Australian Government
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Australian Marine Parks

TANGAROA BLUE

AUSTRALIAN MARINE DEBRIS INITIATIVE

PUBLIC REPORT

MAY 2024 - MAY 2026

COCOS (KEELING) ISLANDS MARINE DEBRIS INITIATIVE

ACKNOWLEDGEMENT OF COUNTRY

Tangaroa Blue Foundation acknowledges First Nations peoples as the Traditional Owners and Custodians of Country across Australia, including the Land and Sea Country on which we live and work.

We pay our respects to their Elders past and present, and acknowledge their continuous relationship to this land and the ongoing cultures of Aboriginal and Torres Strait Islander peoples across Australia.

CONTENTS

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Greenshields J, Jones J, Washer E, Lavers JL, and Tait HL. 2026. Cocos (Keeling) Islands Marine Debris Initiative 2024-2026. Public report prepared by Tangaroa Blue Foundation for Australian Marine Parks. Dunsborough, WA.

Title page image: Volunteers at Old Jetty, West Island during the 2026 Marine Debris Voyage.
Image credit: Niamh Swingler

EXECUTIVE SUMMARY

The Cocos (Keeling) Islands Marine Debris Initiative (May 2024 – May 2026), delivered by Tangaroa Blue Foundation in partnership with the Cocos (Keeling) Islands community and Australian Marine Parks, has established the most comprehensive, locally informed understanding to date of marine debris pressures affecting the islands' coastal and marine environments.

Through a combination of structured monitoring, targeted clean-up activities, microplastics surveys and community engagement, the initiative has generated critical evidence to support the long-term management and conservation of the Cocos (Keeling) Islands Marine Park.

The Challenge

Located approximately 900 km from Indonesia, the Cocos (Keeling) Islands sit directly in the path of major regional ocean currents, including the Indonesian Throughflow. As a result, large volumes of anthropogenic debris, predominantly single-use plastics originating from across the Indo-Pacific region, accumulate on the islands' beaches, particularly during the winter monsoon season.

Most islands within the atoll are uninhabited and accessible only during limited tidal windows, creating significant logistical challenges for monitoring and clean-up activities. Combined with limited local waste management infrastructure, these conditions have historically constrained effective marine debris management and highlighted the need for a coordinated, community-based approach.

Key Achievements (2024–2026)

The initiative directly supported Australian Marine Parks' objectives to protect and conserve biodiversity and natural values within the Australian Marine Park Network, including the Cocos (Keeling) Islands Marine Park established in 2022. Working closely with the local community, partner organisations and Australian Marine Parks, Tangaroa Blue Foundation delivered a locally supported program that achieved the following outcomes:

- Comprehensive Data Generation
  Generated a robust dataset through a structured quarterly monitoring program, targeted clean-ups and microplastics surveys. The data has significantly improved understanding of marine debris pressures within the marine park, identified single-use plastics as a major contributor to marine debris (see page 6), and provides a strong evidence base for future management, conservation and policy responses.

- Enhanced Local Stewardship
  Strengthened local capacity through training, employment and direct participation in marine debris monitoring and removal activities. The initiative fostered greater community ownership and stewardship of the local marine environment while supporting the development of long-term conservation capability within the islands.

- Measurable Environmental Improvement
  Improved the condition of priority coastal sites through the repeated removal of marine debris, reducing local environmental impacts and contributing to healthier coastal and marine ecosystems.

PROJECT OUTCOMES

Strengthened Evidence Base

Improved understanding of marine debris pressures through the collection of locally relevant data and scientific evidence to inform marine park management and conservation decisions.

Community Capacity Building

Strengthened the skills, knowledge and confidence of local community members and organisations to support ongoing monitoring, conservation activities and marine park stewardship.

Meaningful Community Engagement

Fostered active community participation in protecting the atoll's coastal and marine environments through hands-on involvement in monitoring, clean-up and education activities.

Cleaner Coastal Environments

Improved the condition of priority coastal sites through repeated clean-ups and targeted marine debris removal.

Increased Environmental Awareness

Raised awareness and appreciation of the environmental values of the Cocos (Keeling) Islands among residents, project participants, visitors and online audiences.

Local Employment and Skills Development

Created local employment opportunities and supported the development of practical skills in environmental management, monitoring and conservation.

Image: Students from Cocos (Keeling) Islands District High School supported the project through beach clean-ups, monitoring and data collection.
Image Credit: Emma Washer

MAP LOCATION

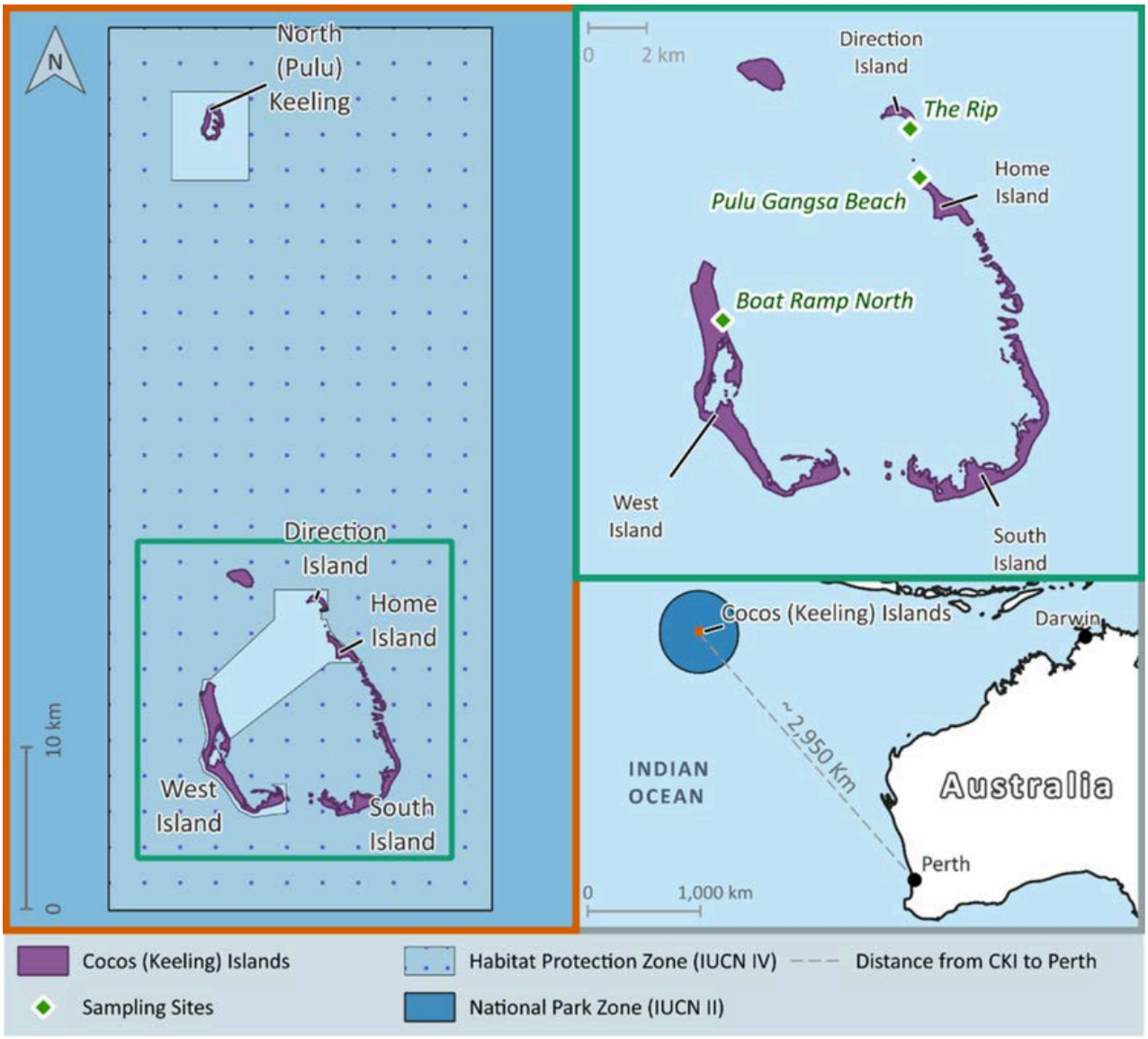

Figure 1. Map of the Cocos (Keeling) Islands showing the three long-term monitoring (transect) sites (green diamonds), and the location of the atoll in relation to Perth, Australia.

MONITORING METHODOLOGY

Beach debris accumulation is influenced by a complex combination of environmental and human factors, including wind speed and direction, tides, ocean currents, coastal use and nearby debris sources. Understanding the drivers of debris accumulation at specific locations is important for identifying local and seasonal risks to wildlife, coastal ecosystems, shipping, tourism and communities. It also helps ensure that clean-up activities, prevention measures and management responses are targeted where they can have the greatest impact.

Reliable monitoring is essential for understanding how marine debris accumulates and changes over time. By surveying beaches at regular intervals using a standardised methodology, trends can be identified and compared across seasons, years and management areas.

Three monitoring sites were established across the Cocos (Keeling) Islands: Pulu Gangsa Beach (Home Island), Boat Ramp North (West Island) and The Rip (Direction Island), shown as green diamonds in Figure 1. Monitoring was conducted quarterly from December 2024 to May 2026 using the Australian Marine Debris Initiative (AMDI) methodology. Surveys were undertaken across four fixed transects at each site, with all debris items recorded, counted and categorised according to standardised data collection protocols.

Regular monitoring provides a robust evidence base for marine debris management by:

01 Generating consistent, long-term datasets that support research, reporting and evidence-based decision-making.

02 Identifying changes in debris loads, composition and distribution across locations and seasons.

03 Informing prevention and mitigation strategies, and evaluating the effectiveness of management interventions.

04 Improving understanding of debris sources, transport pathways and accumulation hotspots.

05 Supporting action on marine debris at local, regional and global scales through the collection of comparable, high-quality data.

In addition to monitoring activities, community clean-ups were regularly undertaken at the three monitoring sites and other locations across the atoll to remove accumulated debris and improve environmental conditions. Further information on community clean-up activities is provided on page 28.

PROJECT HIGHLIGHTS

MAY 24 - MAY 26

19
COMMUNITY CLEAN-UPS

21
MONITORING SURVEYS

600
VOLUNTEERS PARTICIPATED

4,982
WEIGHT (KG) REMOVED

16+
KILOMETRES COVERED

1,129
VOLUNTEER HOURS

48,008
VOLUME (L) MARINE DEBRIS REMOVED

145,911
MARINE DEBRIS ITEMS RECORDED

MONITORING SUMMARY

During the monitoring events between December 2024 and May 2026, a total of 105,851 items weighing 1,718.85 kg were removed from the Cocos (Keeling) Islands and recorded in the AMDI Database (Table 1). The most common 'problematic' debris items were consistent across sites, with the three most frequently encountered items being:

1. Hard plastic remnants (i.e. fragments of larger unknown items)
2. Plastic straws, confection sticks, cups, plates & cutlery
3. Plastic lids and bottle caps

	DEC 2024 - MAY 2026		Most common items recovered (top 3)		
Beach	**Item Count**	**Weight (kg)**	**1st**	**2nd**	**3rd**
Pulu Gangsa Beach	84,126	1,187.21	Hard plastic remnants	Plastic straws, confection sticks, cups, plates & cutlery	Plastic lids & bottle caps
Boat Ramp North	18,104	491.50	Hard plastic remnants	Plastic lids & bottle caps	Plastic straws, confection sticks, cups, plates & cutlery
The Rip	3,621	40.15	Hard plastic remnants	Plastic lids & bottle caps	Plastic straws, confection sticks, cups, plates & cutlery
Total	**105,851**	**1,718.85**	**Hard plastic remnants**	**Plastic straws, confection sticks, cups, plates & cutlery**	**Plastic lids & bottle caps**

Table 1. Item count and weight (kg) of macro-debris items (>5 mm) removed and entered into the AMDI Database during monitoring (general area and transects) at each of the three beaches on the Cocos (Keeling) Islands during December 2024 - May 2026. The top three most commonly encountered items are also reported.

MATERIAL COMPOSITION

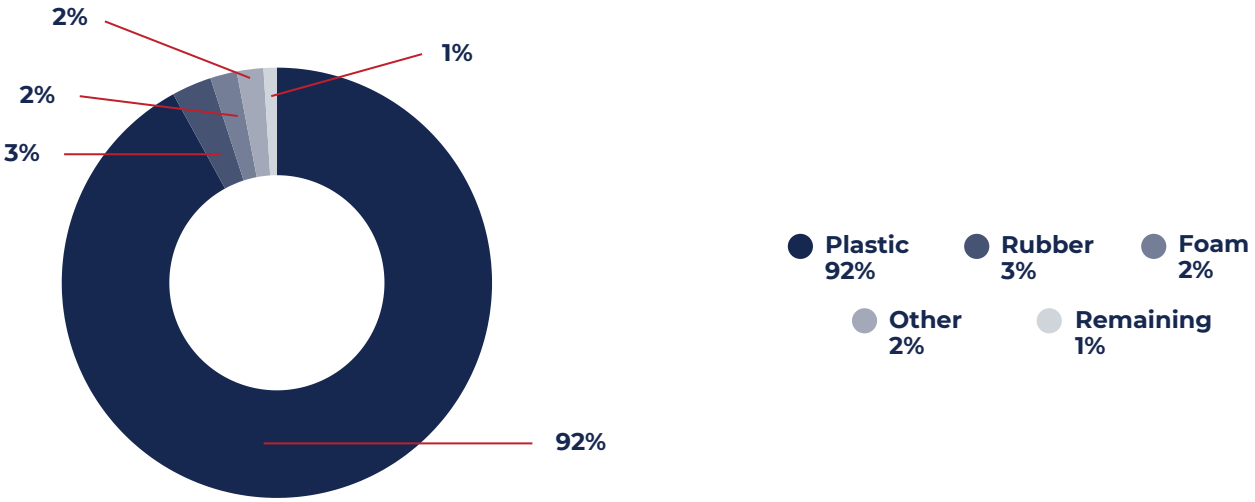

Figure 2. Material breakdown summary (transects & general area) for all three monitoring sites (combined) at the Cocos (Keeling) Islands, December 2024 - May 2026. 'Other' category encompasses natural and mixed material items; 'Remaining' category combines categories not otherwise included (wood, paper & cardboard, metal, glass & ceramic, fibre & cloth).

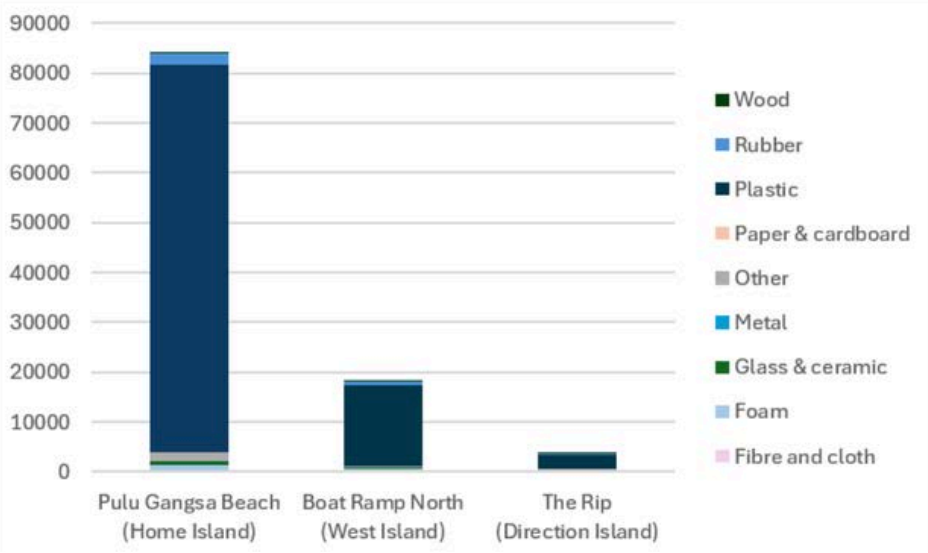

Figure 3. Material breakdown per site (transects & general area) for monitoring sites at Cocos (Keeling) Islands, December 2024 - May 2026.

MONITORING TRENDS

Using standardised monitoring data from transect study areas, comparisons can be made between the three monitoring sites on Cocos (Keeling) Islands. Figure 4 shows that marine debris densities varied strongly between the three monitoring locations. Pulu Gangsa Beach on Home Island recorded the highest debris densities throughout the monitoring period, ranging from 3.92 items/m² in June 2025 to 33.25 items/m² in December 2025. In contrast, densities were much lower at Boat Ramp North on West Island (0.22 - 1.66 items/m²) and The Rip on Direction Island (0.07 - 0.87 items/m²).

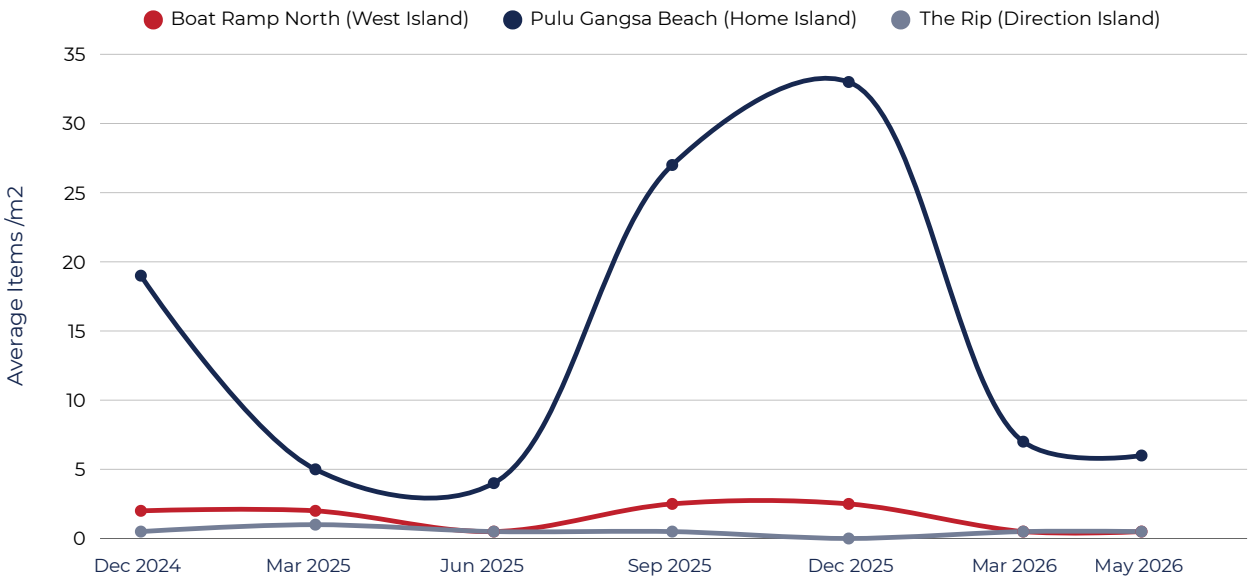

Figure 4. Average density (items/m2) of items found within transects at the three monitoring sites on Home, West & Direction Islands.

Image: The Pulu Gangsa Beach AMDI monitoring site. Image Credit: Sky Land Sea Imagery

MONITORING TRENDS

Seasonal Analysis:

At the Cocos (Keeling) Islands, the dry season typically occurs from May to October, while the wet season occurs from November to April. The dry season is generally associated with more persistent south-easterly trade winds, whereas the wet season is typically more humid and influenced by more variable weather conditions. As the wet season approached, the average debris density increased. This was most pronounced at Pulu Gangsa Beach, where densities rose sharply from 3.92 to 26.23 items/m^2 in September 2025, towards the end of the dry season, to 33.25 items/m^2 in December 2025, at the start of the wet season. These differences are influenced by various factors, including seasonal winds, currents, wave exposure and beach orientation.

Pulu Gangsa Beach is an exposed, east-facing site and is therefore more likely to intercept offshore floating debris transported by south-easterly trade winds. Boat Ramp North is also east-facing but is more sheltered within the atoll, while The Rip is a sheltered, west-facing site (see Figure 1). These differences in exposure likely contribute to the substantially higher debris densities recorded at Pulu Gangsa Beach compared with the other monitored locations.

While debris density peaked in December 2025, average weight (kg/m2) peaked earlier, in September 2025 (Figure 5). This signifies differences in the type of debris found between monitoring quarters. For example, at Pulu Gangsa Beach, 19 plastic bottles, drums, jerrycans and buckets over 4 litres were found in September 2025, while only one was found in December 2025. Similarly, 26 large rope items over 1 metre were found in September, while only 6 were found in December. Variances in large items such as these explain the different timeline peaks in debris density and weight.

Image: The Pulu Gangsa Beach AMDI monitoring site. Image Credit: Sky Land Sea Imagery

MONITORING TRENDS

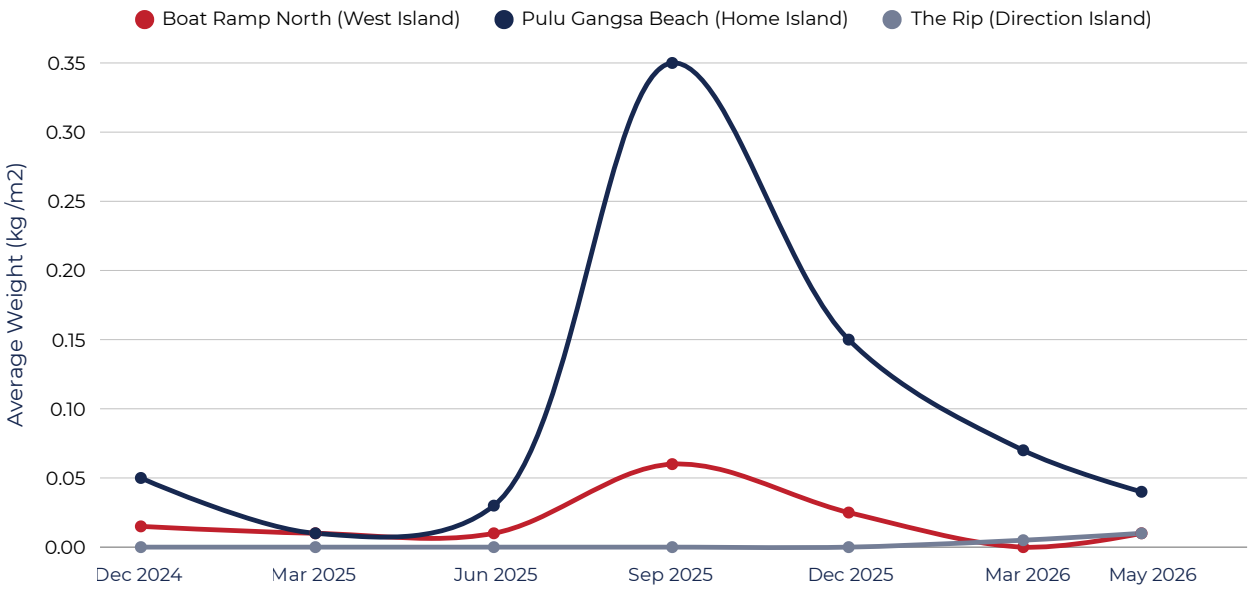

Figure 5. Average weight (kg/m2) of items found within transects at the three monitoring sites on Home, West & Direction Islands.

Image: All marine debris items are separated and counted for inclusion in the AMDI Database. Image Credit: Emma Washer

PULU GANGSA BEACH

HOME ISLAND

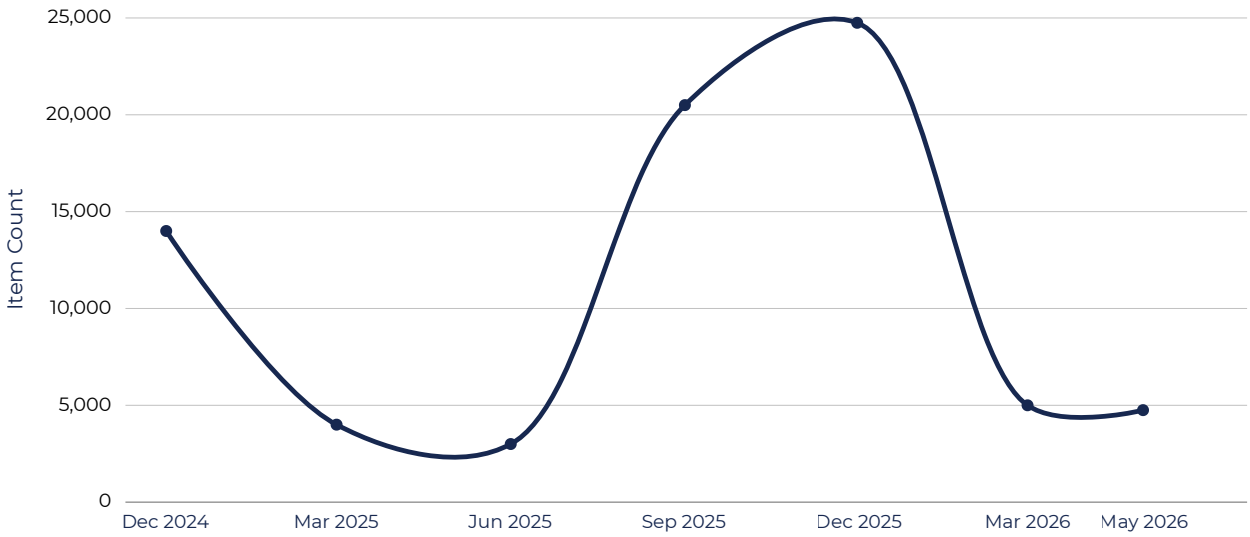

Figure 6. Combined item counts for transects per quarterly monitoring event for Pulu Gangsa Beach (Home Island), December 2024 - May 2026.

518
WEIGHT (KG) REMOVED

3,298
VOLUME (L) MARINE DEBRIS REMOVED

74,626
MARINE DEBRIS ITEMS REMOVED

Image: CKI District High School students and staff at the Pulu Gangsa Beach monitoring clean-up in December 2025. Image Credit: Emma Washer

PULU GANGSA BEACH

HOME ISLAND

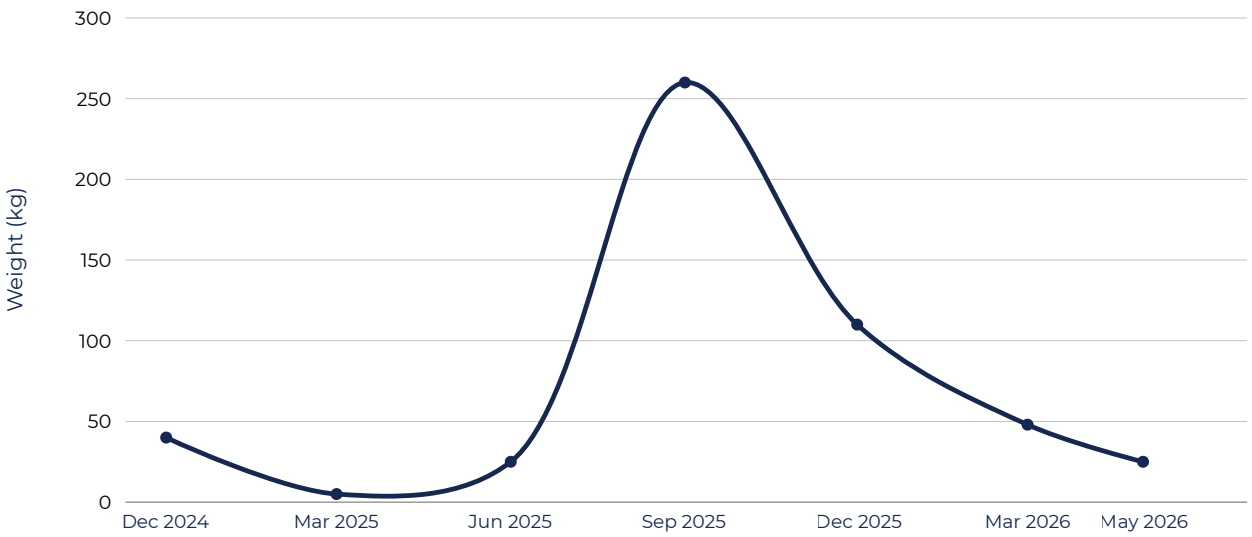

Figure 7. Combined weight (kg) for transects per quarterly monitoring event for Pulu Gangsa Beach (Home Island), December 2024 - May 2026.

Image: Pulu Gangsa Beach. Image Credit: Sky Land Sea Imagery

PULU GANGSA BEACH

HOME ISLAND

Item Name	Item Total
Hard plastic remnants	29,520
Plastic straws, confection sticks, cups, plates & cutlery	14,454
Plastic lids and bottle caps, pump spray, flow restrictor & similar	8,084
Plastic food packaging (wrappers, packets, containers)	5,038
Soft plastic film remnants	4,285
Synthetic rope & net scraps remnants less than 1 metre	1,510
Sanitary (tissues, nappies, condoms, cotton buds)	1,294
Personal care & pharmaceutical packaging	1,067
Plastic toys, party poppers, ribbons, clips & similar	979
Foam insulation & packaging (whole and remnants)	977

Table 2. Top 10 items found in monitoring transects at Pulu Gangsa Beach (Home Island), December 2024 - May 2026.

Image: A FAD washed up on Pulu Gangsa Beach. Image Credit: Sky Land Sea Imagery

BOAT RAMP NORTH

WEST ISLAND

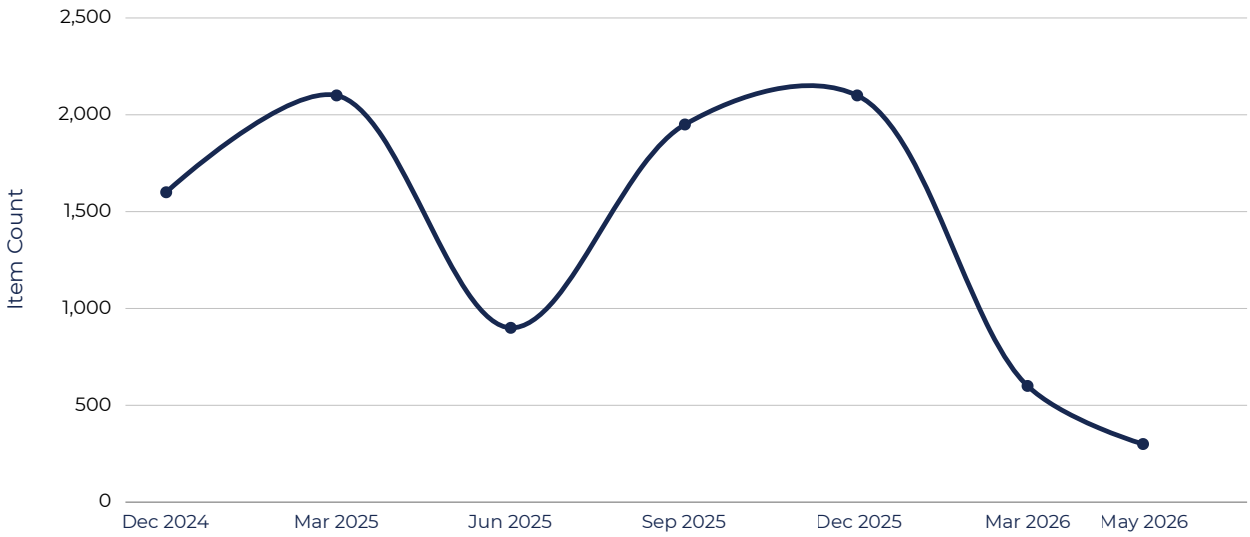

Figure 8. Combined item counts for transects per quarterly monitoring event for Boat Ramp North (West Island), December 2024 - May 2026.

160	1,370	9,679
WEIGHT (KG) REMOVED	VOLUME (L) MARINE DEBRIS REMOVED	MARINE DEBRIS ITEMS REMOVED

Image: Monitoring at Boat Ramp North, West Island with students from Cocos (Keeling) Islands District High School. Image Credit: Emma Washer

BOAT RAMP NORTH

WEST ISLAND

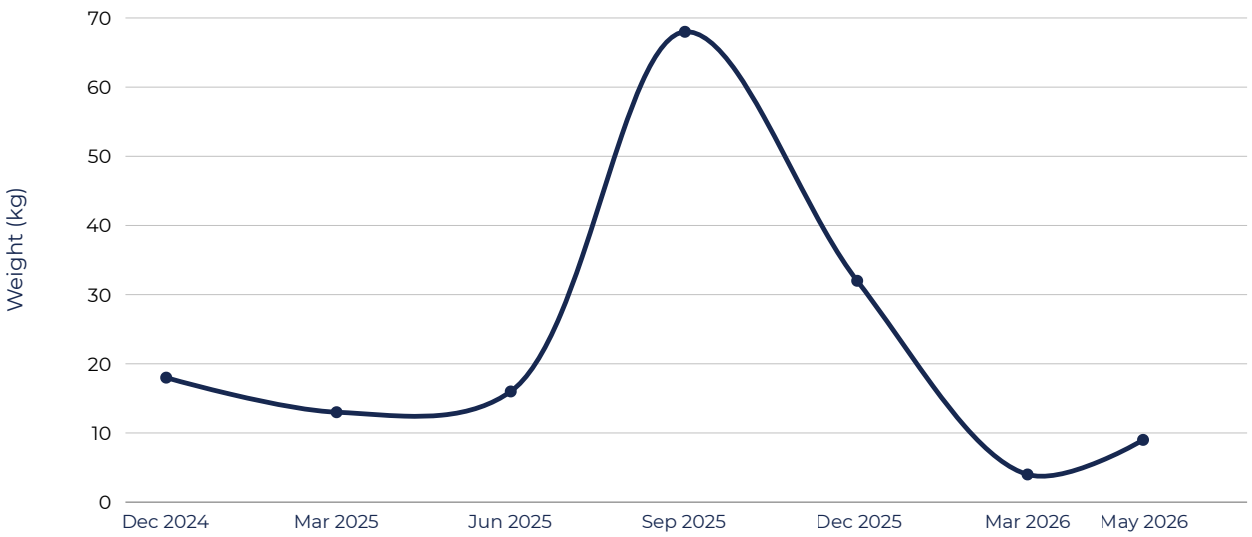

Figure 9. Combined weight (kg) for transects per quarterly monitoring event for Boat Ramp North (West Island), December 2024 - May 2026.

Image: AMDI monitoring at Boat Ramp North on West Island in December 2025. Image Credit: Emma Washer

BOAT RAMP NORTH

WEST ISLAND

Item Name	Item Total
Hard plastic remnants	2,590
Plastic straws, confection sticks, cups, plates & cutlery	1,430
Plastic lids and bottle caps, pump spray, flow restrictor & similar	1,367
Plastic food packaging (wrappers, packets, containers)	1,204
Soft plastic film remnants	461
Plastic drink bottles (water, juice, milk, soft drink)	363
Personal care & pharmaceutical packaging	237
Synthetic rope & net scraps remnants less than 1 metre	225
Plastic toys, party poppers, ribbons, clips & similar	211
Foam insulation & packaging (whole and remnants)	184

Table 3. Top 10 items found in monitoring transects at Boat Ramp North (West Island), December 2024 - May 2026.

Image: AMDI data collection. Image Credit: Niamh Swingler

THE RIP

DIRECTION ISLAND

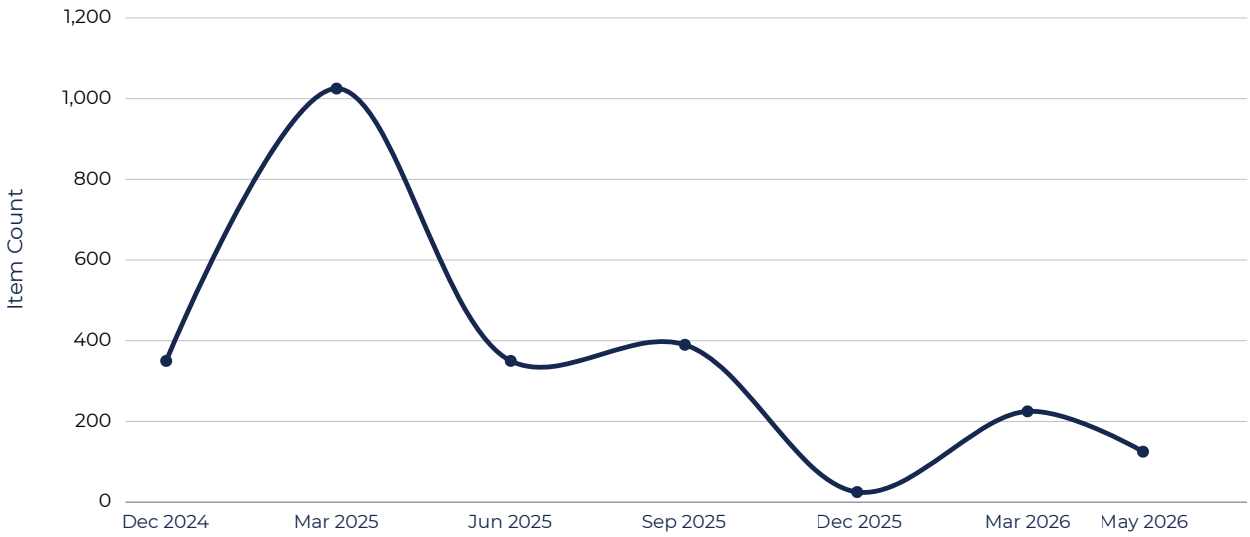

Figure 10. Combined item counts for transects per quarterly monitoring event for The Rip (Direction Island), December 2024 - May 2026.

13.75
WEIGHT (KG) REMOVED

339.5
VOLUME (L) MARINE DEBRIS REMOVED

2,521
MARINE DEBRIS ITEMS REMOVED

Image: Volunteers arriving at Direction Island during the 2026 Marine Debris Voyage. Image Credit: Niamh Swingler

THE RIP

DIRECTION ISLAND

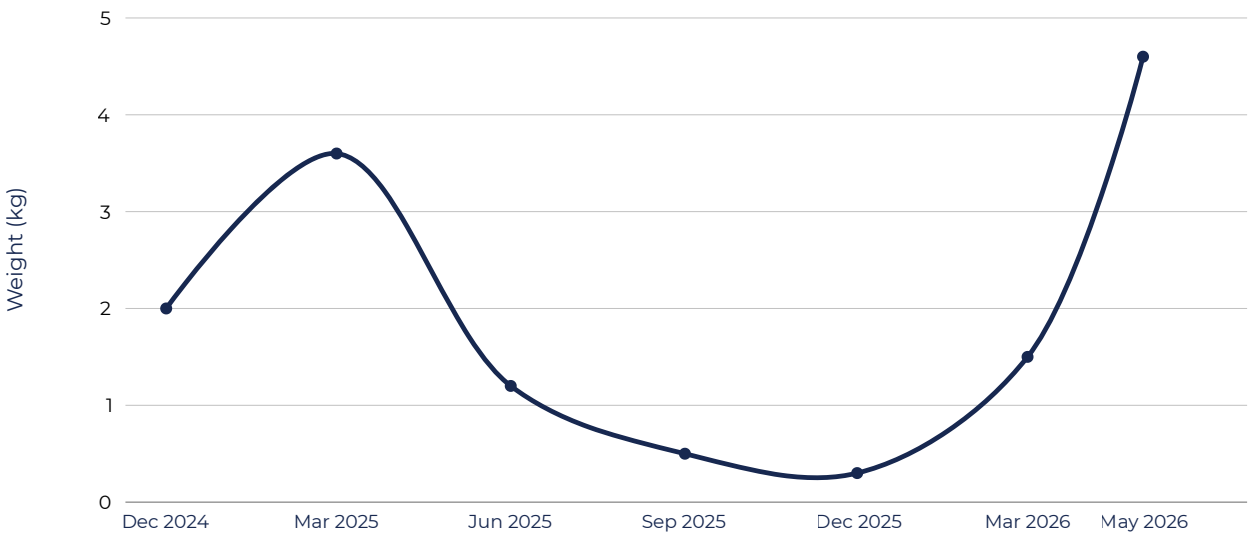

Figure 11. Combined weight (kg) for transects per quarterly monitoring event for The Rip (Direction Island), December 2024 - May 2026.

Image: AMDI monitoring at The Rip on Direction Island in December 2025. Image Credit: Emma Washer

THE RIP
DIRECTION ISLAND

Item Name	Item Total
Hard plastic remnants	1,070
Plastic lids and bottle caps, pump spray, flow restrictor & similar	185
Plastic straws, confection sticks, cups, plates & cutlery	178
Foam insulation & packaging (whole and remnants)	172
Glass or ceramic broken	110
Foam and polystyrene cups, single-use food packs & trays	88
Rubber remnants	78
Soft plastic film remnants	72
Plastic food packaging (wrappers, packets, containers)	66
Plastic toys, party poppers, ribbons, clips & similar	64

Table 4. Top 10 items found in monitoring transects at The Rip (Direction Island), December 2024 - May 2026.

Image: Marine debris recovered from Direction Island. Image Credit: Niamh Swingler

In May 2026, a research article titled *"Single-use plastics as the primary source of plastic pollution on a remote island in Western Australia"* was submitted for publication (in review). In this article, the Tangaroa Blue Foundation team used 18 months of monitoring data from the Cocos (Keeling) Islands (December 2024 - March 2026) to investigate a) the proportion of debris that is comprised of single-use plastics (SUPs), and b) identify whether these items are likely to have originated locally on Cocos (Keeling) Islands, or washed in from a distant country.

In total, 82,284 items were recorded within monitoring transects established by Tangaroa Blue Foundation on Direction, Home and West Islands (Figure 12). Of the total debris items collected, 36,120 (43.9%) were classified as single-use plastics. Broader AMDI item categories were expanded into sub-categories to highlight specific SUPs. The ten most common SUP items are listed in Table 5 and Figure 12, with plastic drinking straws and lids accounting for 59.4% of all items collected.

Item sub-category	Count	%
Straws	12,376	34.3
Drink bottle lids	9,076	25.1
Food packaging	3,815	10.6
Single-serve water (drink) cups (including identifiable remnants)	1,989	5.5
Cutlery	1,896	5.2
Cotton bud sticks	1,383	3.8
Personal care and pharmaceutical packaging (e.g., deodorant)	1,248	3.8
Confectionary sticks	1,095	3
Drink bottles (e.g., milk, tea, water and soft drink)	1,366	2.9
Stationary (e.g., pens and lids)	540	1.6

Table 5. The ten most common single-use plastics found in monitoring transects surveyed on the Cocos (Keeling) Islands during 2024 - 2026. % = proportion of total debris, Count = total number of items collected across all transects and in all years.

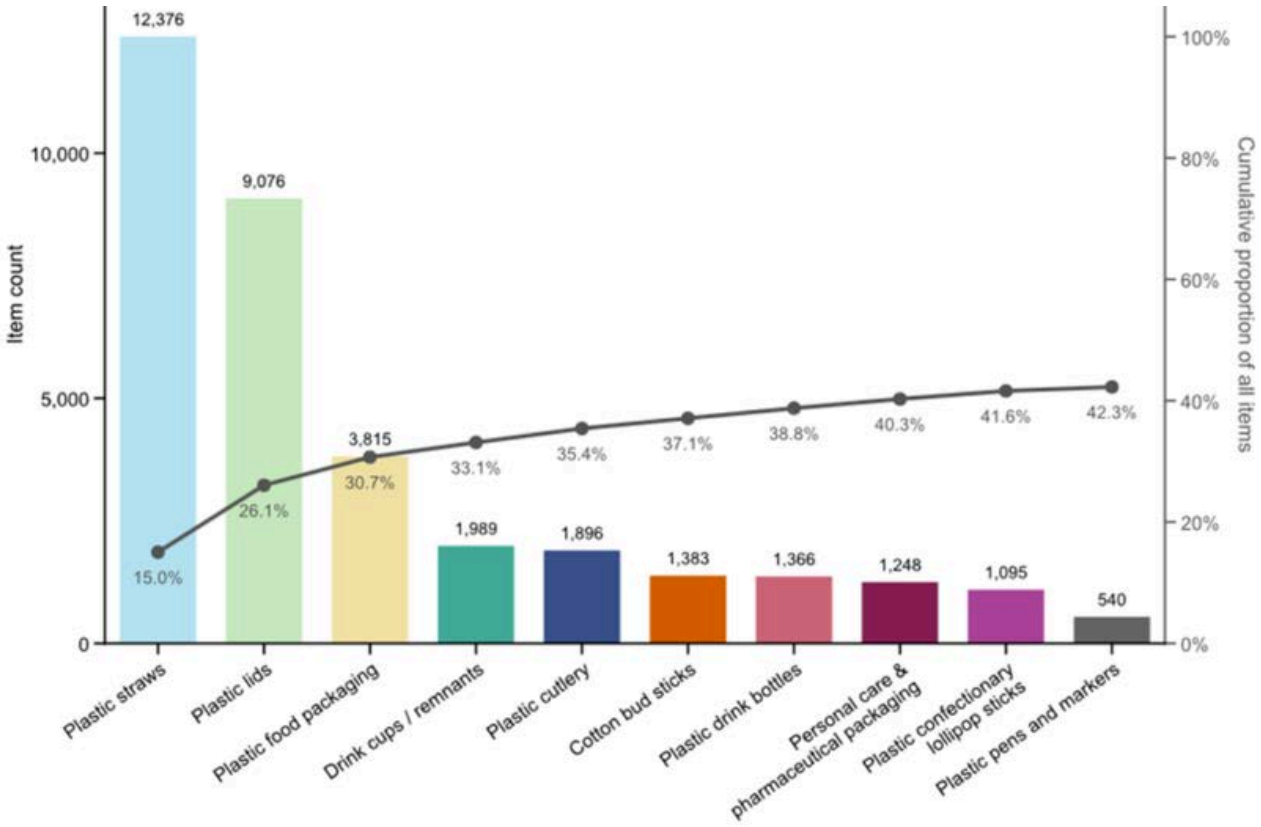

Figure 12. The ten most common single-use plastic (SUP) items recorded across monitoring transects on Direction, Home and West Islands during 2024 - 2026. Bars show item counts for the ten SUP subcategories (n = 36,120); the line indicates the cumulative proportion relative to the total number of items found (n = 82,284).

Seventeen (85%) of the 20 most common brands found on the Cocos (Keeling) Islands' beaches during monitoring were manufactured exclusively in Southeast Asia and not available for sale in the local shops on Home and West Islands (Figure 13). Only one brand (ABC; n = 24 items, 1.6%) was available for sale in plastic bottles in the shop on West Island (Figure 13).

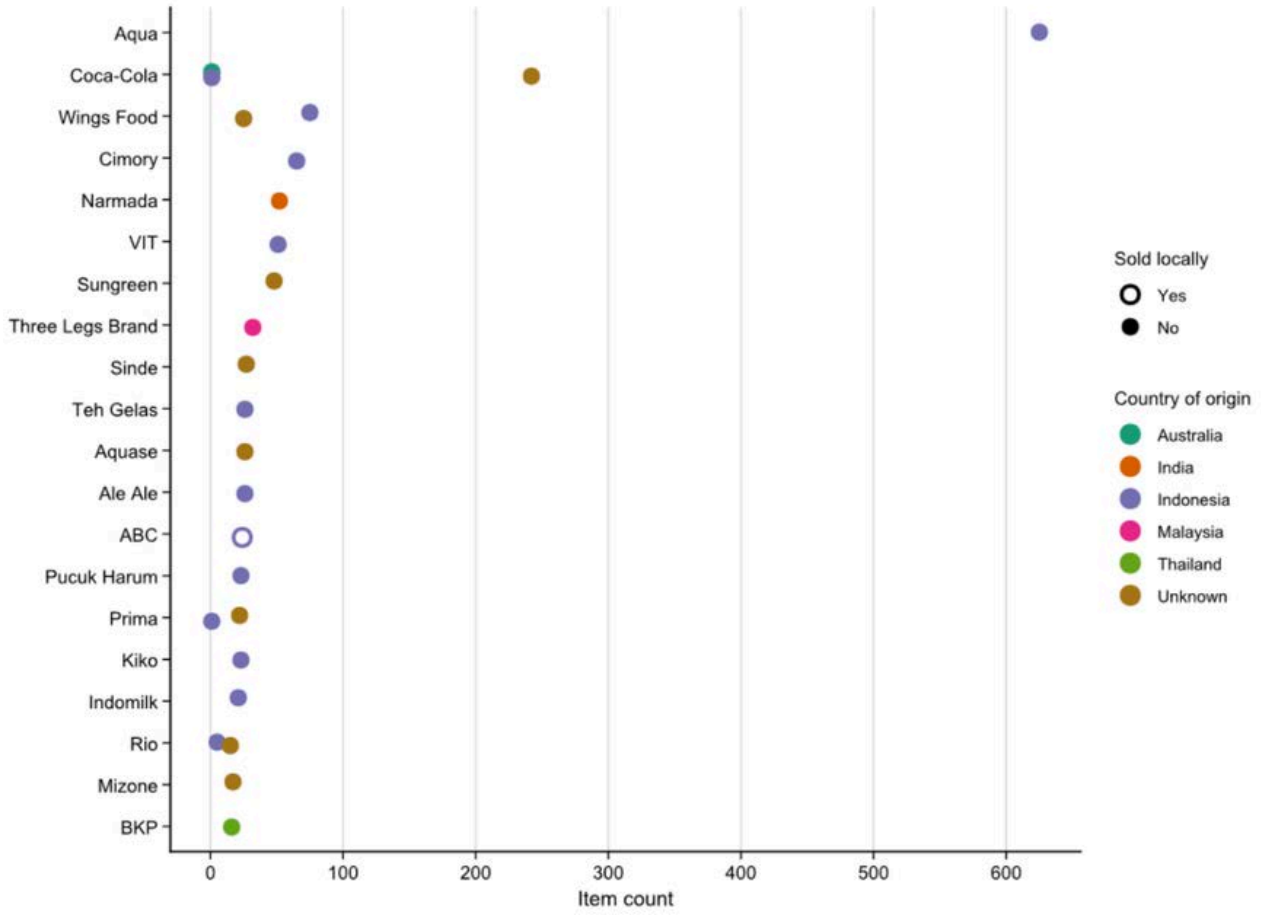

Figure 13. The provenance of the 20 most common single-use plastic (SUP) brands based on items collected from transects on the Cocos (Keeling) Islands during 2024 - 2026. Interviews with the shop owners on Home and West Islands indicate the vast majority of items found on the beaches are not sold locally.

Conclusions from the Research

How we monitor matters: Marine debris is a significant and ongoing environmental challenge facing the ecology, economy and natural history of Cocos (Keeling) Islands. The robust monitoring data collected for the project was only possible due to substantial community support and rigorous training and methodology. This is particularly important in remote locations where monitoring and removal of debris may be costly and logistically prohibitive. This demonstrates the critical role and benefits of training community scientists in monitoring global change, including rising plastic pollution.

Policy implications: Of the ten most common single-use plastics found on Cocos (Keeling) Islands' beaches, Western Australian legislation currently prohibits the sale of four items: straws, drink cups, cutlery and cotton bud sticks. Together, these four banned items account for 48.8% of the total SUPs collected.

Further analysis of beverage containers indicates that the Indonesian beverage brands Aqua, Vit and Mizone (Figure 13) account for 46.5% of all identifiable branded items. Many of the parent companies responsible for these detected brands have established sustainability policies; for example, Danone, the parent company of the aforementioned brands, is a signatory of the Global Commitment on Plastics. Because debris loads from foreign countries and offshore activities impact the Cocos (Keeling) Islands at such high levels, there is a critical need for robust, enforceable international framework developments, such as the Global Plastics Treaty, to reinforce regional legislation and voluntary producer commitments.

Image: Marine debris on Direction Island. Image Credit: Niamh Swingler

AUSMAP

Microplastics Report

As part of the Indian Ocean Territories Marine Debris Initiative, the Australian Microplastic Assessment Project (AUSMAP) supported microplastics (MPs) monitoring on the Cocos (Keeling) Islands between 2023 and 2026. The project was delivered in collaboration with Tangaroa Blue Foundation, with funding provided through the Our Marine Parks Grants and Indian Ocean Territories Grants from the Australian Government

The monitoring focused primarily on Pulu Gangsa Beach on Home Island, with an additional baseline survey undertaken on West Island during the initial AUSMAP training workshop in August 2023. The purpose of the monitoring was to establish baseline information, assess changes in microplastic loads over time, identify seasonal accumulation patterns, and characterise the dominant types of microplastics present on Cocos (Keeling) Islands shorelines.

Image: AUSMAP sampling quadrat on Home Island. Image Credit: Emma Washer

AUSMAP

Methodology

Beach sediment samples were collected along the recent high tide line using the standardised AUSMAP methodology. Samples were sieved and analysed for microplastics, with results verified by AUSMAP's Science Officer. Microplastics were defined as plastic particles within the 1-5 mm size range and were reported as microplastics per square metre (MPs/m^2). In addition to quantifying microplastic loads, particles were characterised by type, colour, size, shape and condition. Categories included primary plastic feedstock such as nurdles, as well as hard plastic fragments, foam, fibres, synthetic grass, film and rubber. These classifications allow comparison between sites and over time and provide insight into potential sources and degradation pathways.

AUSMAP classifies sites according to microplastic load, ranging from 'Very Low' through to 'Extreme' (Table 6). Sites exceeding 250 MPs/m^2 are classified as microplastic hotspots. Monitoring at Cocos (Keeling) Islands began with an AUSMAP training workshop in August 2023, which established baseline data. Four additional monitoring rounds were then completed at Pulu Gangsa Beach between November 2024 and March 2026, covering both wet season and dry season conditions.

Microplastic Level (MPs/m^2)	Grading	Status
0-10	Very Low	GOOD
11-50	Low	WATCH AND ACT
51-250	Moderate	WATCH AND ACT
251-1,000	High	HOTSPOT
1,001-10,000	Very High	HOTSPOT
>10,000	Extreme	HOTSPOT

Table 6. Microplastic load classification system used by AUSMAP

Image: Without ongoing clean-ups, all macroplastic items will degrade into microplastics. Marine debris on Pulu Gangsa Beach. Image Credit: Emma Washer

Results

Microplastic loads at Pulu Gangsa Beach were consistently elevated across the monitoring period, although concentrations varied substantially between survey rounds. The highest concentrations were recorded during the dry season, with wet season results generally lower and more variable (Table 7). The highest result was recorded in September 2025, when microplastic loads reached 6,938 MPs/m², also classified as 'Very High' (Table 7). The overall site average for Pulu Gangsa Beach was 2,394 MPs/m², placing the site within the 'Very High' hotspot category. West Island, surveyed once in August 2023, recorded 271 MPs/m² and was classified as High.

Survey Round	Date	Season	Mean MPs/m²	AUSMAP Grade
Round 1 (Training)	AUG 2023	Dry	**3,137**	**Very High**
Round 2	NOV 2024	Wet	**1,515**	**Very High**
Round 3	MAR 2025	Wet	**46**	**Low**
Round 4	SEP 2025	Dry	**6,938**	**Very High**
Round 5	MAR 2026	Wet	**336**	**High**
Wet season average			**632**	**High**
Dry season average			**5,038**	**Very High**
Site average			**2,394**	**Very High**

Table 7. *Microplastic loads at Pulu Gangsa Beach (Home Island), CKI, 2023-2026 expressed as MPs/m². Green = Very Low (0–10); yellow = Low (11–50); orange = Moderate (51–250); red = High (251–1000); black = Very High (>1000)*

Hard plastic fragments overwhelmingly dominated the samples, accounting for 97.5% of all particles recorded. Primary industrial pellets (nurdles) represented only 1.0%, while other particle types, such as fibres and film, collectively made up less than 2%.

Colour analysis showed that opaque/clear particles were the most common category, representing 46.3% of all microplastics, followed by white particles at 25.0%. Together, these two colour groups accounted for more than 70% of recorded particles. Blue and green particles were also present, representing 11.8% and 7.0%, respectively, while all other colours accounted for less than 3% each.

Most particles were recorded in the smaller size class, with particles less than 3 mm accounting for 79.3% of all items recorded. Particles measuring 3-5 mm accounted for 12.7%, while 8.0% of particles exceeded 5 mm in their longest dimension (reflecting elongated or fibrous microplastics). Shape was also strongly dominated by irregular fragments, which accounted for 92.8% of particles, with angular fragments making up a further 5.3%.

Interpretation & Conclusion

The results indicate that Pulu Gangsa Beach is a persistent microplastic hotspot, with concentrations frequently reaching 'Very High' levels. The strong seasonal patterns, with dry season loads substantially higher than wet season loads, suggest that prevailing southeast trade winds play a major role in transporting and concentrating microplastics along the Cocos (Keeling) Islands shorelines.

The dominance of hard plastic fragments, particularly small, irregular particles, indicates that most microplastics at Pulu Gangsa Beach are secondary microplastics formed through the break up of larger plastic items. Likely parent materials include consumer packaging, bottles, containers, crates, fishing gear, ropes and other marine debris that have been exposed to sunlight, wave action and abrasion during transport through the marine environment.

These findings demonstrate the value of continued seasonal monitoring. Ongoing monitoring through AUSMAP will help track changes over time, identify peak accumulation periods and support targeted management responses. Local actions such as waste reduction, community stewardship and shoreline clean-ups remain important for reducing impacts and protecting sensitive habitats.

However, given that microplastic pollution at Cocos (Keeling) Islands is overwhelmingly from offshore sources, coordinated local, national, regional and international efforts are required to reduce plastic use, improve waste management and prevent plastic leakage into the marine environment.

Image: AUSMAP samples from Home Island. Image Credit: Emma Washer

COMMUNITY CLEAN-UPS

Community clean-up activities coordinated by Tangaroa Blue Foundation during the project period contributed to local engagement by involving participants across a range of community sectors. These activities were undertaken outside the primary monitoring sites and focused on locations considered important to the community, including areas of environmental value and sites commonly used for recreation and community gatherings.

Several clean-up events were delivered in collaboration with local project partners, supporting capacity building and coordinated action toward shared environmental objectives. Activities included Western Australia Beach Clean-up (WABCU) events involving students and community members, as well as general area clean-ups conducted following monitoring activities. These events were often attended by the Australian Federal Police and Parks Australia Rangers and supported by Cocos Marine Care.

The Cocos (Keeling) Islands District High School provided significant support throughout the project. Students participated in multiple monitoring events, including debris collection from transects, general area clean-ups, debris sorting and item counts for entry into the Australian Marine Debris Initiative (AMDI) Database. Students also contributed to the AUSMAP process, including assisting with microplastic counts.

Clean-up activities conducted during the 2025 and 2026 Marine Debris Voyage trips, where off-island volunteers visited Cocos (Keeling) Islands to support clean-up activities, provided additional opportunities for community engagement between local residents and off-island volunteers. These interactions enabled knowledge exchange, with volunteers gaining insight into island life and culture, and community members learning more about Tangaroa Blue Foundation's broader work across Australia. The voyages also provided economic benefits to the island through the use of local accommodation, vehicle hire, venue hire, catering and other services provided by local small businesses.

Image: 2026 Marine Debris Voyage volunteers with community members at the Old Jetty on West Island. Image Credit: Niamh Swingler

COMMUNITY CLEAN-UPS

Additional Clean-ups:

At the beginning of the project, an additional general interest collection area was established adjacent to the monitoring site known as 'The Rip'. This area was referred to as 'The Rip Adjacent' and consisted of a 200 m stretch of coastline extending from the southern end point of the formal monitoring site.

The Rip is a locally recognised drift-snorkelling location, known for its coral habitat and marine biodiversity. It is located within a National Park protected Green Zone and is managed as part of the Cocos (Keeling) Islands Marine Park.

The Rip Adjacent collection area begins at the southern end of the monitoring site, then wraps around the coastal corner and continues along the shoreline adjacent to the area where The Rip flows past. This site was included to provide additional information on marine debris accumulation in an area of local environmental and recreational interest.

Site	Month Collected	Duration (hours)	Participants	Weight (kg)	Total Items	% Itemised
The Rip Adjacent (Direction Island)	Jan-25	3	1	36.63	1,278	100
The Rip Adjacent (Direction Island)	Mar-25	0.45	3	8.83	440	100
The Rip Adjacent (Direction Island)	Sep-25	1.5	4	54	1,483	100
The Rip Adjacent (Direction Island)	Dec-25	1	8	12.18	695	100
The Rip Adjacent (Direction Island)	Mar-26	2	4	53.4	172	100

Data and Impact

All clean-up data collected through the project has been entered into the Australian Marine Debris Initiative (AMDI) Database. This strengthens community-based reporting and supports the development of targeted source reduction planning. The data also contributes to broader policy discussions relating to marine debris and plastic pollution, including issues such as single-use plastics, and provides information relevant to national and international initiatives, including the Global Plastics Treaty process.

VOYAGES

June 2025 Voyage

A large-scale volunteer marine debris clean-up voyage took place between the 13th and 20th June 2025. The activity was led by Cocos (Keeling) Islands Project Coordinators Emma Washer and Elizabeth Barton, with support from off-island Tangaroa Blue Foundation coordinators Ian Anderson and Renee Mouritz. The voyage included a team of nine off-island volunteers who contributed to clean-up and engagement activities during their time on the islands.

The voyage team undertook clean-up activities across four islands: West Island, Home Island, Direction Island and Horsburgh Island. These activities enabled the removal of marine debris from a range of accessible and more remote coastal sites. Tangaroa Blue Foundation partnered with Keep Australia Beautiful WA to deliver an education and clean-up session at Pasir Nek Ayak on Home Island with students from Cocos (Keeling) Islands District High School. Students also assisted with a monitoring session at Boat Ramp North on West Island.

A community clean-up led by Tangaroa Blue Foundation was held at the Old Jetty on West Island, with participation from local families. Tangaroa Blue Foundation also delivered a workshop with the Suka Duka Seniors Group on Home Island, where participants created recycled buckets using marine debris collected from local beaches. The session concluded with a catered morning tea attended by participants and local project partners.

Additional engagement activities included a cultural tour on Home Island and attendance at a community screening of David Attenborough's Ocean documentary.

Image: 2025 Marine Debris Voyage Suka Duka Seniors Group basket making workshop with volunteers. Image Credit: Emma Washer

VOYAGES

The 2025 voyage removed 1,005.51 kg of marine debris, categorised 17,928 items and engaged 130 participants. A summary of activities is listed below.

Site	Duration (hours)	Participants	Weight (kg)	Total Items	% Itemised
Northern side (Direction Island)	3	13	136.4	3,534	100
The Rip Adjacent (Direction Island)	1	14	28.31	674	100
Twiss Memorial (West Island)	2	14	158.5	5,036	100
Old Jetty Foreshore (West Island)	1.5	31	214	3,607	100
Horsburgh Island	4	14	427.8	3,295	33
Pasir Nek Ayak (Home Island)	1	44	40.5	1,782	100
Total	**12.5**	**130**	**1,005.51**	**17,928**	

Image: Bags of marine debris being removed from Direction Island. Image Credit: Samuel Hall.

VOYAGES

May 2026 Voyage

A second volunteer marine debris clean-up voyage was held from 8th to 15th May 2026. The activity was led by Island Project Coordinators Emma Washer and Elizabeth Barton, with support from off-island Tangaroa Blue Foundation Coordinators Shannon Martin and Renee Mouritz. The voyage included a team of nine off-island volunteers with varied backgrounds and shared interests in ocean conservation.

The voyage team returned to four key islands: West Island, Home Island, Direction Island and Horsburgh Island. Clean-up activities were undertaken across a range of sites, including more remote coastal areas. Tangaroa Blue Foundation partnered with the Shire of Cocos (Keeling) Islands to deliver two community clean-ups, held at the Old Jetty on West Island and Pulu Gangsa Beach on Home Island. These events were followed by community gatherings with catering provided.

The voyage team also undertook clean-up activities along a large section of the rear coastline of Direction Island, as well as at a new site at the northern end of the island (Jetty Beach). In addition, several voyage volunteers worked with Cocos (Keeling) Islands Marine Park Rangers to remove a large rope mass that had washed onto the reef at the edge of the protected Green Zone known as ‘The Rip’. The rope was removed and carried out by hand, representing a major and rewarding highlight for the volunteers.

Additional engagement activities included a basket-making workshop with local Cocos (Keeling) Islands artist Clare Jefferies from Salty Baskets, using marine debris rope, and attendance at a community screening of the Ocean Film Festival.

Image: Volunteers working with Marine Park Rangers to remove a large rope mass from Direction Island during the 2026 Voyage. Image Credit: Emma Washer

VOYAGES

The 2026 voyage removed 1,993.1 kg of marine debris, categorised 18,063 items and engaged 112 participants. A summary of activities is listed below.

Site	Duration (hours)	Participants	Weight (kg)	Total Items	% Itemised
South West Beach (West Island)	2	5	35	916	100
Northern side (Direction Island)	6	14	335	4,721	20.2
The Rip Adjacent (Direction Island)	0.5	13	4.6	181	100
Old Jetty Foreshore (West Island)	1.5	42	131.9	830	37.5
Horsburgh Island	2.5	12	390.8	7,455	22.5
Pasir Nek Ayak (Home Island)	3	12	565.2	3,116	22.8
The Rip Adjacent (Direction Island)	1.5	5	400	1	100
Jetty Beach (Direction Island)	2	9	130.6	843	11.1
Total	**18.5**	**112**	**1,993.1**	**18,063**	

Image: The 2026 Marine Debris Voyage volunteers after a successful FAD recovery at Pulu Gangsa Beach. Image Credit: Niamh Swingler

COMMUNITY EDUCATION
AND AWARENESS

The project included a range of community education and awareness-raising activities for local residents, students, volunteers and visitors. These activities provided information on Tangaroa Blue Foundation initiatives, including broader national and international projects, as well as locally relevant information on marine debris affecting the Cocos (Keeling) Islands.

Education activities focused on the types of marine debris found on local shorelines, the role of ocean currents and other factors in transporting debris to the islands and the importance of ongoing monitoring and data collection. Community members were also provided with information on ways to contribute to marine debris prevention and reduction, including participation in clean-ups, data entry and actions that can be taken by individuals, families, community groups and businesses to reduce plastic use and single-use items.

Image: The Ocean Film Festival comes to the Cocos (Keeling) Islands. Image Credit: Elizabeth Barton

COMMUNITY EDUCATION
AND AWARENESS

Junior Marine Rangers - October 2024

The Tangaroa Blue Foundation coordinator delivered a marine debris education session as part of the inaugural Junior Marine Rangers Program, a partnership between Parks Australia and Cocos (Keeling) Islands District High School. The session explored marine pollution, its environmental impacts, the ocean currents that transport debris to the islands and how marine debris patterns change seasonally.

Twilight Market Stand - December 2024

An information stall was established alongside the community Twilight Markets, featuring a slideshow about Tangaroa Blue Foundation and project activities on the islands. The stall included marine debris displays, information posters, educational activities, donated prizes and a volunteer sign-up sheet, providing an opportunity for community members to learn about the project and engage with the team.

Ocean Film Festival - May 2025/2026

Tangaroa Blue Foundation hosted Ocean Film Festival screenings in 2025 and 2026 for residents on Home Island and West Island. At each screening, the local project coordinator provided an overview of the organisation's work on the islands, including the monitoring program and opportunities for community involvement. The events also recognised the contributions of local project partners and community members.

Marine Debris Bucket Making Workshop - June 2025

Tangaroa Blue Foundation delivered a hands-on workshop with the voyage volunteer team and the Suka Duka Seniors Group. Participants created buckets from marine debris collected on Cocos (Keeling) Islands beaches, using spliced rope as handles.

The workshop provided an opportunity to discuss marine debris issues, community involvement and the types of marine debris being found during clean-ups. It also demonstrated how collected debris can be repurposed into useful items, helping prevent it from re-entering the marine environment or adding to local waste streams.

Waste Warrior Session - December 2025

A Tangaroa Blue Foundation Project Coordinator contributed to a presentation by the Year 3-6 Waste Warrior team at Cocos (Keeling) Islands District High School, attended by community members and local business owners. The presentation focused on the impacts of plastic pollution on the islands, particularly single-use plastics.

The coordinator shared monitoring data on single-use plastic items recorded during project activities and also presented at the school's 2025 end-of-year assembly, recognising student participation and sharing findings from school-based monitoring activities.

SOURCE REDUCTION PLANS (SRPS)

Project ReCon

Project ReCon involves the repurposing of smart GPS buoys that international commercial fishing fleets are unable to recover from the ocean when they escape the Indian Ocean international fishing grounds. Through a partnership with international technology company Satlink, satellite technology is reused to tag and track ghost nets, including abandoned, lost, or discarded fishing nets and gear. This enables retrieval teams, including Tangaroa Blue Foundation staff, to locate and remove these items from the marine environment before they disappear.

In 2025, Project ReCon activities on the Cocos (Keeling) Islands primarily focused on stakeholder and community engagement through meetings and workshops. These activities introduced the project to local stakeholders and community members and provided information on Fish Aggregating Devices (FADs), smart buoys and the reporting process through the Australian Marine Debris Initiative (AMDI) Database. As a result of this engagement, community members have increased their awareness of how to identify FADs and smart buoys and how to report them. Community members have since located and handed in several buoys. These buoys have undergone integrity testing, followed by satellite testing through Satlink.

Two of the buoys are now registered with Tangaroa Blue Foundation and have been prepared and tagged for deployment with the Parks Australia Marine Park vessel and local charter boat operator Cocos Blue. An additional ten tags are currently available on the island for future use with suitable recovered buoys. Once fitted with tracking technology, these buoys can be used to support ghost gear tracking and retrieval, as well as other local conservation activities.

An information pamphlet developed by Satlink and Tangaroa Blue Foundation outlining the Project ReCon buoy repurposing process is provided below.

SOURCE REDUCTION PLANS (SRPS)

Rig Recycle

Rig Recycle is Tangaroa Blue Foundation's program for collecting unwanted recreational fishing gear and packaging, such as fishing line, spools, hooks, sinkers, swivels, lures and floats. These items are collected through dedicated Rig Recycle stations, audited and recorded in the AMDI Database, then repaired, reused or recycled where possible. The program helps divert fishing items from landfills and reduces the risk of fishing-related litter entering waterways and harming marine life.

In 2025, Rig Recycle was introduced to project partners, small businesses and community members through workshop sessions delivered on Home Island and West Island by the local Tangaroa Blue Foundation Project Coordinator. Following these sessions, further meetings were held with small businesses, industry representatives and shop owners involved in the sale of fishing gear. Following consultation, it was agreed that Rig Recycle buckets would be installed at three key locations. The buckets, along with educational materials explaining their purpose and use, were incorporated into three permanent Tangaroa Blue Foundation display stands established on Home Island and West Island.

Image: The Marine Debris Collection Project & Rig Recycle stand at the Visitor Centre on West Island. Image Credit: Emma Washer

SOURCE REDUCTION PLANS (SRPS)

Marine Debris Collection Station Project

The Marine Debris Collection Station Project was developed as a new collaboration between Tangaroa Blue Foundation and the Shire of Cocos (Keeling) Islands. The project builds on an existing Shire initiative, established several years earlier, which included Marine Debris Collection Stations and signage at a number of public beach areas. These stations previously provided hessian clean-up bags for public use, with collected debris able to be left at designated locations for collection.

As part of the project, the local Tangaroa Blue Foundation Project Coordinator worked with the Shire of Cocos (Keeling) Islands Works Officer to explore options for reinstating and improving the program. This included considering logistical arrangements with the waste transfer team, as well as updating signage, education materials and graphic maps showing the location of collection stations. These updates aimed to make the system more accessible and user-friendly for both residents and visitors. Meetings were also held with the Visitor Centre Manager, who noted strong visitor interest in opportunities to assist with beach clean-ups during their stay on the islands. The project, therefore, included a focus on engaging visitors and providing clear information on how they can participate safely and effectively.

Three display stands were installed at the Shire Office, The Big Barge Art Centre and the Visitor Centre. Each stand included an information panel, graphic location maps and clean-up kits containing bags and gloves.

Image: The Marine Debris Collection Project & Rig Recycle stand at the Visitor Centre on West Island. Image Credit: Emma Washer

SOURCE REDUCTION PLANS (SRPS)

Esky Library

After a successful trial on Christmas Island, initial consultation has been conducted to introduce the Esky Library to Cocos (Keeling) Islands. While this SRP will continue to be developed after this project has been completed, funding through the Indian Ocean Territories Regional Development Organisation will support Tangaroa Blue Foundation in continuing to develop the Esky Library, with initial on-island trials scheduled for Cocos (Keeling) Islands in the second half of 2026.

Image: Expanding the successful Esky Library from Christmas Island to Cocos (Keeling) Islands is planned for 2026. Image Credit: TomKat

Thank you to all the volunteers, organisations and partners that contributed to the Cocos (Keeling) Islands Marine Debris Initiative.

This project would not have been possible without each of you.

Image: Home Island, Cocos (Keeling) Islands. Image Credit: Sky Land Sea Imagery

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