golf Course management to people associated with the golf course concerning the results of recent PFAS testing at the golf course by the EPA
- 4 April 2025 – Email from Dr Michael Walton to secretariat raising concerns that water usage at Pacific Dunes Golf Course is not fully metered; and complaining that an email sent by Pacific Dunes Golf Course management to people associated with the golf course concerning the results of recent EPA PFAS testing at the golf course may have breached the witness protections for witnesses appearing before a Legislative Council Committee inquiry
- 5 April 2025 – Email from Dr Michael Walton to secretariat raising further concerns about PFAS testing by the EPA at Pacific Dunes Golf Course, Medowie, NSW
- 5 April 2025 – Three emails from Ms Lynette LaBlack, Save our Surroundings Riverina, complaining about PFAS risks linked to solar panels
- 6 April 2025 – Email from Dr Michael Walton to secretariat complaining further about an email sent by Pacific Dunes Golf Course management to people associated with the golf course concerning the results of recent PFAS testing at the golf course by the EPA
- 8 April 2025 – Email from Dr Michael Walton to secretariat concerning PFAS levels in water at Pacific Dunes Golf Course, Medowie
- 15 April 2025 – Email from Dr Michael Walton to secretariat concerning Medowie Waste Water Pumping Station and Campvale Drain
- 5 May 2025 – Letter from Mr Pat Sowry, First Assistant Secretary, Infrastructure Division, Department of Defence responding to Chair's letter requesting details of action taken to clean up groundwater plume coming from the RAAF Base at Wagga Wagga
- 7 May 2025 – Email from Professor Miriam L. Diamond, FRSC, FRCGS, FSETAC, Department of Earth Sciences, School of the Environment, University of Toronto, declining invitation to appear at the Committee's hearing on 20 May 2025 owing to prior engagements
- 8 May 2025 – Email from Emeritus Professor Jack Ng, Queensland Alliance for Environmental Health Sciences (QAEHS), The University of Queensland, declining invitation to appear at the Committee's hearing on 20 May 2025 owing to leave arrangements
- 9 May 2025 – Email from Ms Abigail Hendershott, Executive Director, Michigan PFAS Action Response Team (MPART), Michigan Department of Environment, Great Lakes, and Energy, declining invitation to appear at the Committee's hearing on 20 May owing to leave arrangements
- 10 May 2025 – Email from Dr Michael Walton providing an update regarding PFAS testing at Pacific Dunes Golf Course, Medowie
- 14 May 2025 – Email from Dr Emma Banyer, Principal Research Officer, secretariat to Senate Select Committee on PFAS advising that the Senate Committee has resolved to write to the Department of Defence seeking an update on action taken to clean up groundwater plume coming from RAAF Base at Wagga Wagga, and that the Senate Committee will advise when it has received a response
- 15 May 2025 – Email from Mr Kirk Koudelka, Assistant Commissioner, Land Policy and Strategic Initiatives, Minnesota Pollution Control Agency declining the Committee's invitation to appear at hearing for the inquiry on 20 May 2025, owing to other commitments.

Sent

- 22 April 2025 – Letter to Mr Pat Sowry, First Assistant Secretary, Infrastructure Division, Department of Defence requesting details of action taken to clean up groundwater plume coming from the RAAF Base at Wagga Wagga

- 22 April 2025 – Letter to Senator Lidia Thorpe, Chair, Senate Select Committee on PFAS (per and polyfluoroalkyl substances) requesting details of any action the Department of Defence has advised it is taking to clean up groundwater plume coming from the RAAF Base at Wagga Wagga.

The committee noted a briefing note concerning the nine emails from Dr Michael Walton.

Resolved, on the motion of Mrs MacDonald: That:

- the suggested response to Dr Michael Walton's nine emails, circulated in the meeting papers, be sent
- the committee authorise the publication, on the committee's webpage, of correspondence from Mr Pat Sowry, First Assistant Secretary, Infrastructure Division, Department of Defence, dated 5 May 2025, responding to the Chair's letter requesting details of action taken to clean up the groundwater plume coming from the RAAF Base at Wagga Wagga.

4. Submissions

4.1 Partially confidential submission

Resolved, on the motion of Mr Barrett: That the committee keep the following information confidential as per the request of the author/recommendation of the secretariat: names and identifying information in submission no. 67.

4.2 Confidential submission

Resolved, on the motion of Mr Murphy: That the committee keep submission no. 66 confidential, as per the request of the author.

5. Answer to question on notice

The committee noted that the following answer to a question on notice was published by the committee clerk under the authorisation of the resolution appointing the committee:

- Answer to question on notice from Riverina Water County Council, received 5 May 2025.

6. Transcript – 8 April 2025 Hearing, Wagga Wagga

6.1 Redactions

Resolved, on the motion Mr Murphy: That:

- the following words from paragraph 10 of page 14 of the transcript of the committee's 8 April 2025 hearing in Wagga Wagga to be kept confidential, as they contain sensitive information:
 - *words suppressed*
 - *words suppressed*
 - *words suppressed, and*
- these confidential words also be removed from:
 - the YouTube video of the 8 April 2025 hearing; and
 - any public version of the committee minutes.

6.2 Clarification

Resolved, on the motion of Mrs MacDonald: That the following footnote be included after the words 'Hardwicks' on page 11 of the PFAS Committee transcript for the 8 April 2025 hearing: 'By telephone call to the committee secretariat on 28 April 2025, Mr Thomas Hughes, local resident, clarified that the name of the property owners is Brunskill, not Hardwicks'.

7. Public hearing

Sequence of questions

Resolved, on the motion of Mr Murphy: That the allocation of questions to be asked at the hearing be left in the hands of the Chair.

Witnesses, the public, and the media were admitted at 9.16 am.

The Chair made an opening statement regarding the broadcasting of the proceedings and other matters.

The following witnesses were sworn and examined:

- Dr Shiwen Li, Post-Doctoral Research Scholar, Department of Population and Public Health Sciences, Keck School of Medicine, University of Southern California (via videoconference)
- Dr Max Aung, Assistant Professor, Division of Environmental Health, Department of Population and Public Health Sciences, Keck School of Medicine, University of Southern California (via videoconference).

The evidence concluded and the witnesses withdrew.

The following witnesses were sworn and examined:

- Senator Judy Seeberger, Minnesota State Senator, representing Senate District 41 (via videoconference)
- Ms Avonna Starck, State Director, Clean Water Action Minnesota (via videoconference).

Ms Avonna Starck tendered the following documents:

- Support the PFAS Prevention Package factsheet
- Amara's Law is common sense factsheet.

The evidence concluded and the witnesses withdrew.

The public hearing concluded at 11.03 am.

8. Tendered and tabled documents

The Chair tabled the following document:

- Shiwen Li et al, 'Associations between per-and polyfluoroalkyl substances (PFAS) and county-level cancer incidence between 2016 and 2021 and incident cancer burden attributable to PFAS in drinking water in the United States' (2025) *Journal of Exposure Science & Environmental Epidemiology*.

Resolved, on the motion of Mrs MacDonald: That the committee accept and publish the following documents tabled and tendered:

- Shiwen Li et al, 'Associations between per-and polyfluoroalkyl substances (PFAS) and county-level cancer incidence between 2016 and 2021 and incident cancer burden attributable to PFAS in drinking water in the United States' (2025) *Journal of Exposure Science & Environmental Epidemiology*, tabled by Ms Cate Faehrmann MLC
- Support the PFAS Prevention Package factsheet, tendered by Ms Avonna Starck, State Director, Clean Water Action Minnesota
- Amara's Law is common sense factsheet, tendered by Ms Avonna Starck, State Director, Clean Water Action Minnesota.

9. Adjournment

The committee adjourned at 11.05 am, until Tuesday 12 August 2025, 9.00 am, Room 1254, Parliament House (report deliberative).

Elsbeth Dyer
Committee Clerk

Draft minutes no. 8

Friday 5 September 2025

Select Committee on PFAS contamination in waterways and drinking water supplies throughout New South Wales

Room 1254, Parliament House, Sydney, 9.35 am

1. Members present

Ms Faehrmann, *Chair*

Mr Martin, *Deputy Chair* (via videoconference)

Mr Donnelly

Mr Fang (substituting for Mr Barrett)

Mr Lawrence (via videoconference)

Mrs MacDonald

Mr Nanva (substituting for Mr Murphy, via videoconference)

2. Report deliberative meeting date

Resolved, on the motion of Mr Donnelly: That the committee conduct its report deliberative for the inquiry on 5 September 2025, this being urgent business as the timelines for the inquiry needed to be extended.

3. Previous minutes

Resolved, on the motion of Mrs MacDonald: That draft minutes no.7 be confirmed.

4. Correspondence

The committee noted the following items of correspondence:

Received

- 4 April 2025 – Email from Dr Michael Walton to secretariat complaining about an email sent by Pacific Dunes Golf Course management to people associated with the golf course concerning the results of recent PFAS testing at the golf course by the EPA
- 19 May 2025 – Email from Dr Michael Walton raising concerns about PFAS contamination at Pacific Dunes Golf Course, Medowie, and attaching soil testing results, photographs and videos
- 7 June 2025 – Email from Dr Michael Walton raising concerns about PFAS contamination at Pacific Dunes Golf Course, Medowie, and attaching further water testing results, photographs and videos
- 14 June 2025 – Email from Dr Michael Walton attaching his PFAS blood test results and a research paper concerning stormwater discharges and PFAS
- 28 June 2025 – Email from W. Scott Thurlow, Legal Counsel and Director, Chemicals Management, Chemistry Industry Association of Canada, seeking for the Association to appear before the committee at a hearing
- 9 July 2025 – Email to committee secretariat from secretariat to Senate Select Committee on PFAS conveying Defence response to Senate Committee's request for information about PFAS matters connected to the RAAF Base Wagga
- 23 July 2025 – Email from the Cadia Community Sustainability Network (CCSN) regarding concerns about fish testing in a property south of the Cadia Valley Operations and the CCSN's subsequent GIPA application seeking further information
- 29 July 2025 – Letter from Simon Troeth, Director Government Affairs Australia, Newmont, in relation to a number of claims made by the Cadia Community Sustainability Network in evidence to the inquiry
- 31 July 2025 – Letter from Senator Lidia Thorpe, Chair, Select Committee on PFAS (per and polyfluoroalkyl substances), in response to correspondence from Ms Cate Faehrmann, Chair, Select Committee on PFAS, regarding PFAS contamination in Wagga Wagga
- 11 August 2025 – Letter from Dr Kerry Chant AO PSM, Chief Health Officer and Deputy Secretary, Population and Public Health, NSW Health including a link to the final report, meeting minutes and agenda papers of the NSW Health Expert Advisory Panel on PFAS.

Sent

- 20 May 2025 – Letter from Chair to Dr Michael Walton responding to his recent correspondence concerning PFAS contamination in the Hunter region, New South Wales
- 2 July 2025 – Email from secretariat to Mr W. Scott Thurlow, Chemistry Industry Association of Canada, responding to his request to give evidence before the committee.

Resolved, on the motion of Mrs MacDonald: That the committee authorise:

- the publication of the email of 4 April 2025 from Dr Michael Walton complaining about an email sent by Pacific Dunes Golf Course management to people associated with the golf course concerning the results of recent PFAS testing at the golf course by the NSW Environment Protection Authority
- the publication, on the committee webpage, of the soil testing results attached to the email of 19 May 2025 from Dr Michael Walton, raising concerns about PFAS contamination at Pacific Dunes Golf Course, Medowie.

Resolved, on the motion of Mr Donnelly: That the committee:

- publish the correspondence from Newmont, received 29 July 2025, responding to a number of claims made by the Cadia Community Sustainability Network in evidence to the inquiry
- upload the correspondence to the committee's inquiry webpage under 'other documents'
- authorise the secretariat to write back to Newmont advising of the action taken by the committee in response to its correspondence.

Resolved, on the motion of Mrs MacDonald: That the committee:

- publish the correspondence from Dr Kerry Chant AO PSM, Chief Health Officer and Deputy Secretary, Population and Public Health, NSW Health, received 11 August 2025, which includes a link to the final report, meeting minutes and agenda papers of the NSW Health Expert Advisory Panel on PFAS
- upload the correspondence to the committee's inquiry webpage under 'other documents'.

5. Submissions**5.1 Public submissions**

The committee noted that the following submissions were published by the committee clerk under the authorisation of the resolution appointing the committee: submission nos. 68 and 69.

5.2 Confidential submission

Resolved, on the motion of Mr Fang: That the committee keep submission no. 70 confidential, as per the recommendation of the secretariat, as it contains identifying and sensitive information.

6. Answers to questions on notice and supplementary questions

The committee noted that the following answers to questions on notice and supplementary questions were published by the committee clerk under the authorisation of the resolution appointing the committee:

- answers to supplementary questions from Ms Avonna Starck, State Director, Clean Water Action Minnesota, received 18 June 2025
- answers to questions on notice and supplementary questions from Dr Shiwen Li and Dr Max Aung, Keck School of Medicine, University of Southern California, received 25 June 2025.

7. Consideration of Chair's draft report

The Chair submitted her draft report entitled 'PFAS contamination in waterways and drinking water supplies throughout New South Wales', which having been previously circulated was taken as having been read.

Chapter 1**No amendments**

Chapter 2

Mr Donnelly moved: That Recommendation 1 be amended by omitting 'mandate regular PFAS testing' and inserting instead 'ensure regular PFAS testing'.

Question put and passed.

Mr Donnelly moved: That Recommendation 1 be amended by omitting 'testing of source water, water at treatment plants before and after treatment, and water at customer taps' and inserting instead 'risk-based testing of source water, water at treatment plants before and after treatment, and water in the distribution system'.

Question put and passed.

Mr Donnelly moved: That Recommendation 3 be amended by omitting 'legislate standards for the level of PFAS chemicals' and inserting instead 'formally adopt standards for the level of PFAS chemicals'.

Question put and passed.

Mr Donnelly moved: That Finding 2 be omitted: 'The advice provided by NSW Health on PFAS, including on potential associations with certain types of cancer and other diseases and whether individuals exposed to higher levels of PFAS should get their blood tested, is not appropriate given conflicting evidence, the unsettled state of the science, and the need to proceed consistent with the precautionary principle'.

Question put.

The committee divided.

Ayes: Mr Donnelly, Mr Lawrence, Mr Nanva.

Noes: Ms Faehrmann, Mr Fang, Mrs MacDonald, Mr Martin.

Question resolved in the negative.

Mr Martin moved: That Finding 2 be amended by omitting 'is not appropriate' and inserting instead 'requires further scrutiny'.

Question put.

The committee divided.

Ayes: Ms Faehrmann, Mr Fang, Mrs MacDonald, Mr Martin.

Noes: Mr Donnelly, Mr Lawrence, Mr Nanva.

Question resolved in the affirmative.

Mr Donnelly moved: That Finding 3 be omitted: 'Blood testing and medical monitoring of willing individuals within communities that have been affected by elevated levels of PFAS should be freely provided by government or at least cost as little as possible to:

- aid in early detection of adverse health impacts
- inform health care plans to prevent disease progression, and
- inform further, much needed research about the potential health effects of PFAS exposure'.

Question put.

The committee divided.

Ayes: Mr Donnelly, Mr Lawrence, Mr Nanva.

Noes: Ms Faehrmann, Mr Fang, Mrs MacDonald, Mr Martin.

Question resolved in the negative.

Mr Martin moved: That Finding 3 be amended by:

- a) omitting the words 'freely provided' and inserting instead 'supported'
- b) omitting the words 'or at least cost as little as possible'.

Question put.

The committee divided.

Ayes: Ms Faehrmann, Mr Fang, Mrs MacDonald, Mr Martin.

Noes: Mr Donnelly, Mr Lawrence, Mr Nanva.

Question resolved in the affirmative.

Mr Donnelly moved: That Recommendation 4 be omitted: 'That the NSW Government fund blood testing for any willing Blue Mountains residents to:

- determine whether PFAS concentrations are higher in the blood of Blue Mountains community members when compared against the general population
- determine whether higher PFAS concentrations, if any, are associated with a higher incidence of adverse health effects e.g. high cholesterol and cancer
- help inform any clinical interventions on an individual level, if relevant, to prevent the progression of the disease'

and the following new recommendation be inserted instead:

'The NSW Government support clinicians who may be managing patients with concerns about PFAS exposure with the most up to date information including evidence about potential adverse health effects, the utility of blood tests for PFAS and the role of further investigations'.

Question put.

The committee divided.

Ayes: Mr Donnelly, Mr Lawrence, Mr Nanva.

Noes: Ms Faehrmann, Mr Fang, Mrs MacDonald, Mr Martin.

Question resolved in the negative.

Mr Fang moved: That Recommendation 4 be amended by omitting 'That the NSW Government fund blood testing' and inserting instead 'That the NSW Government support blood testing'.

Question put.

The committee divided.

Ayes: Ms Faehrmann, Mr Fang, Mrs MacDonald, Mr Martin.

Noes: Mr Donnelly, Mr Lawrence, Mr Nanva.

Question resolved in the affirmative.

Chapter 3

Mr Donnelly moved: That Recommendation 5 be amended by omitting 'that any testing and monitoring is conducted thoroughly and in the correct location/s' and inserting instead 'clinicians and community members are supported in interpreting and communicating information related to PFAS'.

Question put and passed.

Mr Donnelly moved: That Recommendation 6 be omitted: 'That, as a matter of priority, the NSW Environment Protection Authority:

- coordinate a further door-knocking exercise in the Williamstown Management Area and surrounds in conjunction with NSW Health and Hunter Water to re-iterate any precautionary dietary advice and respond to any community concerns

- continue door-knocking exercises at regular intervals, for as long as a declared management area exists and/or significant PFAS concerns persist in this locality
- ensure up to date information is also available online and made available to residents in printed format'

and the following new recommendation be inserted instead:

'That, as a matter of priority, the NSW Environment Protection Authority:

- write to the Federal Department of Defence, calling on them to invest to clean up the Williamstown Management Area, and communicate health and dietary advice to the community
- call on the Federal Department of Defence to undertake ongoing community consultation and information'.

Question put and passed.

Mr Donnelly moved: That Recommendation 7 be amended by omitting: 'That the NSW Government undertake regular monitoring' and inserting instead: 'That the Federal Department of Defence undertake regular monitoring'.

Question put and passed.

Mr Donnelly moved: That Finding 6 be amended by inserting at the end: 'The NSW Government has consistently said that the Department of Defence needs to take more responsibility for the contamination it has caused'.

Question put and passed.

Chapter 4

Mr Donnelly moved: That Finding 7 be omitted: 'In failing to erect signs along the Belubula River, immediately following the PFAS contamination discovery, warning against swimming and fishing until testing of the water and fish had been undertaken, the NSW Environment Protection Authority failed to act consistently with the precautionary principle'.

Question put.

The committee divided.

Ayes: Mr Donnelly, Mr Lawrence, Mr Nanva.

Noes: Ms Faehrmann, Mr Fang, Mrs MacDonald, Mr Martin.

Question resolved in the negative.

Mr Donnelly moved: That Recommendation 11 be amended by omitting 'erect signs along the Belubula River and other impacted tributaries, as appropriate, warning about the possible dangers' and insert instead 'inform the community about the possible dangers'.

Question put.

The committee divided.

Ayes: Mr Donnelly, Mr Lawrence, Mr Nanva.

Noes: Ms Faehrmann, Mr Fang, Mrs MacDonald, Mr Martin.

Question resolved in the negative.

Mr Fang moved: That Recommendation 11 be omitted: 'That the NSW Environment Protection Authority erect signs along the Belubula River and other impacted tributaries, as appropriate, warning about the possible dangers of swimming and fishing, including to avoid any contact with the foam' and the following new recommendation be inserted instead:

'That the NSW Environment Protection Authority inform the community about the possible PFAS contamination in the Belubula River including to avoid any contact with the foam'.

Question put.

The committee divided.

Ayes: Ms Faehrmann, Mr Fang, Mrs MacDonald, Mr Martin

Noes: Mr Donnelly, Mr Lawrence, Mr Nanva.

Question resolved in the affirmative.

Mr Donnelly moved that Finding 9 be amended by omitting 'due to a lack of proactivity by the NSW Environment Protection Authority'.

Question put and passed.

Mr Donnelly moved: That Recommendation 15 be omitted: 'That the NSW Government fund PFAS blood testing for willing participants in:

- Tarcutta, Wialda, Narrabri and Dubbo, and in any Local Government Areas where elevated PFAS levels are found in drinking water supply systems
- Wagga Wagga more broadly, having regard to the PFAS contamination emanating from Wagga Wagga's Defence bases
- contaminated sections of the Belubula River

in close consultation with local councils'.

Question put.

The committee divided.

Ayes: Mr Donnelly, Mr Lawrence, Mr Nanva.

Noes: Ms Faehrmann, Mr Fang, Mrs MacDonald, Mr Martin.

Question resolved in the negative.

Mr Martin moved: That Recommendation 15 be amended by omitting 'That the NSW Government fund PFAS blood testing' and inserting instead 'That the NSW Government support PFAS blood testing'.

Question put.

The committee divided.

Ayes: Ms Faehrmann, Mr Fang, Mrs MacDonald, Mr Martin.

Noes: Mr Donnelly, Mr Lawrence, Mr Nanva.

Question resolved in the affirmative.

Chapter 5

Mr Donnelly moved: That Recommendation 16 be omitted: 'That the NSW Government establish a dedicated fund or program to train environmental contamination consultants, providing them with the high level skills in PFAS remediation that are increasingly in demand across the state'.

Question put.

The committee divided.

Ayes: Mr Donnelly, Mr Lawrence, Mr Nanva.

Noes: Ms Faehrmann, Mr Fang, Mrs MacDonald, Mr Martin.

Question resolved in the negative.

Chapter 6

Mr Donnelly moved: That Recommendation 24 be omitted: 'That the NSW Government expand the suite of PFAS chemicals regulated under the Australian Drinking Water Guidelines, giving urgent consideration to including GenX chemicals, PFNA and PFBA, noting the limits already in place in the USA and the potential public health implications' and the following new recommendation be inserted instead:

'That the NSW Government call on the Australian Government to regularly review the available evidence on PFAS and incorporate other relevant chemicals in the Australian Drinking Water Guidelines when appropriate'.

Question put.

The committee divided.

Ayes: Mr Donnelly, Mr Fang, Mr Lawrence, Mrs MacDonald, Mr Martin, Mr Nanva.

Noes: Ms Faehrmann.

Question resolved in the affirmative.

Mr Donnelly moved: That Recommendation 25 be amended by omitting 'work with the National Health and Medical Research Council to review and, where appropriate, reduce PFAS limits under the Australian Drinking Water Guidelines' and inserting instead 'call on the National Health and Medical Research Council to conduct more regular reviews of the Australian Drinking Water Guidelines, for PFAS'.

Question put and passed.

Mr Donnelly moved that Recommendation 26 be omitted: 'That the NSW Government amend relevant legislation to require all water utilities in New South Wales to provide complete PFAS testing data – including for unregulated chemicals – to NSW Health and the National Health and Medical Research Council, and to notify those bodies of any spikes or emerging trends that may warrant regulatory review' and the following new recommendation be inserted instead:

'That the NSW Government require all water utilities in New South Wales to provide complete PFAS testing data to NSW Health and the National Health and Medical Research Council, and to notify those bodies of any spikes or emerging trends and continue to keep the community up to date'.

Question put and passed.

Mr Donnelly moved: That Recommendation 27 be omitted: 'That the NSW Government provide dedicated resources to ensuring that the bans on the import, manufacture, export or use of PFOA, PFOS and PFHxS under the Industrial Chemicals Environmental Management Standard (IChEMS) framework are enforced – and that what is entering the state is appropriately understood and tracked'.

Question put.

The committee divided.

Ayes: Mr Donnelly, Mr Fang, Mr Lawrence, Mrs MacDonald, Mr Martin, Mr Nanva.

Noes: Ms Faehrmann.

Question resolved in the affirmative.

Mr Donnelly moved: That Finding 14 be amended by inserting at the end: 'New South Wales, in partnership with the Australian Government, has now banned three PFAS chemicals: PFOA, PFOS and PFHxS for use or import into New South Wales, under the Industrial Chemicals Environmental Management Standard (IChEMS), which came into force on 1 July 2025'.

Question put and passed.

Mr Donnelly moved: That Recommendation 29 be omitted: 'That the NSW Government commit to phasing out all non-essential uses of PFAS in consumer, commercial and industrial products by 2030, in line with

emerging international best practice, and work with other jurisdictions to establish clear criteria for defining essential uses'.

Question put.

The committee divided.

Ayes: Mr Donnelly, Mr Lawrence, Mr Nanva.

Noes: Ms Faehrmann, Mr Fang, Mrs MacDonald, Mr Martin.

Question resolved in the negative.

Mr Martin moved: That Recommendation 29 be amended by omitting 'That the NSW Government commit to phasing out' and inserting instead 'That the NSW Government work via National Cabinet on a plan to phase out'.

Question put.

The committee divided.

Ayes: Ms Faehrmann, Mr Fang, Mrs MacDonald, Mr Martin.

Noes: Mr Donnelly, Mr Lawrence, Mr Nanva.

Question resolved in the affirmative.

Mr Donnelly moved: That Recommendation 30 be omitted: 'That the NSW Government conduct a baseline study to assess the presence of PFAS in commonly imported goods and packaging, and develop a strategy to monitor and limit PFAS-containing products entering New South Wales in coordination with federal agencies'.

Question put.

The committee divided.

Ayes: Mr Donnelly, Mr Fang, Mr Lawrence, Mrs MacDonald, Mr Nanva.

Noes: Ms Faehrmann, Mr Martin.

Question resolved in the affirmative.

Resolved, on the motion of Mr Martin: That

The draft report as amended be the report of the committee and that the committee present the report to the House;

The transcripts of evidence, tabled documents, submissions, correspondence, answers to questions taken on notice and supplementary questions relating to the inquiry be tabled in the House with the report;

Upon tabling, all unpublished attachments to submissions be kept confidential by the committee;

Upon tabling, all unpublished transcripts of evidence, tabled documents, submissions, correspondence, and answers to questions taken on notice and supplementary questions related to the inquiry be published by the committee, except for those documents kept confidential by resolution of the committee;

The committee secretariat correct any typographical, grammatical and formatting errors prior to tabling;

The committee secretariat be authorised to update any committee comments where necessary to reflect changes to recommendations or new recommendations resolved by the committee;

Dissenting statements be provided to the secretariat within 24 hours after receipt of the draft minutes of the meeting;

The Chair is tabling the report in the House on Thursday 11 September 2025;

The Chair to advise the secretariat and members if she intends to hold a press conference, and if so, the date and time.

8. Other business

The Chair thanked members of the secretariat for their work on the inquiry.

9. Adjournment

The committee adjourned at 10.31 am *sine die*.

Elspeth Dyer
Committee Clerk

