2022 ReefClean Report

Tackling marine debris pollution on the Great Barrier Reef



ReefClean is funded by the Australian Government's Reef Trust











Tangaroa Blue Foundation acknowledges the Aboriginal and Torres Strait Islander peoples as the Traditional Custodians of the Great Barrier Reef and their strong and continuing connections to Land and Sea Country.

ReefClean is funded by the Australian Government's Reef Trust and delivered by Tangaroa Blue Foundation in partnership with Reef Check Australia, Capricornia Catchments, Eco Barge Clean Seas, OceanWatch Australia, South Cape York Catchments and Australian Microplastics Assessment Project (AUSMAP).







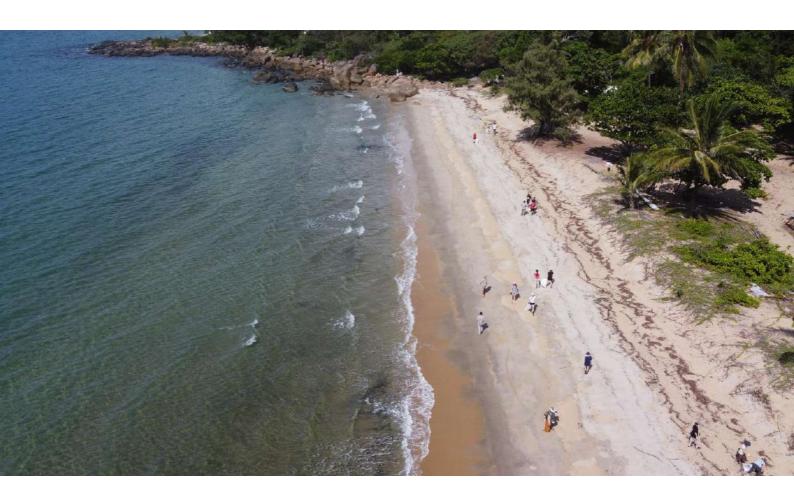












Above: Volunteers and Gunggandji-Mandingalbay Yidinji PPBC Rangers at Jilgi Beach community clean-up in the Wet Tropics. Cover Photo: Volunteers at Five Beaches Loop community clean-up in Cape York on Gudang, Yadaigana, Anggkamurthi and Atambaya Country.

Executive Summary

This report summarises the 2022 ReefClean project including all community, monitoring, annual Great Barrier Reef (GBR), Source Reduction Plan (SRP), school, training and disaster management clean-ups. ReefClean is a 5-year project funded by the Australian Government's Reef Trust, which aims to remove and prevent marine debris along the Great Barrier Reef (GBR). 2022 marks the 4th year of the 5-year project, which will conclude in 2023.

Data is provided for the GBR area, the 6 National Resource Management (NRM) regions, and the northern, central and southern zones within each NRM region. Data is also provided for the Torres Strait. For the entire GBR, the top 5 items collected are provided. For each NRM region and zone, the Land Sea Source Index (LSSI), density of debris (items/m²) and top 3 items collected are provided. The LSSI is the estimated ratio of debris from local sources compared to offshore sources. The density of debris is calculated as the number of items per square metre, using an average site width of 45m. This width was chosen so data is comparable to previous years and other programs led by Tangaroa Blue Foundation.

Across 1,987 hectares of the diverse and expansive GBR, over 4,139 volunteers from 251 organisations dedicated over 14,211 hours collecting 23.7 tonnes of debris. The greatest number of volunteers participated in the Fitzroy NRM region (1,254 people occasions), however the greatest number of hours were contributed by volunteers in the Cape York NRM who collectively contributed over 2,394 hours.

For the fourth year in a row, the heaviest mass (10,231 kg) and greatest density (0.12 items/m²) of debris was collected in the Cape York region. For the last four years, the majority (>85%) of debris in every zone of the Cape York region is predicted to have come from offshore sources, according to the LSSI. The majority (47%) of debris collected from the Cape York region was collected in the northern zone, where debris was the most dense (0.4 items/m²). Of all NRM regions, debris was least dense in Burnett Mary with just 0.004 items/m²; debris here was 29 times less dense than the Cape York region.

For the fourth year in a row, remnant plastic bits and pieces (hard and solid) (227,395 items) and plastic lids and tops, pump spray and flow restrictors (100,430 items) were the top two items collected in the GBR. These two items were also in the top 3 items found in the zones of every NRM region except the Torres Strait and central and south Burnett Mary regions. Other items found in large quantities include cigarette butts and filters and recreational fishing line.

Data from clean-ups are entered into the Australian Marine Debris Initiative (AMDI) Database and used to design and implement SRPs to target specific debris items in an area. In 2022, 150 educational and awareness raising activities were held including 18 SRP campaigns, 6 videos and photography products, 8 educational resources, 32 promotional materials, 61 presentations or briefings and 24 media and communication releases, among others. ReefClean workshops, presentations and displays had over 30,399 participants in 2022, 73% of who were new to ReefClean. The number of volunteers, participants and organisations involved in ReefClean continues to grow every year.

What is ReefClean?

ReefClean is a 5-year project funded by the Australian Government's Reef Trust, which aims to remove and prevent marine debris along the GBR region. Reef Trust is a government investment program which supports the Reef 2050 Long-Term Sustainability Plan (Reef 2050 Plan), a long-term framework to protect and manage the GBR. By monitoring marine debris and implementing SRPs, ReefClean directly appeals to 3 out of 4 of the Reef Trust outcomes; to improve the quality of water entering the GBR, improve the health and resilience of coastal habitats and improve and protect marine biodiversity. In doing so, ReefClean is meeting the objectives and goals for 2021-2025 of the Reef 2050 Plan, as well as those outlined in Australia's National Plastics Plan, 2021, delivering on many of the actions laid out under Prevention, Consumer Education and Our Oceans and Waterways fronts. This project began in 2019 and will span five years, concluding in June 2023.

Previously this report was used to communicate data from community clean-ups only, however in 2021 this expanded to include community, monitoring, Great Barrier Reef (GBRCU) and disaster management clean-ups as well as SRP audits, training and school events. Data collected during these events is entered in the AMDI Database. By continually monitoring these sites over time, we can identify areas where debris is most prevalent (i.e. debris 'hotspots'), provide data to support policy change, design and implement SRPs and assess the effectiveness of these strategies at reducing debris over time.

ReefClean is delivered by Tangaroa Blue Foundation and project partners: Reef Check Australia, Capricornia Catchments, Eco Barge Clean Seas, OceanWatch Australia, South Cape York Catchments and Australian Microplastics Assessment Project (AUSMAP).



2022 Program



296 CLEAN-UP EVENTS HELD



TONNES OF 23.7 MARINE DEBRIS **REMOVED**



SRP CAMPAIGNS ROLLED OUT



Young volunteer with their debris haul collected during the community clean-up event on Darumbal Country at Five Rocks, Byfield.



4,139

VOLUNTEERS AT CLEAN-UPS (people occasions)



1.987

HECTARES CLEANED

251 **ORGANISATIONS PARTICIPATED**

INCLUDING 42

SCHOOLS, UNIVERSITY AND YOUTH GROUPS

22 **TRADITIONAL CUSTODIAN GROUPS**



EDUCATIONAL AND AWARENESS RAISING ACTIVITES



PARTICIPANTS AT WORKSHOPS, PRESENTATIONS & DISPLAYS

Top 5 Items

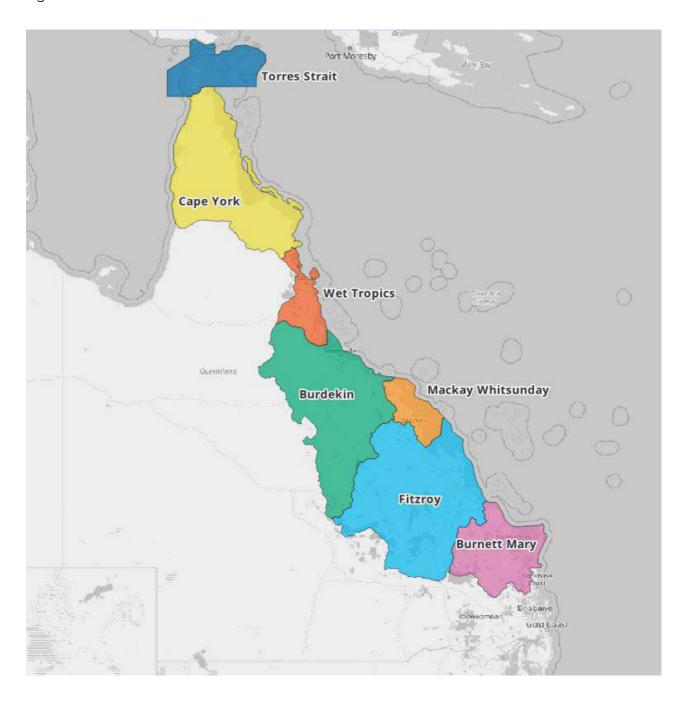
2022	2021	2020	2019
Plastic remnants - hard & solid	Plastic remnants - hard & solid	Plastic remnants - hard & solid	Plastic remnants - hard & solid
Plastic lids & tops, pump spray, flow restrictor & similar	Plastic lids & tops, pump spray, flow restrictor & similar	Plastic lids & tops, pump spray, flow restrictor & similar	Plastic lids & tops, pump spray, flow restrictor & similar
Plastic drink bottles (water, juice, milk, soft drink)	Foam insulation & packaging (whole and remnants)	Plastic film remnants (bits of plastic bag, wrap etc)	Foam insulation & packaging (whole and remnants)
Rubber footwear & thongs	Plastic drink bottles (water, juice, milk, soft drink)	Rope & net scraps (<1m)	Plastic film remnants (bits of plastic bag, wrap etc)
Foam insulation & packaging (whole and remnants)	Rubber footwear & thongs	Foam insulation & packaging (whole and remnants)	Rope & net scraps (<1m)



Debris to be collected on the shores of Sunken Reef Beach, Hinchinbrook Island (Bandjin Country) during the self-managed GBRCU organised in collaboration with Absolute North Charters, The Situation Room and, Hinchinbrook Shire Council.

NRM Region Breakdown

The Australian Government has divided the GBR region into <u>6 NRM regions</u> known as Reef regions: Cape York, Wet Tropics, Burdekin, Mackay Whitsunday, Fitzroy and Burnett Mary. For this report, we have also included the Torres Strait as a reef region and further divided each region into northern, central and southern 'zones'. Run-off from these NRM regions, along with 35 catchments in the area, drains into the neighbouring ocean and reef. Simultaneously, some regions receive offshore debris and this has been demonstrated using the LSSI analysis. Understanding debris in these regions is important because data shows there are regional differences in the mass, number of items and density of debris accumulating; analysing data on too large a scale can miss local differences in the signature of marine debris.



Torres Strait



	2022	2021	2020	2019
NUMBER OF EVENTS HELD	1	1	4	3
NUMBER OF VOLUNTEERS	34	17	136	126
VOLUNTEER HOURS	136	51	342	252
WEIGHT IN KILOGRAMS	70	101	375	251
DEBRIS DENSITY (pieces per metre square)	0.028	0.086	0.06	0.05
LAND SEA SOURCE INDEX (source of debris from land and sea)	53:47	20:80	31:69	67:33

Torres Strait Top 3 categories

2022	2021	2020	2019
Plastic drink bottles (water, juice, milk, soft drink)	Plastic lids & tops, pump spray, flow restrictor & similar	Plastic remnants - hard & solid	Cigarette butts & filters
Fishing line in metres (recreational)	Plastic remnants - hard & solid	Plastic lids & tops, pump spray, flow restrictor & similar	Glass or ceramic broken
Glass or ceramic broken	Foam insulation & packaging (whole and remnants)	Glass or ceramic broken	Plastic packaging food (wrap, packets, containers)





Left: TSRA Rangers, school students and community members on Mer Island, Torres Strait at the flagship GBRCU event. **Right:** Community members with Tangaroa Blue Foundation staff at the flagship GBRCU event on Mer Island, Torres Strait.

Cape York - North





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	6	7	9	6
NUMBER OF VOLUNTEERS	72	100	107	48
VOLUNTEER HOURS	2,050	2,394	994	984
WEIGHT IN KILOGRAMS	4,836	5,139	2,065	2,756
DEBRIS DENSITY (pieces per metre square)	0.397	0.226	0.037	0.149
LAND SEA SOURCE INDEX (source of debris from land and sea)	2:98	2:98	15:85	3:97

Cape York - North Top 3 categories

2022	2021	2020	2019
Plastic remnants -	Plastic remnants -	Plastic remnants -	Plastic remnants -
hard & solid	hard & solid	hard & solid	hard & solid
Plastic lids & tops,	Plastic lids & tops,	Cigarette butts & filters	Plastic lids & tops,
pump spray, flow	pump spray, flow		pump spray, flow
restrictor & similar	restrictor & similar		restrictor & similar
Rubber footwear & thongs	Rubber footwear & thongs	Plastic lids & tops, pump spray, flow restrictor & similar	Plastic film remnants (bits of plastic bag, wrap etc)





Cape York - Central





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	6	6	10	6
NUMBER OF VOLUNTEERS	34	76	70	34
VOLUNTEER HOURS	763	1,974	982	701
WEIGHT IN KILOGRAMS	3,019	3,441	3,128	2,113
DEBRIS DENSITY (pieces per metre square)	0.099	0.225	0.113	0.157
LAND SEA SOURCE INDEX (source of debris from land and sea)	3:97	7:93	6:94	5:95

Cape York - Central Top 3 categories

2022	2021	2020	2019
Plastic remnants -	Plastic remnants -	Plastic remnants -	Plastic remnants -
hard & solid	hard & solid	hard & solid	hard & solid
Plastic lids & tops,	Plastic lids & tops,	Plastic lids & tops,	Plastic lids & tops,
pump spray, flow	pump spray, flow	pump spray, flow	pump spray, flow
restrictor & similar	restrictor & similar	restrictor & similar	restrictor & similar
Plastic drink bottles (water, juice, milk, soft drink)	Rubber footwear & thongs	Rope & net scraps (<1m)	Plastic film remnants (bits of plastic bag, wrap etc)





Cape York - South





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	14	21	29	25
NUMBER OF VOLUNTEERS	169	143	253	280
VOLUNTEER HOURS	618	658	769	1159
WEIGHT IN KILOGRAMS	2,376	1,733	4,229	5729
DEBRIS DENSITY (pieces per metre square)	0.027	0.203	0.050	0.074
LAND SEA SOURCE INDEX (source of debris from land and sea)	3:97	7:93	6:94	5:95

Left: Volunteers collecting debris along the shores of Walker Bay on Guugu Yimithirr Country, Cooktown, for the monitoring event run by South Cape York Catchments. Right: Debris collected during East Hope Isles community clean-up organised in partnership with Dingaal Traditional Custodians aboard Blue Planet Marine's vessel Phantom.

Cape York - South Top 3 categories

2022	2021	2020	2019
Plastic remnants -	Plastic remnants -	Plastic remnants -	Plastic remnants -
hard & solid	hard & solid	hard & solid	hard & solid
Plastic lids & tops,			
pump spray, flow	pump spray, flow	pump spray, flow	pump spray, flow
restrictor & similar	restrictor & similar	restrictor & similar	restrictor & similar
Plastic drink bottles	Plastic drink bottles	Plastic drink bottles	Foam insulation & packaging (whole and remnants)
(water, juice, milk,	(water, juice, milk,	(water, juice, milk,	
soft drink)	soft drink)	soft drink)	





Left: Volunteers collecting debris along the shores of Walker Bay on Guugu Yimithirr Country, Cooktown, for the monitoring event run by South Cape York Catchments. **Right:** Volunteers with debris collected during a clean-up at East Hope Isles organised in partnership with Dingaal Traditional Custodians.

Wet Tropics - North





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	18	31	23	14
NUMBER OF VOLUNTEERS	237	264	210	91
VOLUNTEER HOURS	846	961	891	431
WEIGHT IN KILOGRAMS	1,354	1325	1,565	1,145
DEBRIS DENSITY (pieces per metre square)	0.024	0.031	0.021	0.043
LAND SEA SOURCE INDEX (source of debris from land and sea)	22:78	29:71	15:85	6:94

Wet Tropics - North Top 3 categories

2022	2021	2020	2019
Plastic remnants -	Plastic remnants -	Plastic remnants -	Plastic remnants -
hard & solid	hard & solid	hard & solid	hard & solid
Plastic lids & tops,			
pump spray, flow	pump spray, flow	pump spray, flow	pump spray, flow
restrictor & similar	restrictor & similar	restrictor & similar	restrictor & similar
Foam insulation & packaging (whole and remnants)			





Left: Debris collected from Wonga Beach, on Eastern Kuku Yalanji Country, during the GBRCU Flagship clean-up event. Right: Volunteers on the shores of Baku (Cape Kimberley) on Eastern Kuku Yalanji Country during a community clean-up event.

Wet Tropics - Central





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	30	30	20	19
NUMBER OF VOLUNTEERS	400	294	169	220
VOLUNTEER HOURS	1,180	768	685	357
WEIGHT IN KILOGRAMS	1,162	1116	540	356
DEBRIS DENSITY (pieces per metre square)	0.010	0.023	0.014	0.012
LAND SEA SOURCE INDEX (source of debris from land and sea)	33:67	40:60	56:44	56:44

Wet Tropics - Central Top 3 categories

2022	2021	2020	2019
Plastic remnants -	Plastic remnants -	Plastic remnants -	Plastic remnants -
hard & solid	hard & solid	hard & solid	hard & solid
Plastic lids & tops,	Plastic lids & tops,	Foam insulation & packaging (whole and remnants)	Plastic film remnants
pump spray, flow	pump spray, flow		(bits of plastic bag,
restrictor & similar	restrictor & similar		wrap etc)
Plastic film remnants (bits of plastic bag, wrap etc)	Plastic film remnants (bits of plastic bag, wrap etc)	Fishing line in metres (recreational)	Plastic packaging food (wrap, packets, containers)





Left: Volunteers sorting through debris collected during the Jilgi Beach community clean-up with the Gunggandji-Mandingalbay Yidinji PPBC Rangers. Right: Reef Check Australia divers on the Fitzroy Island underwater community clean-up.

Wet Tropics - South





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	16	19	27	10
NUMBER OF VOLUNTEERS	274	153	93	146
VOLUNTEER HOURS	1,102	835	380	606
WEIGHT IN KILOGRAMS	1,611	3094	2,263	1,925
DEBRIS DENSITY (pieces per metre square)	0.011	0.009	0.034	0.048
LAND SEA SOURCE INDEX (source of debris from land and sea)	18:82	34:66	18:82	16:84

Left: Volunteers and staff at Sunken Reef Beach, Hinchinbrook Island (Bandjin Country) at the self-managed GBRCU organised in collaboration with Absolute North Charters, The Situation Room and Hinchinbrook Shire Council.

Right: Tangaroa Blue Foundation staff member with marine debris from Sunken Reef Beach, Hinchinbrook Island (Bandjin Country).

Wet Tropics - South Top 3 categories

2022	2021	2020	2019
Plastic remnants - hard & solid	Plastic remnants - hard & solid	Plastic remnants - hard & solid	Foam insulation & packaging (whole and remnants)
Plastic lids & tops, pump spray, flow restrictor & similar	Plastic lids & tops, pump spray, flow restrictor & similar	Plastic lids & tops, pump spray, flow restrictor & similar	Plastic remnants - hard & solid
Plastic drink bottles (water, juice, milk, soft drink)	Foam insulation & packaging (whole and remnants)	Plastic film remnants (bits of plastic bag, wrap etc)	Fishing line in metres (recreational)





Left: Volunteers and staff en route to Sunken Reef Beach, Hinchinbrook Island (Bandjin Country) for the self-managed GBRCU organised in collaboration with Absolute North Charters, The Situation Room and Hinchinbrook Shire Council. Right: The landscape of the Hull River Estuary, on Djiru Country, during a monitoring event.

Burdekin - North





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	26	37	18	18
NUMBER OF VOLUNTEERS	597	282	237	331
VOLUNTEER HOURS	1,798	737	754	897
WEIGHT IN KILOGRAMS	1,283	1,854	1,362	2,824
DEBRIS DENSITY (pieces per metre square)	0.024	0.044	0.044	0.121
LAND SEA SOURCE INDEX (source of debris from land and sea)	27:73	27:73	39:61	18:82

Burdekin - North Top 3 categories

2022	2021	2020	2019
Plastic remnants -	Plastic remnants -	Plastic remnants -	Plastic remnants -
hard & solid	hard & solid	hard & solid	hard & solid
Plastic lids & tops,	Plastic lids & tops,	Plastic lids & tops,	Plastic lids & tops,
pump spray, flow	pump spray, flow	pump spray, flow	pump spray, flow
restrictor & similar	restrictor & similar	restrictor & similar	restrictor & similar
Plastic packaging food (wrap, packets, containers)	Cigarette butts & filters	Glass or ceramic broken	Plastic film remnants (bits of plastic bag, wrap etc)





Left: Reef Check Australia volunteers from Alma Bay on Magnetic Island (Wulgurukaba Country) after their underwater clean-up. **Right:** Volunteers with debris collected during the Orpheus Island community clean-up, on Manbarra Country.

Burdekin - Central





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	8	11	8	9
NUMBER OF VOLUNTEERS	41	140	93	446
VOLUNTEER HOURS	92	512	412	1,198
WEIGHT IN KILOGRAMS	172	501	465	4,098
DEBRIS DENSITY (pieces per metre square)	0.014	0.031	0.025	0.005
LAND SEA SOURCE INDEX (source of debris from land and sea)	61:39	67:33	55:45	50:50

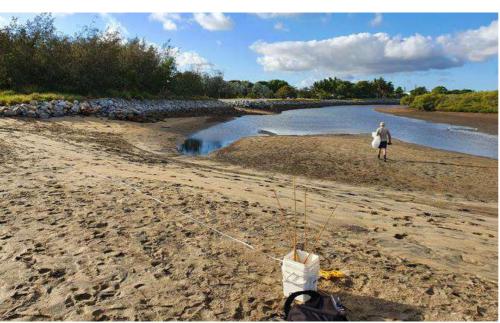
Left: Measuring a transect out and debris collected at a monitoring event at Alva Estuary in Townsville. **Right:** Volunteers with debris collected during a monitoring event at Alva Estuary in Townsville. Both on Bindal and Wulgurukaba Country.

Burdekin - Central Top 3 categories

2022	2021	2020	2019
Plastic remnants - hard & solid			
Plastic lids & tops, pump spray, flow restrictor & similar	Glass or ceramic broken	Plastic film remnants (bits of plastic bag, wrap etc)	Plastic bags supermarkets, garbage, dog po, ice
Rope & net scraps (<1m)	Plastic lids & tops, pump spray, flow restrictor & similar	Plastic lids & tops, pump spray, flow restrictor & similar	Plastic lids & tops, pump spray, flow restrictor & similar



Burdekin - South





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	10	10	8	8
NUMBER OF VOLUNTEERS	56	21	12	18
VOLUNTEER HOURS	253	90	46	51
WEIGHT IN KILOGRAMS	314	26	30	15
DEBRIS DENSITY (pieces per metre square)	0.007	0.006	0.003	0.002
LAND SEA SOURCE INDEX (source of debris from land and sea)	31:69	61:38	60:40	66:34

Left: Whitsunday Catchment Landcare volunteer with debris collected during a monitoring event at Don River in Bowen, on Juru Country. **Right:** Whitsunday Catchment Landcare staff and volunteer preparing transects for a monitoring event on the banks of the Don River in Bowen, Juru Country.

Burdekin - South Top 3 categories

2022	2021	2020	2019
Plastic remnants - hard & solid	Plastic remnants - hard & solid	Plastic remnants - hard & solid	Plastic remnants - hard & solid
Plastic lids & tops, pump spray, flow restrictor & similar	Glass or ceramic broken	Plastic lids & tops, pump spray, flow restrictor & similar	Fishing line in metres (recreational)
Glass or ceramic broken	Plastic film remnants (bits of plastic bag, wrap etc)	Glass or ceramic broken	Cigarette butts & filters





Mackay Whitsunday - North





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	27	20	26	19
NUMBER OF VOLUNTEERS	239	128	104	158
VOLUNTEER HOURS	901	594	327	658
WEIGHT IN KILOGRAMS	1,864	1,990	1,649	1486
DEBRIS DENSITY (pieces per metre square)	0.083	0.072	0.067	0.093
LAND SEA SOURCE INDEX (source of debris from land and sea)	12:88	14:86	16:84	16:84

Mackay Whitsunday - North Top 3 categories

2022	2021	2020	2019
Plastic remnants -	Plastic remnants -	Plastic remnants -	Plastic remnants -
hard & solid	hard & solid	hard & solid	hard & solid
Plastic lids & tops,	Plastic lids & tops,	Plastic lids & tops,	Plastic lids & tops,
pump spray, flow	pump spray, flow	pump spray, flow	pump spray, flow
restrictor & similar	restrictor & similar	restrictor & similar	restrictor & similar
Plastic film remnants (bits of plastic bag, wrap etc)	Cigarette butts & filters	Plastic film remnants (bits of plastic bag, wrap etc)	Rope & net scraps (<1m)





Mackay Whitsunday - Central





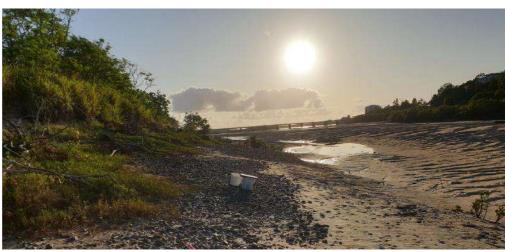
	2022	2021	2020	2019
NUMBER OF EVENTS HELD	17	13	15	10
NUMBER OF VOLUNTEERS	66	89	62	78
VOLUNTEER HOURS	156	301	241	326
WEIGHT IN KILOGRAMS	148	701	216	696
DEBRIS DENSITY (pieces per metre square)	0.004	0.028	0.016	0.032
LAND SEA SOURCE INDEX (source of debris from land and sea)	56:44	21:79	43:57	36:64

Left: Pioneer Catchment Landcare staff and volunteers sorting debris collected during a monitoring event at Pioneer River in Mackay. **Right:** Pioneer Catchment Landcare volunteer weighing debris collected at a monitoring event at Pioneer River in Mackay. Both on Yuwibara Country

Mackay Whitsunday - Central Top 3 categories

2022	2021	2020	2019
Plastic remnants -	Plastic remnants -	Plastic remnants -	Plastic remnants -
hard & solid	hard & solid	hard & solid	hard & solid
Cigarette butts & filters	Plastic lids & tops,	Plastic lids & tops,	Plastic film remnants
	pump spray, flow	pump spray, flow	(bits of plastic bag,
	restrictor & similar	restrictor & similar	wrap etc)
Plastic lids & tops,	Plastic packaging	Toys, party poppers,	Cigarette butts & filters
pump spray, flow	food (wrap, packets,	ribbons, clips &	
restrictor & similar	containers)	similar	





Left: Pioneer Catchment Landcare staff and volunteers collecting debris during a monitoring event at Harbour Beach in Mackay. **Right:** The sun setting over the Pioneer River in Mackay during a monitoring event. Both on Yuwibara Country.

Mackay Whitsunday - South





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	11	18	8	8
NUMBER OF VOLUNTEERS	164	98	26	63
VOLUNTEER HOURS	550	345	71	274
WEIGHT IN KILOGRAMS	1,005	2,114	36	185
DEBRIS DENSITY (pieces per metre square)	0.017	0.030	0.016	0.061
LAND SEA SOURCE INDEX (source of debris from land and sea)	20:80	23:77	31:69	26:74

Left: Tangaroa Blue Foundation and Dalrymple Bay Coal Terminal staff with echosounder buoy found at Louisa Creek Beach monitoring event at Hay Point, on Yuwibara Country. Right: Volunteers sorting debris collected during the Cape Palmerston GBRCU Flagship event on Yuwibara Country.

Mackay Whitsunday - South Top 3 categories

2022	2021	2020	2019
Plastic remnants -	Plastic remnants -	Plastic remnants -	Plastic remnants -
hard & solid	hard & solid	hard & solid	hard & solid
Plastic lids & tops,	Plastic lids & tops,	Plastic lids & tops,	Plastic lids & tops,
pump spray, flow	pump spray, flow	pump spray, flow	pump spray, flow
restrictor & similar	restrictor & similar	restrictor & similar	restrictor & similar
Rope & net scraps (<1m)	Plastic drink bottles (water, juice, milk, soft drink)	Plastic film remnants (bits of plastic bag, wrap etc)	Rope & net scraps (<1m)





Fitzroy - North





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	18	16	18	24
NUMBER OF VOLUNTEERS	236	211	226	541
VOLUNTEER HOURS	624	1,035	806	2,488
WEIGHT IN KILOGRAMS	1,408	1,413	975	2,177
DEBRIS DENSITY (pieces per metre square)	0.002	0.003	0.014	0.014
LAND SEA SOURCE INDEX (source of debris from land and sea)	25:75	29:71	11:89	19:81

Fitzroy - North Top 3 categories

2022	2021	2020	2019
Plastic remnants -	Plastic remnants -	Plastic remnants -	Plastic remnants -
hard & solid	hard & solid	hard & solid	hard & solid
Plastic lids & tops,	Plastic lids & tops,	Plastic lids & tops,	Plastic lids & tops,
pump spray, flow	pump spray, flow	pump spray, flow	pump spray, flow
restrictor & similar	restrictor & similar	restrictor & similar	restrictor & similar
Plastic drink bottles (water, juice, milk, soft drink)	Cigarette butts & filters	Rope & net scraps (<1m)	Cigarette butts & filters





Left: Masks found at Ross Creek Lagoon during a Capricornia Catchments monitoring event on Woppaburra Country **Right:** Ghost net and fish attracting device (FAD) washed ashore at Five Rocks, Byfield and collected as part of a community clean-up on Darumbal Country.

Fitzroy - Central





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	16	13	17	15
NUMBER OF VOLUNTEERS	628	77	112	186
VOLUNTEER HOURS	424	142	226	652
WEIGHT IN KILOGRAMS	474	345	361	442
DEBRIS DENSITY (pieces per metre square)	0.005	0.01	0.014	0.012
LAND SEA SOURCE INDEX (source of debris from land and sea)	32:68	43:57	34:66	53:47

Left: Wiggins Island Coal Export Terminal volunteers at a monitoring clean-up event at Barney Point, Gladstone, on Bailai, Gurang, Gooreng Gooreng and Taribelang Bunda Country. **Right:** A cute visitor to the Heron Island community clean-up run by Reef Check Australia, a brown or common noddy (Anous stolidus).

Fitzroy - Central Top 3 categories

2022	2021	2020	2019
Plastic remnants -	Plastic remnants -	Plastic remnants -	Plastic remnants -
hard & solid	hard & solid	hard & solid	hard & solid
Plastic lids & tops,	Plastic lids & tops,	Cigarette butts & filters	Plastic lids & tops,
pump spray, flow	pump spray, flow		pump spray, flow
restrictor & similar	restrictor & similar		restrictor & similar
Glass or ceramic broken	Plastic packaging food (wrap, packets, containers)	Plastic lids & tops, pump spray, flow restrictor & similar	Glass or ceramic broken



Fitzroy - South





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	21	19	16	15
NUMBER OF VOLUNTEERS	390	247	226	162
VOLUNTEER HOURS	1,347	1,195	525	396
WEIGHT IN KILOGRAMS	1,837	1,641	889	1,626
DEBRIS DENSITY (pieces per metre square)	0.012	0.014	0.031	0.021
LAND SEA SOURCE INDEX (source of debris from land and sea)	27:73	13:86	6:94	38:62

Left and right: Tangaroa Blue Foundation volunteer group and their 4WDs from the Curtis Island community clean-up, organised in partnership with Opposite Lock, Shell QGC, Santos, ConocoPhillips, Gladstone Regional Council, Curtis Ferry Services.

Fitzroy - South Top 3 categories

2022	2021	2020	2019
Plastic remnants -	Plastic remnants -	Plastic remnants -	Plastic remnants -
hard & solid	hard & solid	hard & solid	hard & solid
Plastic lids & tops,	Plastic lids & tops,	Plastic lids & tops,	Plastic lids & tops,
pump spray, flow	pump spray, flow	pump spray, flow	pump spray, flow
restrictor & similar	restrictor & similar	restrictor & similar	restrictor & similar
Rope	Plastics drink bottles (water, juice, milk, soft drink)	Rope & net scraps (<1m)	Cigarette butts & filters





Left: Tangaroa Blue Foundation volunteers collecting debris during Curtis Island community clean-up, organised in partnership with Opposite Lock, Shell QGC, Santos, ConocoPhillips, Gladstone Regional Council and Curtis Ferry Services. Right: Tangaroa Blue Foundation volunteers sorting the debris collected during Curtis Island community clean-up. Both events were on Bailai, Gurang, Gooreng Gooreng and Taribelang Bunda Country.

Burnett Mary - North





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	10	13	10	13
NUMBER OF VOLUNTEERS	82	80	44	86
VOLUNTEER HOURS	312	186	81	239
WEIGHT IN KILOGRAMS	621	596	117	160
DEBRIS DENSITY (pieces per metre square)	0.004	0.008	0.004	0.010
LAND SEA SOURCE INDEX (source of debris from land and sea)	38:62	35:65	57:43	38:62

Left: Reef Check Australia volunteer measuring the site for a monitoring event at Surf Beach, Agnes Waters, on Bailai, Gurang, Gooreng Gooreng and Taribelang Bunda Country. Right: Measuring the site for a monitoring event at Endeavour Park in 1770 on Bailai, Gurang, Gooreng Gooreng and Taribelang Bunda Country.

Burnett Mary - North Top 3 categories

2022	2021	2020	2019
Plastic remnants - hard & solid	Plastic remnants - hard & solid	Plastic remnants - hard & solid	Plastic remnants - hard & solid
Plastic lids & tops, pump spray, flow restrictor & similar	Rope	Cigarette butts & filters	Plastic film remnants (bits of plastic bag, wrap etc)
Fishing line in metres (recreational)	Plastic lids & tops, pump spray, flow restrictor & similar	Plastic packaging food (wrap, packets, containers)	Glass or ceramic broken





Left: Bags of debris collected from a community clean-up at Bustard Bay on Bailai, Gurang, Gooreng Gooreng and Taribelang Bunda Country. **Right:** Reef Check Australia volunteers ready for a monitoring event at Surf Beach, Agnes Waters, on Gurang Country.

Burnett Mary - Central



	2022	2021	2020	2019
NUMBER OF EVENTS HELD	8	8	8	8
NUMBER OF VOLUNTEERS	18	43	24	27
VOLUNTEER HOURS	73	96	31	85
WEIGHT IN KILOGRAMS	12	103	14	39
DEBRIS DENSITY (pieces per metre square)	0.004	0.005	0.002	0.001
LAND SEA SOURCE INDEX (source of debris from land and sea)	69:31	77:23	57:43	75:25

Burnett Mary - Central Top 3 categories

2022	2021	2020	2019
Plastic remnants - hard & solid	Fishing line in metres (recreational)	Plastic remnants - hard & solid	Plastic remnants - hard & solid
Glass or ceramic broken	Plastic remnants - hard & solid	Plastic film remnants (bits of plastic bag, wrap etc)	Plastic film remnants (bits of plastic bag, wrap etc)
Cigarette butts & filters	Cigarette butts & filters	Glass or ceramic broken	Plastic packaging food (wrap, packets, containers)





Left: Debris collected during a monitoring event at Norval Park, Yandaran on Taribelang Bunda, Gooreng Gooreng, Gurang, and Bailai Country. **Right:** Volunteers scouring the beach at a monitoring event at Yandaran Creek in Bundaberg on Taribelang Bunda, Gooreng Gooreng, Gurang, and Bailai Country.

Burnett Mary - South





	2022	2021	2020	2019
NUMBER OF EVENTS HELD	10	8	10	10
NUMBER OF VOLUNTEERS	56	68	76	191
VOLUNTEER HOURS	164	211	187	574
WEIGHT IN KILOGRAMS	146	180	127	380
DEBRIS DENSITY (pieces per metre square)	0.006	0.01	0.022	0.038
LAND SEA SOURCE INDEX (source of debris from land and sea)	83:17	75:25	78:22	81:19

Left: In the foreground is the erosion seen at Burnett River during a monitoring event, and behind is a Reef Check Australia volunteer collecting debris. **Right:** Reef Check Australia volunteers scouring the beach at a monitoring event at Nielson Beach, on Taribelang Bunda, Gooreng Gooreng, Gurang, and Bailai Country.

Burnett Mary - South Top 3 categories

2022	2021	2020	2019
Cigarette butts & filters	Cigarette butts & filters	Plastic remnants - hard & solid	Cigarette butts & filters
Plastic remnants - hard & solid	Plastic remnants - hard & solid	Cigarette butts & filters	Glass or ceramic broken
Plastic film remnants (bits of plastic bag, wrap etc)	Glass or ceramic broken	Building & trade materials, fixings and fittings	Plastic remnants - hard & solid





Source Reduction Plans



ReefClean Source Reduction Plans (SRPs) are informed by data from the AMDI Database, which is used to identify where debris accumulates (i.e. debris 'hotspots') and the types of debris collected. This information is used by Tangaroa Blue Foundation, stakeholders and partners to design and implement SRPs that target specific types of debris with the aim to prevent their entry into the environment.

In 2022, 18 specially designed SRPs were implemented to target fishing tackle, cigarette litter, rubber crumb and general litter through collaboration with 40 unique stakeholders. The effectiveness of these SRPs at reducing litter was monitored through 28 auditing events. Several campaigns are ongoing from previous years and all campaigns will be monitored and refined into 2023.

18 SRP CAMPAIGNS ROLLED OUT

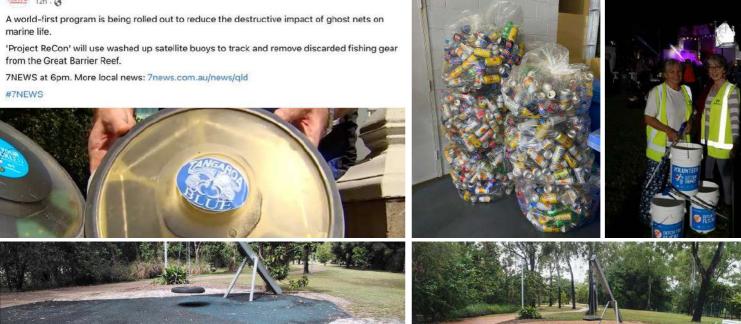
Top: Volunteers at Queensland Country Bank Stadium for the Litter Hero SRP campaign in Townsville. Middle: Example of a butt bin installed at Coral Sea Marina where signage was upgraded in 2022. Bottom: Stall and Tangaroa Blue Foundation staff members at Townsville Ecofiesta where the Ditch the Flick and Litter Hero SRPs were implemented.



Key Results from SRPs

- 47.5% total reduction in cigarette litter and 68% reduction in cigarette butts per capita at sports games at Queensland Country Bank Stadium in Townsville compared to 2021 after the installation of several butt bins and designated outdoor smoking areas (DOSA) as part of Ditch the Flick.
- After adhering better signage and stickers to butt bins at Coral Sea Marina, there has been a 53% decrease in the amount of cigarette litter at the entrance gate to the public jetty. Cigarette litter around the Garden Bistro and Bar and northern end of the jetty also reduced by 49% and 37% respectively.
- **28**% reduction in the number of litter items collected per 1000 spectators and 19% reduction in the average weight of debris collected at Queensland Country Bank Stadium in Townsville compared to 2021 as part of the Litter Hero SRP.
- As a direct result of the Rubber Crumb SRP, Cassowary Coast Regional Council will remove all rubber crumb from local playgrounds and has committed to no new rubber crumb.
- 100% reduction in the number of litter 'warning penalties' given for wrongful litter disposal of litter at the 2022 Cairns IRONMAN event (4 penalties in 2021 vs. 0 in 2022). This suggests the Litter Hero SRP has been effective at altering participant littering behaviour. IRONMAN staff, volunteers and athletes all provided feedback on the initiatives implemented in 2022, and this will be built on in 2023.

7NEWS Townsville 🔮



Top left: Snapshot from the 7News post about the innovative and exciting Project ReCon, launched in December 2022 by Tangaroa Blue Foundation in partnership with Satlink. Top middle: Cans collected from Queensland Country Bank Stadium during a sports game as part of the Litter Hero SRP campaign. Top right: Volunteers collecting litter during the North Australian Festival of Arts in Townsville as part of the Litter Hero campaign. Bottom left: Playground on the Cassowary Coast with rubber crumb. Bottom right: Same playground with rubber crumb removed by council and replaced with sand as a direct response to the ReefClean Rubber Crumb SRP.

Key Wins from ReefClean 2022





- Significant increase in the number of **Traditional Custodian groups** from 14 in 2021 to 22 in 2022.
- The number of schools, universities and youth groups has more than doubled from 2021 to 2022, with 42 schools or universities participating in clean-ups this year (compared to 19 in 2021).
- 73% of participants in 2022 were new to the ReefClean program. This is a testament to Tangaroa Blue Foundation and our partner's commitment to reach and inspire new participants every year.



Top left: Staff and volunteers at a microplastics AUSMAP training day in Townsville. **Top right:** Students from St John's Primary School listening to an educational talk at the GBRCU self-managed event at Kurrimine Beach in the Wet Tropics region. This event was in collaboration with Mandubarra Land and Sea Rangers and St John's Primary School as part of NAIDOC. **Bottom:** Volunteers and partners alongside rangers from Gunggandji-Mandingalbay Yidinji People's Prescribed Body Corporate Aboriginal Corporation at the Jilgi & Kunjurra GBRCU events.

Contributing Organisations

Tangaroa Blue Foundation would like to thank all the dedicated volunteers for their ongoing support for these annual events. Tangaroa Blue Foundation would also like to thank the following organisations for their support with the 2022 clean-ups.

NRM Groups

- Burnett Mary Regional Group
- Fitzroy Basin Association
- North Queensland Dry Tropics
- Reef Catchments
- South Cape York Catchments
- Terrain Natural Resource Management

Government Bodies and Initiatives

- Assistant Minister for Waste Reduction and Environmental Management
- Australian Banana Growers
- Australian Defence Force
- Australian Department of Agriculture
- Australian Government's Reef Trust
- Australian Institute of Marine Science
- Australian Maritime Safety Authority
- Bundaberg Regional Council
- Burdekin Shire Council
- Cassowary Coast Regional Council
- Cassowary Coast Local Marine Advisory Committee
- Coastal Dry Tropics Landcare Inc
- Cook Shire Council
- Douglas Shire Council

- Dry Tropics Partnership for Healthy Waters
- Far North Queensland Regional Organisation of Councils
- Gladstone Healthy Harbour Partnership
- Gladstone Local Marine Advisory Committee
- Gladstone Regional Council
- Gladstone Regional Council Libraries
- Great Barrier Reef Marine Park Authority
- Hinchinbrook Local Marine Advisory Committee
- Hinchinbrook Shire Council
- Inspiring Australia Queensland
- Livingstone Shire Council
- Mackay Regional Council
- Maritime Safety
 Queensland
- Northern Peninsula Area Regional Council
- Partner Up Queensland
- Port of Townsville
- Ports North
- Queensland Parks and Wildlife Services
- Regional Arts
 Development Fund
- Senator Nita Green
- Tablelands Regional Council
- Torres Strait Regional Authority - Land and Sea Rangers
- Townsville City Council

Schools/University

- Aboriginals and Torres Strait Islanders in Marine Science
- Agnes Water State Primary School
- Aitkenvale State School
- Alexandra Bay State School
- Belgian Gardens State School
- Boyne Island State School
- Burnett Heads State School
- C & K Holloways Beach Community Kindergarten
- Central Queensland University
- Chanel College
- Clinton State School
- Endeavour Christian College
- Gladstone Homeschoolers
- Gladstone State High School
- Gladstone West State Primary School
- Green STEM group
- Hermit Park State School
- Home Hill State High School
- Ingham State High School
- InTrek Volunteering (Education Queensland)
- James Cook University
- Kin Kora State School
- Lockhart River State School
- Mackay North State School
- Miallo State School
- Mourilyn State School
- Port Douglas State School

Contributing Organisations

- Port Explorers Outside Hours School Care
- Sarina High School
- Southern Cross Catholic College
- St Benedict's Catholic School
- St John Baptist Catholic Primary School
- St Johns School
- St Lukes Anglican School, Bundaberg
- Tagai State College-Darnley Island Campus
- Tannum Sands State School
- The Cathedral School
- Toolooa State High School
- Trinity Anglican School
- TropWATER, James Cook University
- Vincent State School
- William Ross State High School

Traditional Custodian Groups

- NPARC Apudthama Rangers
- Abriculture
- Dabu Jajikal Aboriginal Corporation
- Darumbal People
 Aboriginal Corporation
 Registered Native Title
 Body
- Dawul Wuru Aboriginal Corporation
- Djunbunji Land and Sea Rangers
- Gidarjil Development Corporation Limited
- Girrigun Rangers
- Gudjuda Rangers
- Gunggandji Land and Sea Rangers

- Gunggandji-Mandingalbay Yidinji Peoples Prescribed Body Corporate Aboriginal Corporation
- Jabalbina Yalanji Rangers
- Kuuku Ya'u Aboriginal Corporation
- Kuuku Ya'u Land Trust Rangers
- Lama Lama Land Trust
- Mamu Aboriginal Corporation Registered Native Title Bodies Corporate
- Mandubarra Aboriginal Land and Sea Rangers
- North Australian Indigenous Land and Sea Management Alliance
- Wulgurukaba Working Group
- Wuthathi Aboriginal Corporation
- Yintjingga Aboriginal Corporation
- Yuku Baja Muliku Rangers

Community Groups and Not-For-Profit NGOs

- Airlie Beach Rotary Club
- Arcadia Coast Care
- Association of Marine Park Tourism Operators Pty Ltd
- Australian Microplastic Assessment Project (AUSMAP)
- Birdlife Capricornia
- Boomerang Bags
- Boyne Island
 Environmental Education
 Centre
- Bundaberg VMR Family Fishing Classic
- Cairns and Far North Environment Centre

- Cairns Turtle
 Rehabilitation Center
- CapCoast Eco Warriors
- Capricornia Catchments
- Clean Up Australia Day
- Clontarf Foundation
- Coastal Marine and Environment Centre
- Coastal Marine Ecosystems Research Centre
- Coral Sea Foundation
- Coral Watch
- Discovery Coast Conservatory
- Discovery Coast Environment Group
- EarthWatch
- Eco Barge Clean Seas Inc.
- Elijah's World
- Erub Arts
- Far North Queensland GIS User Group
- Ghost Net Collective
- Great Barrier Reef Foundation
- Great Barrier Reef Legacy
- Harbour Watch
- Johnstone River Community Gardens Inc
- Kurrimine Beach Game Fishing Club
- Low Isles Preservation Society
- Mackay District Turtle Watch
- Magnetic Island Community Development Association
- Magnetic Island Network for Turtles
- MangroveWatch
- Milbi Festival
- Morris Family Foundation
- Northern Suburbs Lions Club

Contributing Organisations

- Ocean Connect
- Our World Heritage Island Initiative
- Owen's Wildlife Adventures
- PCYC Cooktown
- Plastic Free Townsville
- Queensland Water and Landcarers
- QC STEM Hub
- Reef Check Australia
- Reef Ecologic
- Rotaract
- Santalum Foundation
- South End Community
- Tangalooma Ecomarines
- Tangaroa Blue Foundation
- Team Turtle CQ
- Tidy Up Townsville Group
- Whitsunday Catchment Landcare
- Great Barrier Reef Foundation
- Great Barrier Reef Legacy
- World Science Festival
- Yeppoon Scout Group
- Young Endeavour Youth Development
- Young Veterans
 Association (Central QLD)

Tourism Operators

- 1770 LARC! Tours
- Absolute North Charters
- Crackajack Sportfishing Adventures
- Cruise Whitsundays
- Curtis Island Ferry Services
- Great Adventures Cruises
- Green Island Resort
- Greenhoose Accommodation
- Orpheus Island Lodge Resort
- Port Curtis Ferry Services

- Riverbend Tours
- Sheraton Grand Mirage
- SV Whitehaven
- Wavelength Reef Cruises
- Westofish Sportfishing Charters
- Whitehaven Adventures

Associations and

Businesses

- Aerial Media Gladstone
- Ascent Footwear
- Atlas Soils
- Australian Fishing Industry Association
- Australian Prawn Farmers Association
- Blue Planet Marine
- Boating Camping Fishing
- Bodyglide
- Bont Cycling
- Boyne Smelters Limited
- Cairns Airport
- Cairns Aquarium
- CANEGROWERS
- Catfish Athlete Apparel
- Cleanwater Group
- · Coastal Rag
- Compressport
- Conoco Phillips
- Coral Sea Marina
- Coros
- Dalrymple Bay Coal Terminal
- Discovery Coast Conservatory
- Fastgear Australia
- Feetures
- Fixx Nutrition
- Flipbelt
- Foher Co
- Foreque
- Gladstone Ports
 Corporation
- Great Barrier Reef Masters Games

- GU Energy Australia
- Hit FM
- Hydrofoil Pro Tour
- Injinji®
- International Commercial Fishing Fleet Partners
- InTrek Volunteering (Education Queensland)
- IRONMAN Asia Pacific
- IRONMAN Group Oceania
- Jewellery Design by Michele
- Lend Lease
- Litehaus International
- MAMS Group
- Mash Designs
- Maurten
- North Wind Environmental Services
- · Ocean Film Festival
- Opposite Lock
- Pillar Performance
- Port Airlie Kiosk
- Queensland Country Bank Stadium
- Rocky Instincts
- Rumble on the Reef
- Santos
- Satlink
- Shell QGC
- Sheraton Grand Mirage
- Skirt Sports
- Smart Coffee Project
- Snowy Mountains Engineering Corporation
- Spibelt
- Stanwell Power
- Tackle World
- Topo
- Ultimate Direction
- Ventou Custom Wear
- Wiggins Island Coal Export Terminal
- Wyn Republic
- Yankz



Educate • Reduce • Prevent

We would like to thank the Australian Government's Reef Trust program for their continued support of ReefClean. We would also like to thank our partners, Reef Check Australia, Capricornia Catchments, Eco Barge Clean Seas, OceanWatch Australia, South Cape York Catchments and Australian Microplastics Assessment Project (AUSMAP). Thank you to the extraordinary volunteers and collaborators, without whom ReefClean would not be able to operate. A final thank you to Tangaroa Blue Foundation staff for their tireless efforts to make this program the success that it is.