

# Preliminary Investigation Notice

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SYDNEY WATER CORPORATION  
49 776 225 038  
1 Smith  
PARRAMATTA NSW 2150

Attention: The Proper Officer

Notice Number SR-4851  
Reference Number SR-4851  
Date 30-04-2025

## Preliminary Investigation Notice

### Why is the EPA writing to you?

The Environment Protection Authority (EPA) reasonably suspects that relevant circumstances under s 90B of the Protection of the Environment Operations Act 1997 (Act) may exist or have existed at Coogee Beach, Maroubra Beach, Malabar Beach, Kurnell, Kiama, Dee Why Beach, Palm Beach and Manly Beach (together, 'the Premises'), namely a pollution incident where ball-shaped objects apparently composed of debris (debris balls) washed up on beaches around Sydney between October 2024 and January 2025. The debris balls were sampled and analysed to investigate their physical and chemical characteristics.

The debris balls included a mix of hair, fatty acids likely from waste cooking oil, faecal material and hydrocarbons, indicating that a land-based sewage treatment system receiving a mix of grey water, blackwater and trade waste is the most likely source. Sydney Water operates 23 sewage treatment systems across Sydney and the Illawarra and provides wastewater services to the vast majority of the area's population.

The EPA is issuing you with this preliminary investigation notice to facilitate the EPA carrying out a preliminary investigation to determine the nature and extent of the relevant circumstances, including the nature and extent of any harm or risk of harm to human health or the environment arising from the relevant circumstances. Further information is set out in the notice below.

### What are you required to do?

Please read this notice carefully and carry out the preliminary investigation directions specified in this notice by the date required. If you have any queries about this matter, please contact Julian Thompson on Ph: 02 9995 5000.

## BACKGROUND

Phone 131 555  
Phone 02 9995 5555  
(from outside NSW)

TTY 133 677, then  
ask for 131 155

Locked Bag 5022,  
PARRAMATTA  
NSW 2124

6 Parramatta Square  
10 Darcy Street  
Parramatta NSW 2150

[info@epa.nsw.gov.au](mailto:info@epa.nsw.gov.au)  
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- A. The EPA has responsibility for the administration and enforcement of the Act.
- B. Sydney Water Corporation holds Environment Protection Licences under the Act for 23 sewage treatment systems in Greater Sydney and the Illawarra region in NSW.
- C. On 15 October 2024, black and grey oily debris balls washed up on beaches in the Randwick and Waverley local government areas.
- D. Randwick City Council temporarily closed Coogee, Clovelly, North Maroubra, Malabar Beaches and Gordons Bay while a clean-up of the debris balls was carried out.
- E. Similar debris balls were found at and collected from beaches at Kurnell and Kiama in December 2024, and beaches at Bondi, Maroubra, Malabar, Manly, Dee Why and Palm Beach in January 2025.
- F. The EPA is investigating the potential source of the debris balls found on Coogee Beach, Maroubra Beach, Malabar Beach, Kurnell, Kiama, Dee Why Beach, Palm Beach and Manly Beach (the Premises). This has involved sampling and analysis of the debris balls to investigate their physical characteristics and composition, inspections of Sydney's major sewage treatment plants, and visiting cruise ships to examine their wastewater treatment systems and collect samples for comparison.

## Environment Protection Law

- G. Section 90B of the Act applies if the EPA reasonably suspects that the relevant circumstances may exist or have existed at premises.
- H. Section 90B(2) of the Act enables the EPA to issue a written notice, being a Preliminary Investigation Notice, to facilitate the EPA carrying out a preliminary investigation to determine whether the relevant circumstances exist.
- I. Section 90B(3) provides that a Preliminary Investigation Notice may be issued to:
  - (a) an owner or occupier of the premises, or
  - (b) a person who has caused or contributed, to any extent, the relevant circumstances which are the subject of the Notice.
- J. The Act defines:

**occupier of premises** as the person who has management or control of the premises (Sch 6 Dictionary)

**premises** as including:

- (a) a building or structure, or
- (b) land or a place (whether enclosed or built on or not), or
- (c) a mobile plant, vehicle, vessel or aircraft (Sch 6 Dictionary).

**relevant circumstances** as any of the following circumstances that may exist or have existed at premises including:

- (a) circumstances that may pose a potential risk of harm to human health or the environment from —
  - (i) a substance, or
  - (ii) the deposit of waste or substances suspected of being waste,
- (b) a pollution incident (s 90B(1)).

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**pollution incident** as an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise (Sch 6 Dictionary).

**pollution** as including **water pollution** (Sch 6 Dictionary).

**water pollution** or **pollution of waters** as —

(a) placing in or on, or otherwise introducing into or onto, waters (whether through an act or omission) any matter, whether solid, liquid or gaseous, so that the physical, chemical or biological condition of the waters is changed, or

(b) placing in or on, or otherwise introducing into or onto, the waters (whether through an act or omission) any refuse, litter, debris or other matter, whether solid or liquid or gaseous, so that the change in the condition of the waters or the refuse, litter, debris or other matter, either alone or together with any other refuse, litter, debris or matter present in the waters makes, or is likely to make, the waters unclean, noxious, poisonous or impure, detrimental to the health, safety, welfare or property of persons, undrinkable for farm animals, poisonous or harmful to aquatic life, animals, birds or fish in or around the waters or unsuitable for use in irrigation, or obstructs or interferes with, or is likely to obstruct or interfere with persons in the exercise or enjoyment of any right in relation to the waters, or

(c) placing in or on, or otherwise introducing into or onto, the waters (whether through an act or omission) any matter, whether solid, liquid or gaseous, that is of a prescribed nature, description or class or that does not comply with any standard prescribed in respect of that matter,

and, without affecting the generality of the foregoing, includes—

(d) placing any matter (whether solid, liquid or gaseous) in a position where—

(i) it falls, descends, is washed, is blown or percolates, or

(ii) it is likely to fall, descend, be washed, be blown or percolate,

into any waters, onto the dry bed of any waters, or into any drain, channel or gutter used or designed to receive or pass rainwater, floodwater or any water that is not polluted, or

(e) placing any such matter on the dry bed of any waters, or in any drain, channel or gutter used or designed to receive or pass rainwater, floodwater or any water that is not polluted,

if the matter would, had it been placed in any waters, have polluted or have been likely to pollute those waters (Sch 6 Dictionary).

K. The EPA reasonably suspects that relevant circumstances may exist or have existed at the Premises, namely:

a. The EPA received the results of the sampling and analysis of the debris balls, which confirmed that they were composed of a mix of hair and other debris, fatty acids indicative of waste cooking oil, faecal material and hydrocarbons. This indicates that a land-based sewage treatment system receiving a mix of grey water, blackwater and trade waste is most likely the source of the debris balls.

b. The EPA observed that most of the debris balls washed up on Sydney beaches, with the largest amounts of the debris balls washing up near Coogee Beach and lesser amounts making landfall further away via ocean drift. This indicates that the source of the debris balls is most likely near Sydney's Eastern Suburbs.

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- c. Several samples of debris balls found on beaches were analysed for faecal indicator bacteria (*Escherichia coli*, enterococci and faecal coliforms), with these indicator bacteria being detected in all samples. This indicates that the debris balls had been either been in contact with faeces or contained faeces, suggesting that the debris balls had originated from sewage treatment systems.
- d. The sampling results received by the EPA confirmed that all the debris ball samples contained substantial concentrations of fatty acids, ranging from 9% to 37% weight per weight (w/w). These fatty acids likely originate from waste fats and oils draining from kitchens to sewers.
- e. Palmitic acid was the dominant fatty acid in the sampled debris balls, consistent with the composition of fat, oil and grease (FOG) deposits and balls that accumulate in sewerage systems per Keener KM, Ducoste JJ, Holt LM., 2008, Properties influencing fat, oil, and grease deposit formation, **Water Environment Research, 80(12)**; Rizkianto, F., Oshita, K., Takaoka, M., 2024, Valorization of fat balls and primary scum from wastewater treatment: a promising renewable lipid feedstock for biodiesel production. **Water Science and Technology, 89 (8)**; Williams, J.B., Clarkson, C., Mant, C., Drinkwater, A., May, E., 2012, Fat, oil and grease deposits in sewers: Characterisation of deposits and formation mechanisms, **Water Research, 46 (19)**).
- f. The greater predominance of palmitic acid in the sampled debris balls likely relates to processes of FOG deposit formation and aging and weathering in sewerage systems and the environment, with higher ratios of palmitic to oleic acid promoting the accumulation of deposits (Yusuf, H.H., Roddick, F., Jegatheesan, V., Gao, L., Pramanik, B.K., 2023, Tackling fat, oil, and grease (FOG) build-up in sewers: Insights into deposit formation and sustainable in-sewer management techniques, **Science of the Total Environment, 904**) and this ratio increasing with distance and time from source (Williams et al., 2012).
- g. The EPA considers that cruise ships are unlikely to be the source of the debris balls. Cruise ships have separate systems for management, treatment and disposal of grey water, sewage, cooking oils, and oily bilge water. The samples of wastewater taken and analysed from cruise ship waste cooking oil and food waste streams generally had higher proportions of oleic acid and linoleic acid than palmitic acid compared to the debris balls collected from the premises.
- L. The characteristics, composition and locations of the debris balls cause the EPA to reasonably suspect that:
- the relevant circumstances, being a pollution incident, may exist or have existed at the Premises;
  - Sydney Water Corporation's sewage treatment systems are the most likely source of the debris balls; and
  - a failure by Sydney Water Corporation to prevent release of the debris balls from its sewage treatment systems contributed to the pollution incident at the Premises.
- M. The debris balls entering the ocean and washing up onto the Premises between October 2024 and January 2025 indicate "water pollution" as defined in the Act and meet the definition of a "pollution incident" in the Act.
- N. Section 90D(1) of the Act provides that a Preliminary Investigation Notice may require the person to whom it is issued to assist the EPA to:
- investigate whether the relevant circumstances exist, and
  - if the relevant circumstances exist – determine the nature and extent of the relevant circumstances, including the nature and extent of any harm or risk of harm to human health or the environment arising from the relevant circumstances.

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- O. The EPA is directing Sydney Water Corporation to carry out a preliminary investigation because the EPA reasonably suspects Sydney Water Corporation of contributing to the relevant circumstances, being the pollution incident that is the subject of this notice.

## DIRECTION TO CARRY OUT PRELIMINARY INVESTIGATION

1. In accordance with s 90D of the Act, the EPA directs Sydney Water Corporation to carry out the following:

a) Oceanographic modelling

Sydney Water must provide a report from an appropriately qualified and experienced independent specialist in oceanographic modelling to use appropriate modelling techniques to model the physical movement and dispersion of the debris balls based upon wind driven ocean surface currents around the times that debris balls were detected on beaches (between October 2024 and January 2025) to determine potential origin (discharge) points. This assessment should consider Sydney Water's three deepwater ocean outfall sewer systems (North Head (Northern Suburbs), Bondi, and Malabar (South-Western Suburbs) as a likely source of the debris balls washed up on NSW beaches.

Sydney Water must prepare a report detailing the conduct and results of this investigation and submit it to the EPA in writing by **30 May 2025**.

b) Undertake a sampling and analysis program

Sydney Water must provide the results of a sampling and analysis program focussed on sampling accumulations of fats, oil and grease from wastewater streams of the three deepwater ocean outfall sewer systems (North Head (Northern Suburbs), Bondi and Malabar (South-Western Suburbs)) to enable comparison with solid matrix measurements from debris balls collected at Coogee Beach, Sydney's Northern Beaches and from beaches within Botany Bay. The following pollutants: total petroleum hydrocarbons (TPHs, fractionated), oil and grease, faecal bacterial indicators (e. coli, faecal coliforms), human faecal-associated microbial source tracking marker genes (Bacteroides HF183, CrAssphage CPQ\_056, pepper mild mottle virus), nutrients and metals are to be assessed considering the potential age of material obtained. The reference parameter of moisture content and melting point of solids (for solid samples) must also be noted in the analysis report. The sampling and analysis program must include these listed pollutants and reference parameter but need not necessarily be limited to them. The wastewater streams sampled must include, but need not be limited to sedimentation tanks (bottom and top layers), fatty deposits on screens or pre-screens, and from the final discharge point immediately before discharge "behind the bulkhead sampling" at the deepwater ocean outfall plants (where safe and practicable).

Sydney Water must prepare a report detailing the conduct, sampling details and analysis of the results of this investigation, including copies of sampling documentation and laboratory analysis reports, and submit it to the EPA in writing by **13 June 2025**.

c) Assess deep ocean outfall systems

Sydney Water must provide the results of an investigation into whether its three deepwater ocean outfall sewage treatment systems (North Head (Northern Suburbs), Bondi and Malabar (South-Western Suburbs)) indicate that accumulation of fats, oils and grease are being discharged from those systems into the ocean, causing debris balls to form. Sydney Water must undertake the following assessments, however the assessments undertaken need not be limited to these: i) examine pressure changes and abnormalities at the plants before, during and after the period where debris balls washed up on beaches (October 2024 to January 2025) and prepare a report

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documenting this process and the outcomes of the assessment , and ii) inspect the deep ocean outfall diffuser outlets for their operation and asset condition (using a remotely operated vehicle or similar). Prepare a report of the deepwater ocean outfall diffuser inspections for the EPA. This report must include any video or photographic footage taken during the inspections. The measure of fats, oils or grease that are exiting the diffusers will be the licensed discharge point of the plant at the entry to the deepwater ocean outfalls.

Sydney Water must prepare a report detailing the conduct and results of these two investigations and submit it to the EPA in writing by **30 August 2025**.

## d) Assess sewerage networks

Sydney Water must provide the results of an investigation into the potential for sewerage network assets such as pumping stations and Emergency Relief Structures (ERS) in Sydney Water's three ocean outfall sewer systems (North Head, Bondi, and Malabar), to potentially release fats, oils and grease into the aquatic environment.

Sydney Water must prepare a report on the extent, conduct and results of this assessment and submit it to the EPA in writing by **30 June 2025**.

A handwritten signature in black ink, appearing to be 'J. Thompson'.

**Julian Thompson**  
**Manager Regional Operations**  
(by Delegation)

## WARNINGS AND INFORMATION ABOUT THIS PRELIMINARY INVESTIGATION NOTICE

- This notice is issued under section 90B(2) of the Act.
- It is an offence against the Act not to comply with a preliminary investigation notice.
- If this notice is issued to a corporation and the notice is not complied with by the date specified, the EPA may, under section 90E(2) of the Act, issue a supplementary preliminary investigation notice. A supplementary preliminary investigation notice can be issued to a current or former director or manager of the corporation, or a related body corporate, directing them to carry out, or ensure the carrying out of, the preliminary investigation specified in the supplementary notice.

## Penalty for not complying with this notice

- The maximum penalty that a court may impose for a corporation is \$2,000,000 and a further \$240,000 for each day the offence continues. The maximum penalty that a court may impose for an individual is \$500,000 and a further \$120,000 for each day the offence continues.

## When this notice begins to operate



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- This notice operates from the day the notice is given, unless a later date is specified in the notice.

## **Continuing obligation**

- Under section 319A of the Act, your obligation to comply with the requirements of this notice continues until the notice is complied with in full, even if the due date for compliance has passed.

## **Cost recovery from the person(s) who is issued another notice and contributed to the relevant circumstances**

If you carry out the requirements of this notice, you have a right to go to court to recover your costs, or part of your costs, from another person who:

- is issued an environment protection notice or recall notice under the Act, following the issue of this notice, in relation to the relevant circumstances the subject of this notice, and
- contributed to the relevant circumstances the subject of this notice.

These costs include costs incurred in complying with this notice and “other costs” you are required to pay, as set out below.

## **Other costs**

- The Act allows the EPA to recover from you reasonable costs and expenses it incurs in taking action or monitoring under this notice, ensuring the notice is complied with and associated matters.
- If you are required to pay these other costs and expenses you will later be sent a separate notice called a “Notice Requiring Payment of Reasonable Costs and Expenses – Preliminary Investigation Compliance Notice”.

## **Variation of this notice**

- The requirements of this notice may only be varied or revoked by written notice issued by the EPA.