

Teacher Resource Pack

Teacher
use only!

SEA LIFE Sydney Aquarium x Seabin Learning Pack, Answer Guide & Lesson Support

Refers to:

- Student Pack (Stages 2, 3 & 4 available on the SEA LIFE Sydney website)
- Impact Reports (2023 - 2025, and 2025 only) - View here:
(<https://www.visitsealife.com/sydney/conservation/local-conservation-projects/project-seabin/#sea-life-sydney-x-seabin-impact-report-2025-annual>)

Please Note:

This resource has been produced for teachers to use for FREE and for them to use within the attraction, in a classroom and online learning environments. This resource works best with an excursion to SEA LIFE Sydney Aquarium.

Go to our website <https://www.visitsealife.com/sydney/schools/> to find out more about school excursions!

Teacher Notes: Program Summary

The SEA LIFE Sydney Aquarium x Seabin partnership demonstrates how science, technology, and community engagement can reduce marine debris in Sydney Harbour.

This resource challenges students to interpret real data, evaluate sustainability solutions, and propose evidence-based strategies.

Key partnership achievements (use in class discussion):

2025 annual results:

- 664.09 kg marine litter captured
- 248.97 million litres filtered
- 525.84k plastic items captured
- 383.22k microplastics captured

3-year results (2023–2025):

- 2,568.85 kg captured
- 711.63 million litres filtered
- 1,407,774 plastic items captured
- 921,737 microplastics captured

Top litter breakdown:

- Microplastics: 65.47%
- Soft plastics: 15.89%
- Hard plastics: 6.72%
- Foam: 3.17%

What is a Seabin?

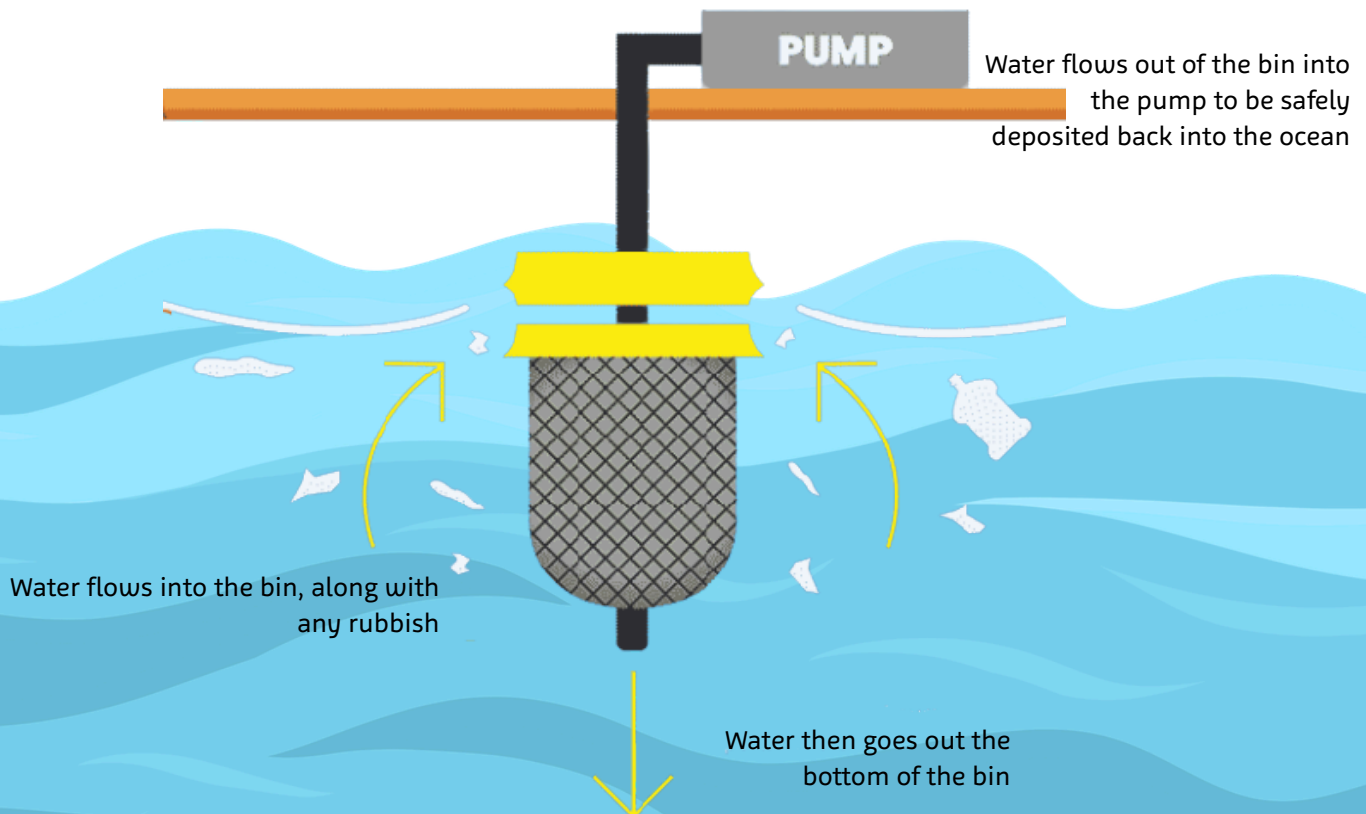
Seabin is like a “bin in the sea.” It floats in marinas and harbours and collects rubbish that is floating in the water.

It also filters the water to catch tiny pieces of plastic called microplastics.

In 2025, SEA LIFE Sydney Aquarium’s Seabin captured 664.09kg of marine litter in Sydney Harbour

How it works

The Seabin is situated at the water's surface and is plumbed into a shore-based water pump on the dock. The water is sucked into the Seabin, drawing all floating debris inside. The water then flows out through the bottom of the bin and up into the pump on the dock.



The Seabin is easy to empty and replace. It can work 24 hours a day, 7 days a week.

Teacher Answer Key - Stage 2

Worksheet One:

Q1 (Circle items): Correct: plastic bottle, plastic bag, fishing line, aluminium can, food wrapper, glass bottle, paper straw
(Apple core is biodegradable but could still be litter – teacher may allow as discussion.)

Q2 (What is marine litter?): Expected answer: Rubbish that ends up in the ocean/harbour/waterways.

Q3 (Two reasons plastic is dangerous):

1. Animals can eat it and choke or starve
2. Animals can get tangled and injured
3. Pollution damages habitats and water quality

Q4 (Food chain):

Any logical chain accepted. Plastic should be shown entering via small animals (fish/plankton) or direct ingestion.

Worksheet Two:

Q1: 664.09 kg

Q2: Filtering means cleaning water by removing waste and particles.

Q3: 525.84 thousand is bigger than 383.22 thousand

Q4: Microplastics can be eaten by marine animals and enter food chains.

Q5: Litter could float away, break down into microplastics, harm animals, or sink into habitats.

Worksheet Three:

Q1: Plastic items captured more than microplastics (525.84k vs 383.22k)

Q2: Sunlight, waves, and weather break plastic into smaller pieces.

Q3: Example sentence: "More plastic items were captured than microplastics."

Poster Task & Reflection

No fixed answers. Teachers assess poster inclusions as per instruction, and reflection depth & relevance.

Teacher Answer Key - Stage 3

Worksheet One:

Q1: Plastic items are larger visible pieces; microplastics are tiny pieces (<5mm).

Q2: They are small, widespread, easily swallowed, and difficult to filter once dispersed.

Q3 (4 sources):

1. degraded packaging
2. synthetic clothing fibres
3. fishing gear fragments
4. industrial pellets/nurdles
5. tyre dust
6. foam breakdown

Q4: Microplastics can be eaten by fish, move through the food chain, and harm animals and ecosystems.

Worksheet Two:

Q1: Microplastics (65.47%)

Q2: Soft plastics are lightweight, easily blown into drains/waterways, and used widely in packaging.

Q3: Unidentified plastic means it couldn't be clearly classified (too broken down).

Challenge: Suggests pollution is breaking down over time and that microplastic contamination is widespread and persistent.

Worksheet Three:

Table example answers:

- Streets/drains → wrappers → rain washes into stormwater
- Boats → fishing line → falls into harbour
- Beaches → bottles → blown into ocean
- Food packaging → takeaway containers → litter
- Clothing fibres → microfibres → washed into waterways via wastewater

Short response:

Likely easiest = packaging + school behaviour changes, because individuals control consumption and waste.

Teacher Answer Key - Stage 3

Worksheet Four:

3 benefits of Seabin:

1. captures floating litter before it spreads
2. collects data for research
3. prevents breakdown into microplastics
4. raises awareness through visible impact

2 limitations:

1. doesn't stop pollution at the source
2. cannot capture all microplastics everywhere
3. only works where installed and maintained
4. doesn't solve landfill/waste management issues

3 extra solutions:

1. bans/reductions in packaging
2. better stormwater filtration
3. education campaigns
4. improved recycling systems

Assessment Task

Students should cite stats such as:

1. 2,568.85 kg captured
2. 711.63 million litres filtered

High-grade answers discuss effectiveness + limitations.

Teacher Answer Key - Stage 4

Worksheet One:

Q1: Data shows large-scale and ongoing pollution; thousands of kilograms removed indicates significant pollution inflow.

Q2 (5 activities):

- littering
- boating and fishing
- tourism
- industrial waste
- stormwater runoff
- poor recycling systems
- construction debris

Q3: Pollution reduces biodiversity by harming habitats, poisoning food chains, and killing animals.

Q4: Humans may ingest microplastics through seafood; pollution impacts tourism and water safety.

Worksheet Two:

Q1: Different timeframes, different run times, different data collection methods, and extrapolation.

Q2: Extrapolated = estimated using sample data to predict a total.

Q3 (2 reasons estimates are needed):

- constant monitoring isn't always possible
- units may not run 24/7
- collecting every microplastic manually is impossible
- Q4 (2 weaknesses):
- may overestimate or underestimate
- depends on assumptions and sampling accuracy

Q5 (3 improvements):

1. consistent sampling schedules
2. automated sensors
3. standardised reporting methods
4. more units across more sites

Teacher Answer Key - Stage 4

Worksheet Three:

Q1: Microplastics are the largest category, indicating long-term breakdown pollution is a major threat.

Q2: Microplastics persist for long periods, spread widely, and enter food chains.

Q3 (3 strategies for soft plastics):

1. reduce single-use packaging
2. introduce container deposit schemes
3. improve bin access + enforcement
4. school/community education

Q4: Foam pollution often comes from packaging, takeaway containers, boating materials, and construction.

Worksheet Four:

No single ranking. Strong answers justify with logic such as:

- prevention beats cleanup
- policy changes reduce consumption
- filters reduce microfibres
- education builds long-term behaviour change

Assessment Task:

Must include at least two report stats such as:

- 2,568.85 kg litter captured
- 65.47% microplastics

High-quality proposals include:

- stormwater filtration
- policy + packaging redesign
- enforcement + education
- industry partnerships

Suggested Lesson Sequences

Stage 2 Suggested Flow

Lesson 1: Marine litter basics + Worksheet 1

Lesson 2: Seabin Data Detective + Worksheet 2

Lesson 3: Graphing activity + Poster task + Reflection

Excursion Link (recommended):

Bring learning to life with an excursion to SEA LIFE Sydney Aquarium, where students can explore marine ecosystems up close and deepen their understanding of ocean health, sustainability and conservation.

Stage 3 Suggested Flow

Lesson 1: Microplastics investigation + Worksheet 1

Lesson 2: Pollution breakdown pie chart + Worksheet 2

Lesson 3: Cause and effect mapping + Worksheet 3

Lesson 4: Assessment task prep + student report planning

Excursion Link (recommended):

Extend this unit with a visit to SEA LIFE Sydney Aquarium, allowing students to connect their data learning to real marine habitats and discover how conservation programs support Sydney Harbour and beyond.

Stage 4 Suggested Flow

Lesson 1: Environmental change analysis + Worksheet 1

Lesson 2: Data reliability + Worksheet 2

Lesson 3: Pollution type analysis + Worksheet 3

Lesson 4: Sustainability solutions ranking + Worksheet 4

Lesson 5: Policy proposal assessment task

Excursion Link (recommended):

For a real-world case study experience, schools are encouraged to visit SEA LIFE Sydney Aquarium, where students can explore conservation science in action and strengthen their understanding of environmental change and sustainability solutions.