ReefClean 2019

Tackling marine debris pollution impacting the Great Barrier Reef

ReefClean is funded by the Australian Government's Reef Trust

Australian Government | REEF TRUST | TANGAROA BLUE | AUSTRALIAN MARINE DEBRIS INITIATIVE

ReefClean

Educate • Reduce • Prevent

Tangaroa Blue Foundation would like to acknowledge the First Nations people as the Traditional Owners of country across Australia and recognise their continuing connection to land, waters and culture. We pay our deep respects to all Elders past, present and emerging.

Cape York coastline during the 2019 helicopter survey.

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

Cover photo: ReefClean volunteers on Low Wooded Island in the Far North GBR

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Introduction

The Reef 2050 Long-Term Sustainability Plan 2018 *(https://www.environment.gov.au/marine/gbr/long-term-sustainability-plan)* lists 4 major influencing factors in assessing the risk of current and potential threats to the Great Barrier Reef. These are climate change, land-based runoff, coastal land-use change, and direct use. Marine debris as a threat is addressed in the plan under the influencing factors of land-based runoff and direct use.

Land-based runoff concerning the quality of water entering the reef has deteriorated over time. The presence of plastic waste has become significant, joining the sediment, herbicide and other components of runoff in rivers and drains as major threats to reef health *(Kroon et al 2016 Identification, impacts, and prioritization of emerging contaminants present in the GBR and Torres Strait marine environments).*

Direct use - legal and illegal human activities on the reef and its coastal margins - introduces various forms of marine debris including consumer items, shipping waste, and fishing gear into the reef environment.

The reef is vast with many variables influencing the abundance and distribution of marine debris. In a very general sense transport of marine debris within and across the reef is influenced by the South Equatorial Current which bifurcates in the region of central Cape York and flows north as the Hiri Current and south as the East Australian Current (Map 1). South Easterly trade winds blowing for the greater part of the year drive floatable marine debris, caught up in these currents, across the reef, and into the coast. Country of origin labelling shows that non-local marine debris affecting the reef originates from Papua New Guinea, the island nations of the Western Pacific and well beyond. It can originate from the discharge of waste from vessels and loss of fishing gear occurring throughout the reef and the wider Pacific region. Land-based sources of marine debris come from dumping, littering and waste management issues on the coast, or via runoff from rivers and drains. Cyclones and floods introduce an element of chaos when they amplify debris loads from these various sources and uncover and recirculate buried or sunken debris, and this process will intensify as the frequency and intensity of cyclones and flood events increases due to climate change.

When the community is engaged in clean-up activities using a common data collection methodology it becomes possible to build a dataset covering regional and larger scales. Data generated by community efforts can be used to calculate and estimate different aspects of marine debris including abundance, the prevalence of different items, and possible sources. These measures and estimates are not always perfect but with increasing volumes of data, they provide enough data to gain an insight on marine debris that may not otherwise be available at the scale of regions such as the Great Barrier Reef. The data is used to inform source reduction planning at a local level and enable the monitoring of government policies and initiatives at regional and higher levels.

Prevention or mitigation of the impacts of various types of plastic marine debris is the focus of information obtained from these data collection efforts. Between 2019 and 2023 the ReefClean project will conduct marine debris removal, monitoring, and source reduction activities in the six NRM regions along the Great Barrier Reef. This report will be produced annually to provide a summary of the data collected and track the progress of the ReefClean efforts.

Map 1: Schematic diagram of major ocean currents in the GBR region

ReefClean

ReefClean is a five-year project funded through a competitive tendering process which coordinates community clean-up events and education and awareness-raising activities to reduce marine debris in the Great Barrier Reef World Heritage Area. Commencing in 2019 the project is coordinated by Tangaroa Blue Foundation www.tangaroablue.org in partnership with Conservation Volunteers Australia, Reef Check Australia, AUSMAP, Eco Barge Clean Seas, Capricornia Catchments, South Cape York Catchments and OceanWatch Australia, and is funded by the Australian Government through the sixth phase of Reef Trust. *(Reef Trust Investment Strategy Phase VI, Commonwealth of Australia 2018).*

ReefClean has two main aims:

- To reduce the volume of debris generated in or entering the Great Barrier Reef that may impact listed threatened and migratory species, such as dugongs and turtles, and ecosystems of the Great Barrier Reef.
- To increase awareness in Reef catchment communities about the issue of marine debris and actions they can undertake to prevent litter from entering Reef waterways.

ReefClean work is carried out in the six Natural Resource Management (NRM) regions along the Queensland coast. These are, from north to south, Cape York, Wet Tropics, Burdekin, Mackay Whitsunday, Fitzroy, and Burnett Mary. Community clean-ups are being conducted at locations across each NRM region according to a project schedule. During October of each year, the Great Barrier Reef Clean-up is held. ReefClean conducts six flagship events for the October clean-up, one in each NRM region. Also, as part of the October event, and in conjunction with the annual ReefBlitz co-event, the public is invited to self-manage their own clean-ups and provide data to the AMDI Database.

Due to community capacity and support, several clean-up activities were also conducted in the Torres Strait NRM region contributing to the ReefClean project, this data is also included in this report.

Monitoring activities occur in the northern, middle and southern zones of each NRM region and involve an estuary and a coastal site in each of these zones except Cape York where estuary locations are excluded and replaced by a helicopter survey. Data collected from the monitoring activities will be analysed during the life of the project by the ReefClean scientific team at the University of New South Wales.

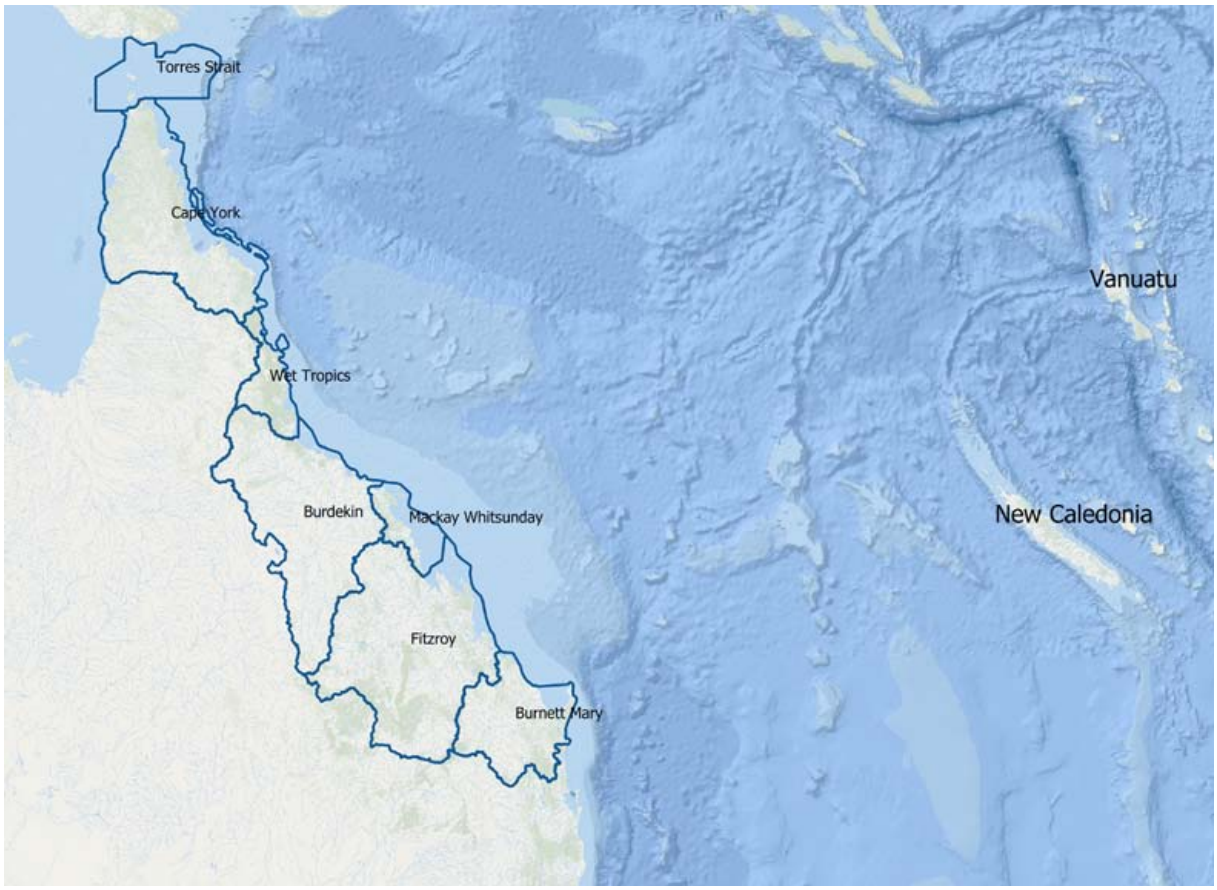
AUSMAP has completed training and conducted microplastic surveys in each NRM region for the ReefClean project and the results of these are contained in the separate AUSMAP report “Review of Microplastics across GBR Catchments - 2019”.

Source reduction plan workshops and other education and awareness-raising activities are conducted in each NRM region based on consultations with communities and Traditional Owners. Source reduction plans underway include:

- Addressing a gap in recycling opportunities for soft plastics such as plastic bags, film, and wrap in Cooktown
- Cigarette butts in Port Douglas, Cairns, Airlie Beach, Mackay and Gladstone
- Single-use plastic items in Yarrabah and single-use plastic items used at events in Townsville
- Recreational fishing gear in Cardwell
- Syringes in Bowen
- Takeaway coffee cups in Yeppoon
- Bait bags in Bundaberg

Due to almost all debris found in remote areas coming from offshore sources, the focus in these areas is on removal and sustainable disposal of debris removed, and on providing data and information in support of government level actions addressing marine debris originating from fishing, shipping and other countries.

NRM regions in the Great Barrier Reef World Heritage Area



Where marine debris is accumulating across the GBR

In the tables and graphs below the 2019 ReefClean community clean-up data is compared with 2014 - 2018 historic data from the same sites from the AMDI Database. The comparisons use items per hectare as a measure of marine debris density. The density is averaged for clean-up events occurring within the different coastal categories in each NRM region and for the two timeframes.

The coastal categories are:

a) coastal beaches in built areas

b) coastal beaches away from built areas

c) islands that are populated and/or with high visitor numbers

d) islands that are remote and/or protected.

Figures 1 and 2 show the data in graph form. The average density is used as a proxy for the abundance (total load) of marine debris in the different coastal types within the NRM regions.

Please also note that in calculating the hectare figures for the items per hectare data, an average width of 45 metres was used (calculated from historic AMDI records).

Table 1: Item density by NRM region - ReefClean 2019

ReefClean 2019 - Items per hectare - Data							
	Torres Strait	Cape York	Wet Tropics	Burdekin	Mackay Whitsundays	Fitzroy	Burnett Mary
Coastal beaches in built areas	No Data	243	181	560	1267	110	1268
Coastal beaches away from built areas	No Data	1699	565	267	1181	110	No Data
Inhabited islands	537	352	495	2049	1773	189	70
Remote islands	No Data	366	497	No Data	No Data	268	No Data

ReefClean 2019 - Items per hectare - Percentage							
	Torres Strait	Cape York	Wet Tropics	Burdekin	Mackay Whitsundays	Fitzroy	Burnett Mary
Coastal beaches in built areas	No Data	7%	5%	15%	35%	3%	35%
Coastal beaches away from built areas	No Data	44%	15%	7%	31%	3%	No Data
Inhabited islands	10%	6%	9%	38%	33%	3%	1%
Remote islands	No Data	32%	44%	No Data	No Data	24%	No Data

Table 2: Item density by location type – 2014 - 2018

2014 - 2018 Items per hectare - Data							
	Torres Strait	Cape York	Wet Tropics	Burdekin	Mackay Whitsundays	Fitzroy	Burnett Mary
Coastal beaches in built areas	No Data	186	61	123	373	90	93
Coastal beaches away from built areas	No Data	1863	297	122	710	269	174
Inhabited islands	228	282	121	766	1494	189	23
Remote islands	1081	265	359	428	1238	46	No Data

2014 - 2018 Items per hectare - Percentage							
	Torres Strait	Cape York	Wet Tropics	Burdekin	Mackay Whitsundays	Fitzroy	Burnett Mary
Coastal beaches in built areas	No Data	20%	7%	13%	40%	10%	10%
Coastal beaches away from built areas	No Data	53%	9%	4%	21%	8%	5%
Inhabited islands	7%	9%	4%	25%	48%	6%	1%
Remote islands	32%	8%	11%	13%	35%	1%	No Data

Figure 1: Comparison of marine debris density by NRM region and coastal type – ReefClean 2019

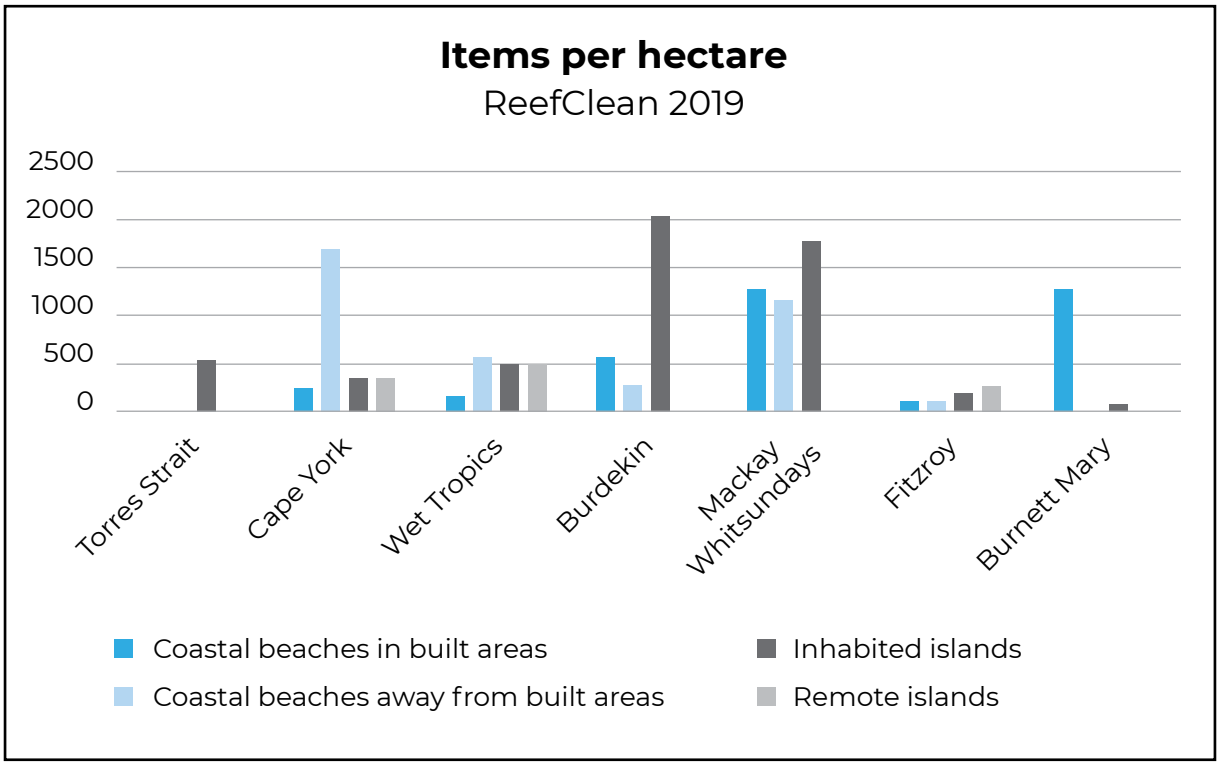
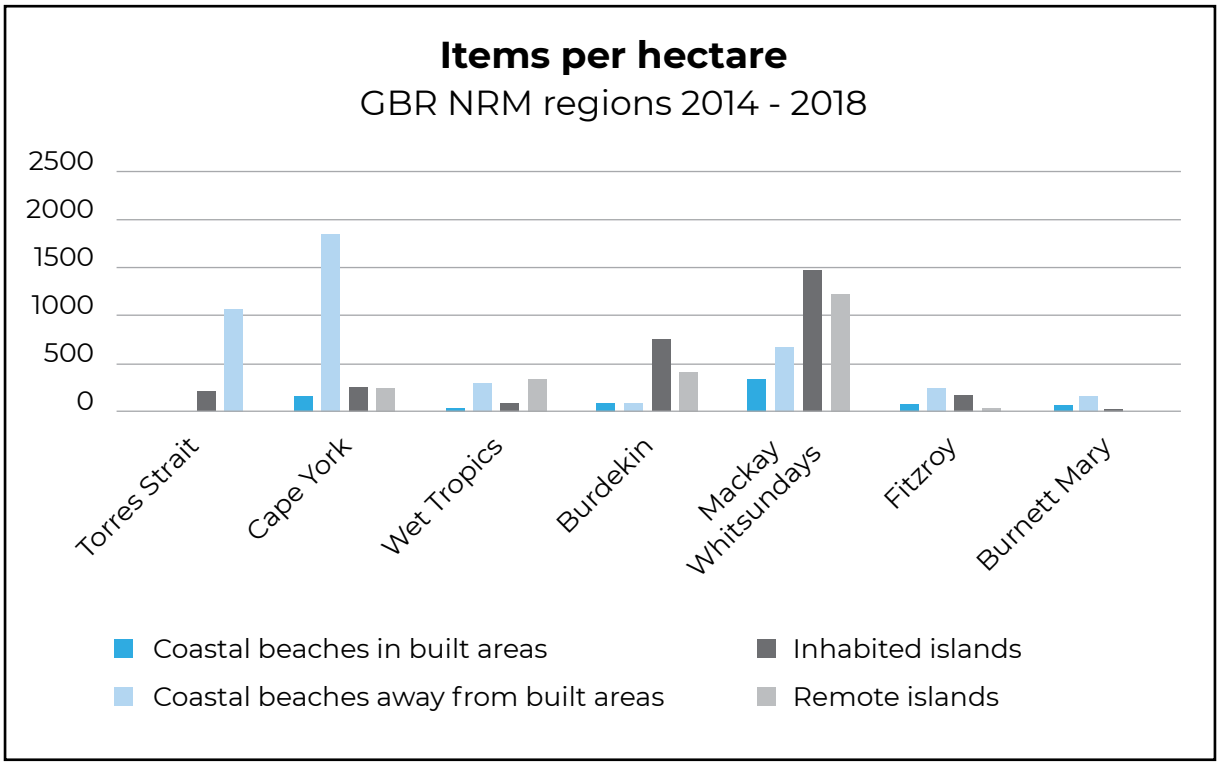


Figure 2: Comparison of marine debris density by NRM region and coastal type – 2014 - 2018



NRM region data result pages

Each NRM region is given a separate section below, which contains a page showing a map of clean-up sites and a graph that will track the density of marine debris (items per hectare) across different clean-up location categories.

Subsequent pages, one for each location category, provide data and information on the following:

Top 10 items

The types of items and their probable onshore and offshore sources provide information for developing Source Reduction Plans. The table showing the top 10 items is colour-coded to differentiate between items that have a high probability of coming from local land sources and those with a high probability of coming from offshore sources such as shipping, fishing, and ocean current-borne debris. The sites from which the 2019 ReefClean data was collected are listed in the right-hand column of this table.

Land and Sea Source Index (LSSI)

Onshore and offshore sources of marine debris are calculated using the AMDI Land and Sea Source Index (LSSI) which is not a direct measurement but a tool for providing an estimate of the land and sea components of beach debris. The LSSI concept makes use of the fact that different items behave differently in the coastal and marine environment. This difference of behaviour is based on the physical properties of items including form, material composition, buoyancy etc. House bricks and bicycles found on a beach are much less likely to have floated ashore than fishing buoys. Some items quickly lose their form, sink or snag and therefore do not or cannot travel far. Other items drift to a greater or lesser extent and some items such as lidded plastic water bottles and polystyrene foam travel great distances relatively quickly. These differences are sorted into six Dispersion Categories. The underlying principle involves estimating the (subjective) probability that items grouped under any of the dispersion categories have a local source. (A local source can be direct littering, litter escaping nearby drains or any other local land-based action resulting in loss into the environment). The LSSI therefore estimates the proportion of the total debris collected that is likely to have a land source and this can range from 100% to 0%.

Clean-up details, top 3 materials and LSSI

The second table shows the number of clean-ups, the total items removed, and the weight of items removed for the location category, then the top 3 materials and finally the LSSI percentages.

The rows below show the historic (2014-2018) data. It is important to note that due to marine debris loads and volunteer capacity at each event, not all items removed during community clean-up events may have been recorded into the AMDI Database. In these cases, an accepted sample methodology was used to record minimum volumes of marine debris data.

Wildlife

Marine debris is a major threat to the health of the Great Barrier Reef and can injure and kill marine life such as turtles, dugongs, dolphins, and seabirds, as well as impacting corals and other reef ecosystems. Observations of dead animals are noted in the opening text of each NRM region's section. These recordings are anecdotal with a small number indicating the possibility of marine debris playing a role, mostly due to entanglement in nets. Proper scientific assessment is needed to identify the cause of death of wildlife and this does not usually occur for sightings during beach clean-ups.

Underwater clean-ups

Underwater activity is summarised in the opening text of each NRM region's page where these clean-ups occurred.

Graphs and tables have not been numbered to simplify layout and space constraints.

Fitzroy Island underwater clean-up coordinated by Reef Check Australia

NRM region data results

Cape York coastline during the 2019 helicopter survey.

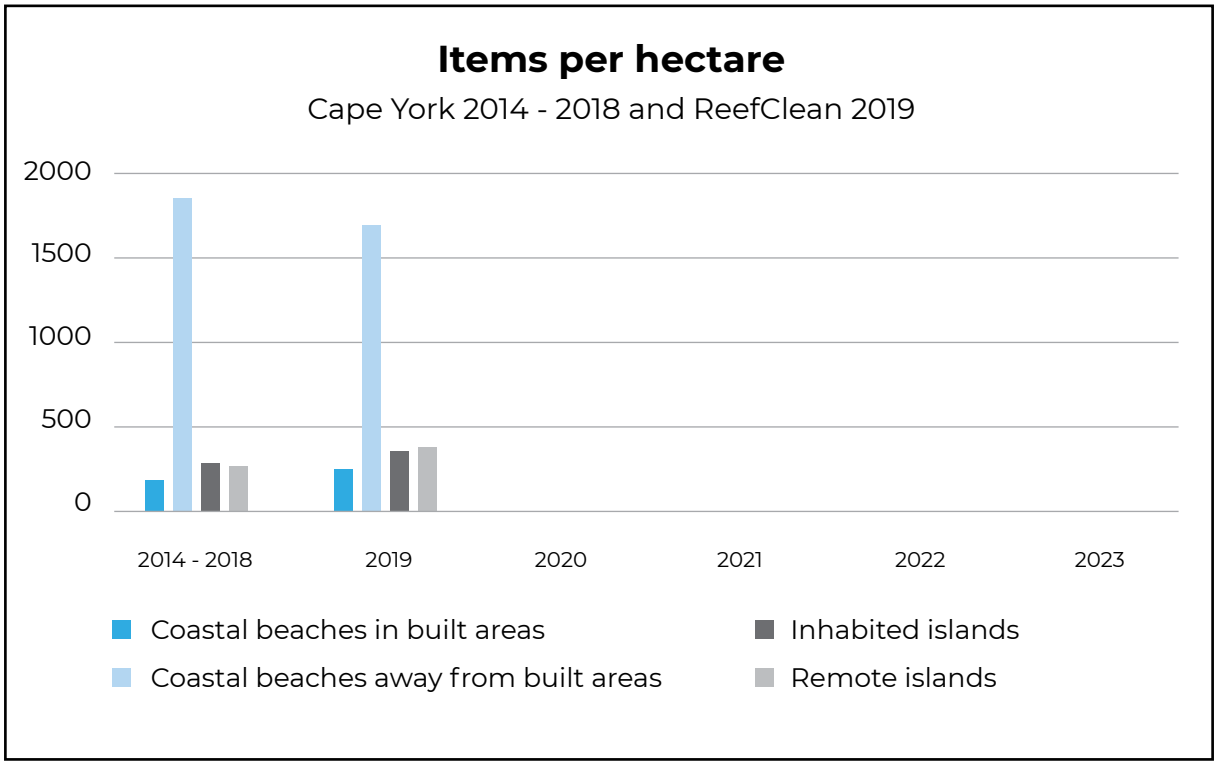
Cape York

Cape York has high densities of debris recorded along its coastline with most of this marine debris originating from offshore. The combined effects of the South Equatorial Current and the South Easterly trade winds transport debris originating from other countries, shipping and fishing activities into the region. The South Equatorial Current flows directly toward the coast in the northern half of the NRM region bringing very high levels of debris into the coast. In the wet season (December – March) wind patterns change and cyclonic weather can amplify debris loads. Local input of litter and waste recorded in the region appears to be low.

During the 2019 activities, observed dead wildlife included one dead green turtle and several seabirds. In previous years hawksbill turtles, green turtles and seabirds have been recorded.

Marine debris washed up in remote Cape York

Cape York clean-up sites



Items and sources - Cape York

Coastal beaches in built areas

Clean-up sites / notes
Cooktown North Shore

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	737	35%
2	Lids & tops, pump spray, flow restrictor & similar	236	11%
3	Foam insulation & packaging (whole and remnants)	168	8%
4	Rubber footwear & thongs	133	6%
5	Rope & net scraps less than 1 metre	87	4%
6	Plastic packaging food (wrap, packets, containers)	86	4%
7	Fishing line in metres (recreation)	81	4%
8	Paper & cardboard packaging	74	4%
9	Plastic film remnants (bits of plastic bag, wrap etc)	42	2%
10	Rope (estimated length in metres)	41	2%
		1685	**80%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Coastal beaches in built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Foam	Rubber	Debris from the land	Debris from the sea
2	**2100**	**1943**	**74%**	**9%**	**9%**	**29%**	**71%**

2014 - 2018 - Coastal beaches in built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Rubber	Foam	Debris from the land	Debris from the sea
2	**1172**	**1131**	**77%**	**9%**	**6%**	**22%**	**78%**

Items and sources - Cape York

Coastal beaches away from built areas

Clean-up sites / notes
Five Beaches Loop, Bamaga
Captain Billy's Landing
Chilli Beach
Cape Flattery Headland
Alligator Creek, Cape Bedford
Cape Bedford
Elim Beach

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	116899	59%
2	Lids & tops, pump spray, flow restrictor & similar	29347	15%
3	Plastic film remnants (bits of plastic bag, wrap etc)	6728	3%
4	Rubber footwear & thongs	4774	2%
5	Rope & net scraps less than 1 metre	4224	2%
6	Plastic drink bottles (water, juice, milk, soft drink)	3783	2%
7	Foam insulation & packaging (whole and remnants)	3702	2%
8	Rope (estimated length in metres)	2530	1%
9	Rubber remnants	2186	1%
10	Personal care & pharmaceutical packaging	1997	1%
		176170	**88%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Coastal beaches away from built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Rubber	Foam	Debris from the land	Debris from the sea
9	**197805**	**7529**	**92%**	**4%**	**2%**	**3%**	**97%**

2014 - 2018 - Coastal beaches away from built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Rubber	Foam	Debris from the land	Debris from the sea
61	**1117207**	**55374**	**89%**	**5%**	**2%**	**4%**	**96%**

Items and sources - Cape York

Inhabited islands

Clean-up sites / notes
Mangrove Beach, Lizard Island
One Tree Coconut Beach, Lizard Island
Rocky Headland between Mangrove and Trawler Beaches
Trawler Beach, Lizard Island
Watsons Bay, Lizard Island

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	1805	62%
2	Metal scrap & remnants	270	9%
3	Foam insulation & packaging (whole and remnants)	231	8%
4	Lids & tops, pump spray, flow restrictor & similar	147	5%
5	Rubber footwear & thongs	59	2%
6	Rope & net scraps less than 1 metre	52	2%
7	Plastic film remnants (bits of plastic bag, wrap etc)	48	2%
8	Plastic drink bottles (water, juice, milk, soft drink)	33	1%
9	Glass or ceramic broken	23	1%
10	Rubber remnants	23	1%
		2691	**93%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Inhabited islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Metal	Foam	Debris from the land	Debris from the sea
5	**2915**	**52**	**77%**	**10%**	**9%**	**21%**	**79%**

2014 - 2018 - Inhabited islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Rubber	Foam	Debris from the land	Debris from the sea
27	**17520**	**1040**	**86%**	**6%**	**2%**	**13%**	**87%**

Items and sources - Cape York

Remote and protected islands

Clean-up sites / notes
Eagle Isle
Low Wooded Island
North Direction Island
Palfrey Island, North Side
Rocky Islet
South Direction Island
Two Islands National Park

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	5185	44%
2	Foam insulation & packaging (whole and remnants)	1173	10%
3	Lids & tops, pump spray, flow restrictor & similar	1107	9%
4	Plastic drink bottles (water, juice, milk, soft drink)	822	7%
5	Rope (estimated length in metres)	730	6%
6	Rubber footwear & thongs	551	5%
7	Rubber remnants	346	3%
8	Glass or ceramic broken	217	2%
9	Rope & net scraps less than 1 metre	196	2%
10	Aluminium cans	111	1%
		10438	**89%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Remote and protected islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Metal	Foam	Debris from the land	Debris from the sea
8	**11905**	**812**	**75%**	**11%**	**8%**	**5%**	**95%**

2014 - 2018 - Remote and protected islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Rubber	Foam	Debris from the land	Debris from the sea
23	**10529**	**1705**	**78%**	**8%**	**8%**	**4%**	**96%**

Cape York

Photo gallery

Two canisters containing aluminium phosphide were found on remote Cape York beaches during the May marine debris helicopter survey.

1. Jess Nash joined the Chilli Beach Clean-up in August, helping to record 507 toothbrushes for the AMDI Database. 2. Crew members from the 2019 Far North Queensland island boat trip. 3. Volunteers at the North Shore Clean-up in Cooktown coordinated by South Cape York Catchments. 4. The Tangaroa Blue team working with the NPARC/Apudthama Rangers and Traditional Owners at the 5 Beaches Loop Clean-up. 5. Cape York coastline during the 2019 helicopter survey.

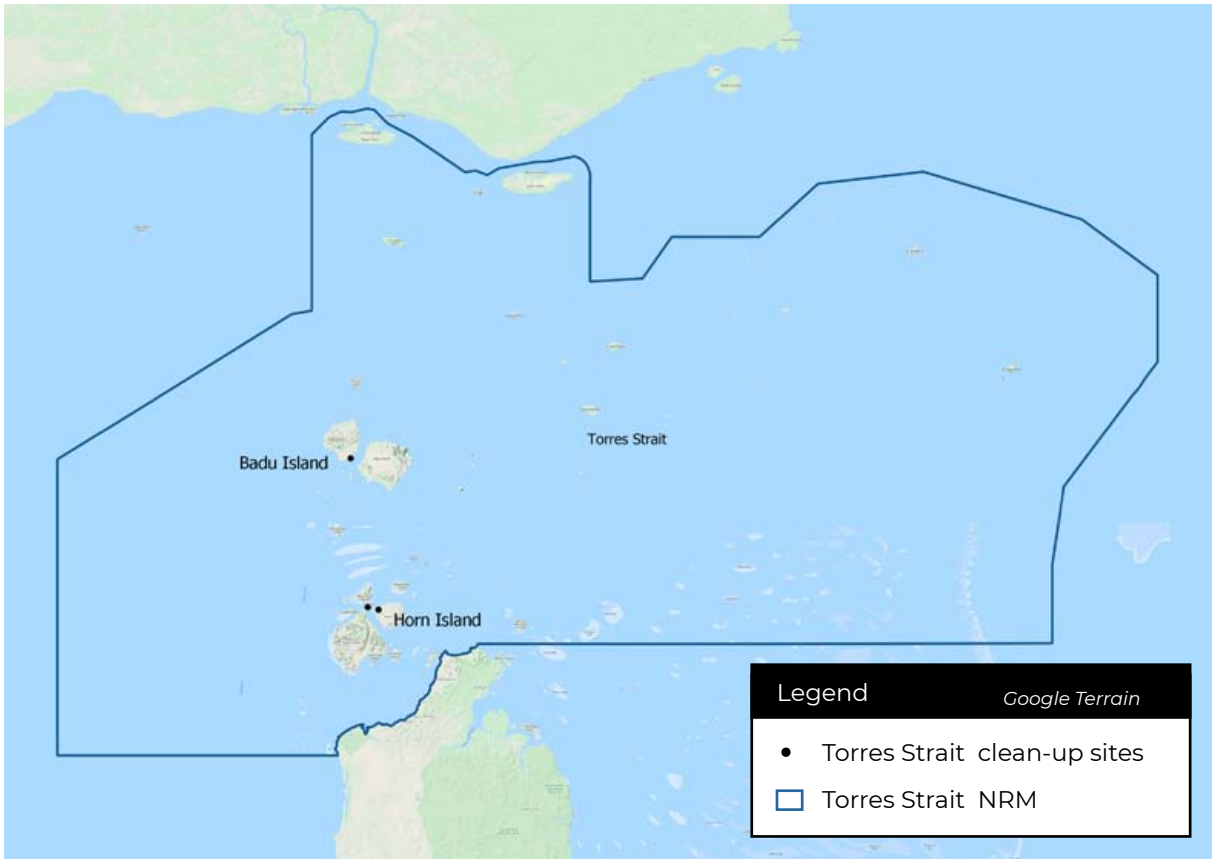
Torres Strait

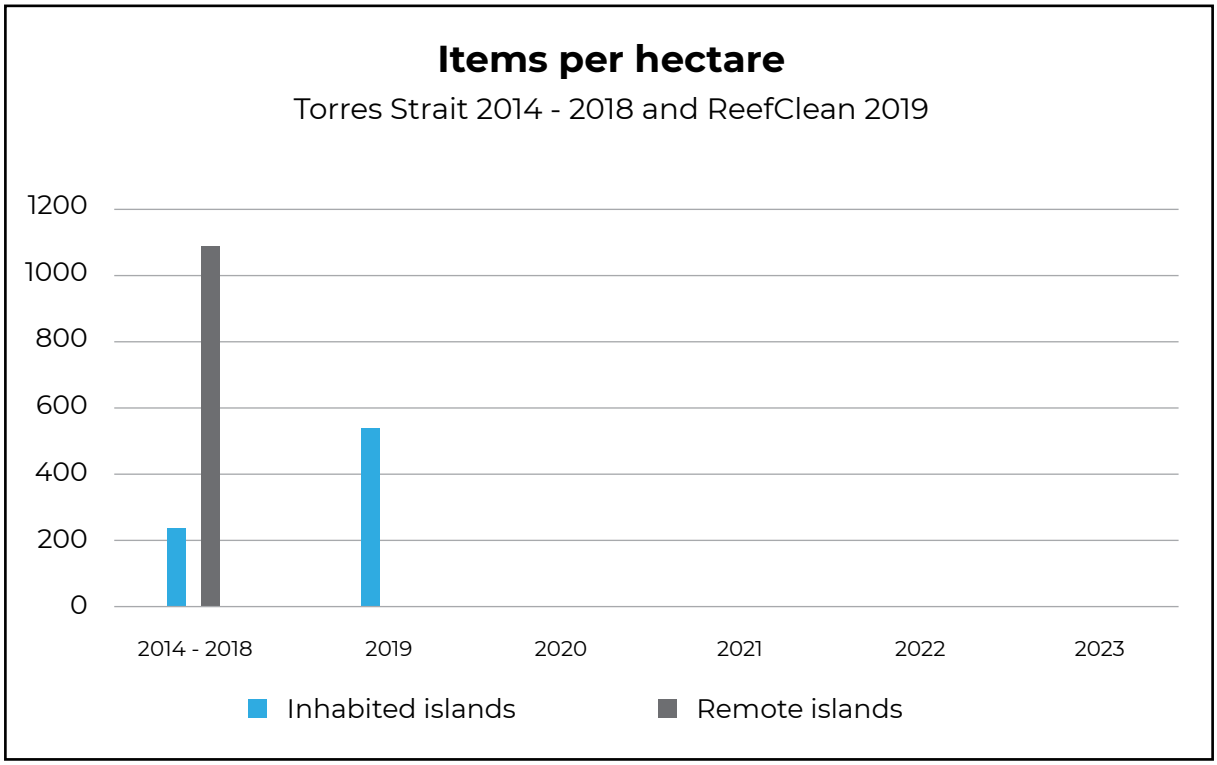
The Torres Strait is a broad, shallow region of continental shelf between the northern tip of Cape York and Papua New Guinea with numerous islands supporting small populations and many smaller uninhabited islands. South East trade winds and North Westerly monsoonal winds play seasonal roles in marine debris transportation. Shipping and fishing are likely sources of wind driven debris from the Coral and Arafura Seas and these may penetrate the region seasonally. Approximately half of the debris recorded appears to be local in origin.

No wildlife impacts were recorded from ReefClean 2019 and historic clean-up events.

Badu Island community participating in the 2019 GBR Clean-up event.

Torres Strait clean-up sites





Items and sources - Torres Strait

Inhabited islands

Clean-up sites / notes
Badu Island, Torres Strait
Horn Island Foreshore, Horn Island, Torres Strait
Federal Beach, Thursday Island, Torres Strait

Top-ranking items

Rank	Item	Total	%
1	Cigarette butts & filters	605	29%
2	Glass or ceramic broken	197	9%
3	Plastic packaging food (wrap, packets, containers)	160	8%
4	Plastic bags supermarket, garbage, dog poo, ice	120	6%
5	Lids & tops, pump spray, flow restrictor & similar	114	5%
6	Plastic film remnants (bits of plastic bag, wrap etc)	113	5%
7	Plastic bits & pieces hard & solid	101	5%
8	Plastic drink bottles (water, juice, milk, soft drink)	75	4%
9	Straws, confection sticks, cups, plates & cutlery	66	3%
10	Aluminium cans	47	2%
		1598	**76%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Inhabited islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Glass & ceramic	Metal	Debris from the land	Debris from the sea
3	**2078**	**251**	**73%**	**10%**	**6%**	**67%**	**33%**

2014 - 2018 - Inhabited islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Metal	Paper & cardboard	Debris from the land	Debris from the sea
3	**1946**	**453**	**53%**	**23%**	**6%**	**50%**	**50%**

Torres Strait

Photo gallery

2.

4.

5

7.

Badu Island community participating in the 2019 GBR Clean-up event.

Wet Tropics

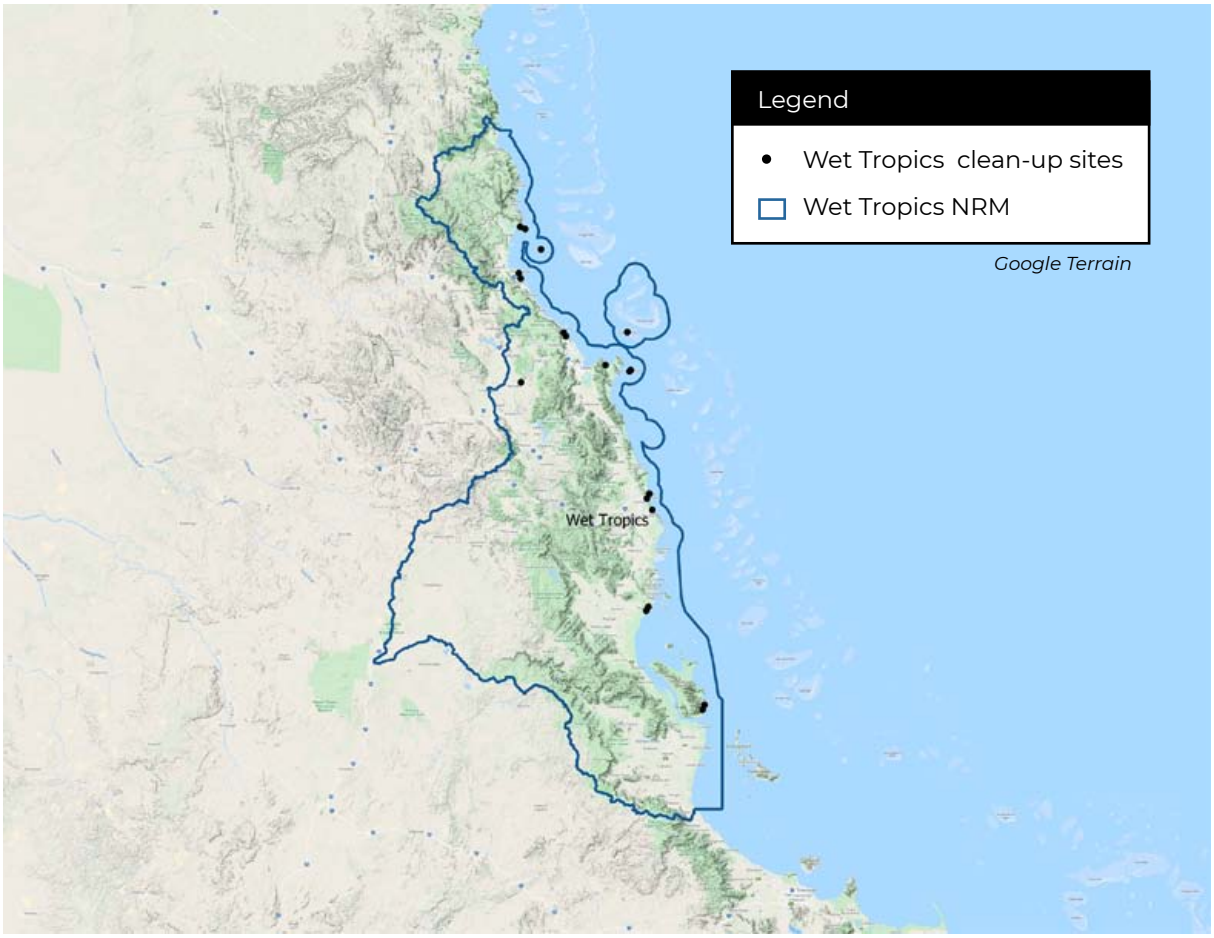
The Wet Tropics has a medium density of debris compared to the other regions with the greater proportion of debris coming from offshore. The southern diversion of the SEC at this point has become the East Australian Current (EAC) flowing parallel to the coast beyond the outer reef. The South East Trade winds transport offshore sourced debris into the region. Occasional cyclonic activity can amplify debris loads. Local inputs of debris appear to be greater by approximately one half in larger centres, and around one third for populated islands.

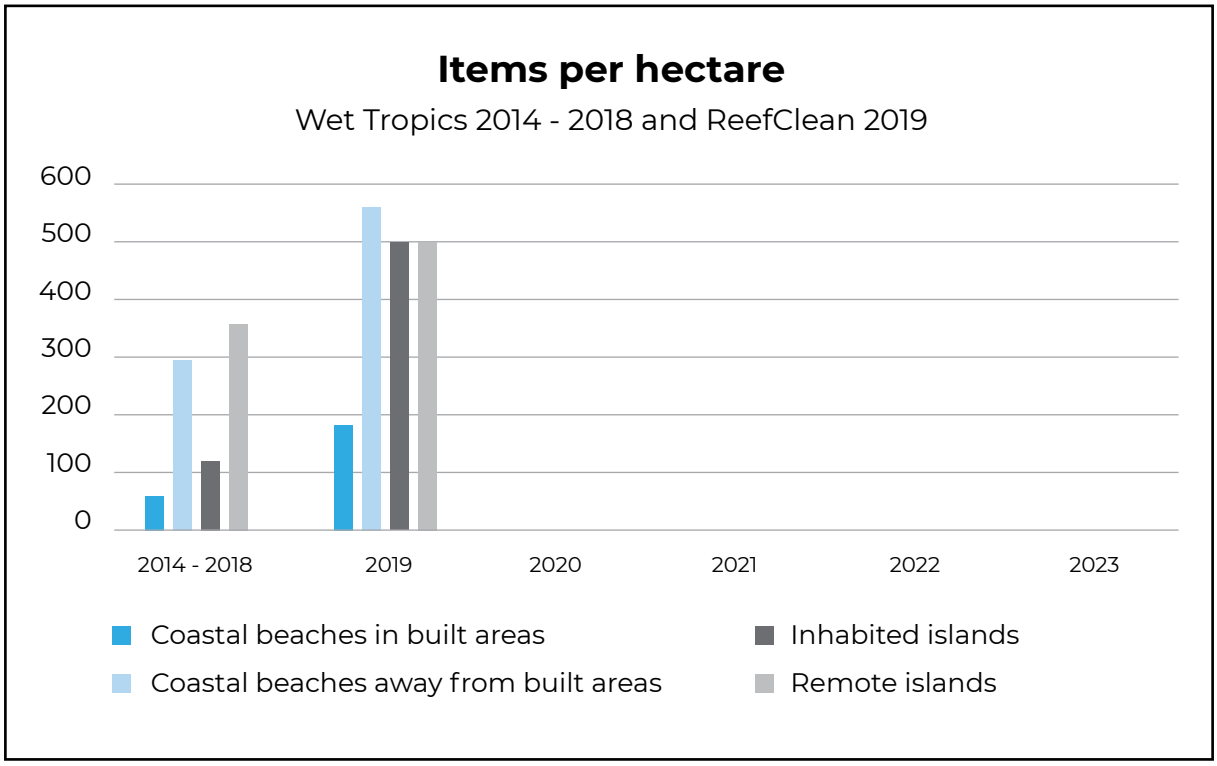
Three underwater clean-ups were held at Fitzroy Island during 2019 with toothbrushes, brushes & combs, hair ties etc., glass beer stubbies and rope being the top three items out of a total 117 items.

During the 2019 activities no dead wildlife was recorded. In previous years dead green turtles, hawksbill turtles, unknown turtles, sharks, sea snakes, stingrays, dugong, fish and crustaceans, land snakes and domestic animals have been recorded.

Cape Kimberley Community Clean-up July 2019

Wet Tropics clean-up sites





Items and sources - Wet Tropics

Coastal beaches in built areas

Clean-up sites / notes
Kewarra Beach
Clifton Beach
Yarrabah Beach

Top-ranking items

Rank	Item	Total	%
1	Plastic packaging food (wrap, packets, containers)	401	14%
2	Cigarette butts & filters	285	10%
3	Plastic film remnants (bits of plastic bag, wrap etc)	282	10%
4	Glass or ceramic broken	255	9%
5	Aluminium cans	211	7%
6	Plastic bits & pieces hard & solid	117	4%
7	Miscellaneous paper, labels & tickets	114	4%
8	Metal scrap & remnants	107	4%
9	Foam insulation & packaging (whole and remnants)	104	4%
10	Paper & cardboard packaging	101	4%
		1977	**70%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Coastal beaches in built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Metal	Glass	Debris from the land	Debris from the sea
3	**2855**	**224**	**55%**	**16%**	**12%**	**70%**	**30%**

2014 - 2018 - Coastal beaches in built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Metal	Glass	Debris from the land	Debris from the sea
225	**133101**	**49928**	**73%**	**7%**	**7%**	**56%**	**44%**

Items and sources - Wet Tropics

Coastal beaches away from built areas

Clean-up sites / notes
Cape Kimberley

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	17640	58%
2	Lids & tops, pump spray, flow restrictor & similar	3992	13%
3	Foam insulation & packaging (whole and remnants)	2481	8%
4	Straws, confection sticks, cups, plates & cutlery	852	3%
5	Plastic drink bottles (water, juice, milk, soft drink)	594	2%
6	Plastic film remnants (bits of plastic bag, wrap etc)	494	2%
7	Rubber footwear & thongs	444	1%
8	Rope & net scraps less than 1 metre	291	1%
9	Plastic packaging food (wrap, packets, containers)	235	1%
10	Personal care & pharmaceutical packaging	220	1%
		27243	**90%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Coastal beaches away from built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Rubber	Foam	Debris from the land	Debris from the sea
4	**30501**	**825**	**74%**	**9%**	**9%**	**4%**	**96%**

2014 - 2018 - Coastal beaches away from built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Foam	Glass	Debris from the land	Debris from the sea
103	**210895**	**10066**	**76%**	**12%**	**4%**	**10%**	**90%**

Items and sources - Wet Tropics

Inhabited islands

Clean-up sites / notes
Green Island, Cairns
Mulligans Bay, Hinchinbrook Island
Nudey Beach, Fitzroy Island
Snapper Island
Welcome Bay, Fitzroy Island

Top-ranking items

Rank	Item	Total	%
1	Foam insulation & packaging (whole and remnants)	9778	55%
2	Plastic bits & pieces hard & solid	2272	13%
3	Plastic drink bottles (water, juice, milk, soft drink)	870	5%
4	Fishing line in metres (Recreation)	600	3%
5	Rubber footwear & thongs	470	3%
6	Plastic film remnants (bits of plastic bag, wrap etc)	456	3%
7	Glass beer stubbies & pre-mixed alcohol bottles	314	2%
8	Glass wine, spirit and similar bottles	299	2%
9	Glass or ceramic broken	222	1%
10	Rope (estimated length in metres)	179	1%
		15460	**88%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Inhabited islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Foam	Plastic	Glass	Debris from the land	Debris from the sea
6	**17711**	**1750**	**56%**	**31%**	**6%**	**21%**	**79%**

2014 - 2018 - Inhabited islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Foam	Glass	Debris from the land	Debris from the sea
50	**22643**	**1619**	**52%**	**20%**	**9%**	**37%**	**63%**

Items and sources - Wet Tropics

Uninhabited Islands

Clean-up sites / notes
Sunken Reef Beach, Hinchinbrook Island
Woody Island

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	2215	62%
2	Lids & tops, pump spray, flow restrictor & similar	224	6%
3	Rope (estimated length in metres)	209	6%
4	Plastic drink bottles (water, juice, milk, soft drink)	206	6%
5	Plastic film remnants (bits of plastic bag, wrap etc)	96	3%
6	Foam insulation & packaging (whole and remnants)	90	3%
7	Bleach & cleaner bottles	51	1%
8	Rope & net scraps less than 1 metre	46	1%
9	Rubber footwear & thongs	45	1%
10	Glass or ceramic broken	41	1%
		3223	**90%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Uninhabited Islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Foam	Rubber	Debris from the land	Debris from the sea
2	**3576**	**491**	**92%**	**3%**	**2%**	**3%**	**97%**

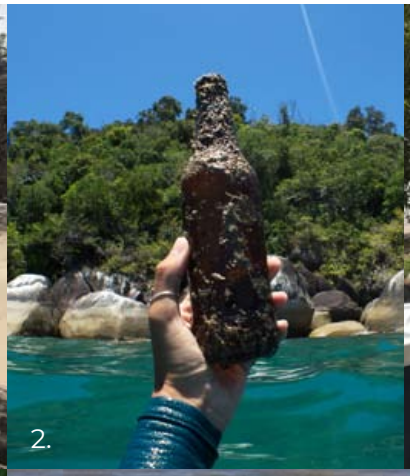
2014 - 2018 - Uninhabited Islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Foam	Rubber	Debris from the land	Debris from the sea
7	**21964**	**1406**	**88%**	**4%**	**3%**	**6%**	**94%**

Wet Tropics

Photo gallery


1.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1. Cape Kimberley Community Clean-up April 2019. 2. Bottle collected during underwater clean-up at Fitzroy Island, April 2019. 3. Community Clean-up at Yarrabah, April 2019. 4. Green Island Community clean-up volunteers, November 2019. 5. GBR Clean-up efforts on Hinchinbrook Island, October 2019. 6. Great Barrier Reef Clean-up on Hinchinbrook Island October 2019. 7. Community Clean-up at Yarrabah, April 2019.

Burdekin

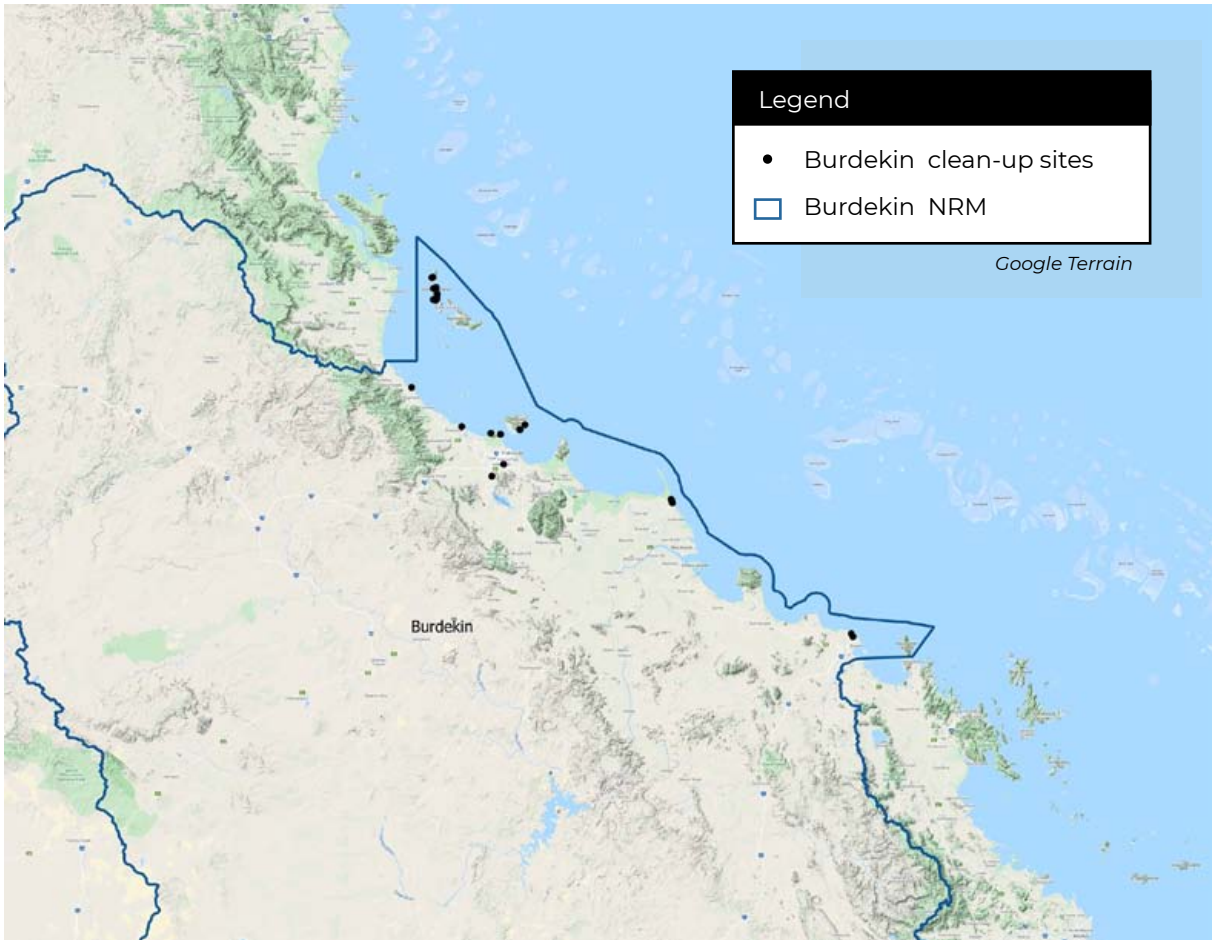
Higher debris densities in the Burdekin region are found on the islands, with inhabited islands showing the highest density and the greater proportion of debris coming from offshore sources. The East Australian Current flows parallel to the coast beyond the outer reef. The South East Trade winds now blow more parallel to the coast, potentially transporting debris from sources within the southern section of the reef in addition to current borne debris from beyond the outer reef. Occasional cyclonic activity can amplify debris loads. Local inputs of debris appear to be slightly more than half in larger centres and below one fifth for populated islands. Data for coastal beaches away from built areas is limited to one site which shows local inputs above 50%. This local input appears to be mainly from recreational users visiting the area. No ReefClean 2019 activity occurred on remote and protected islands.

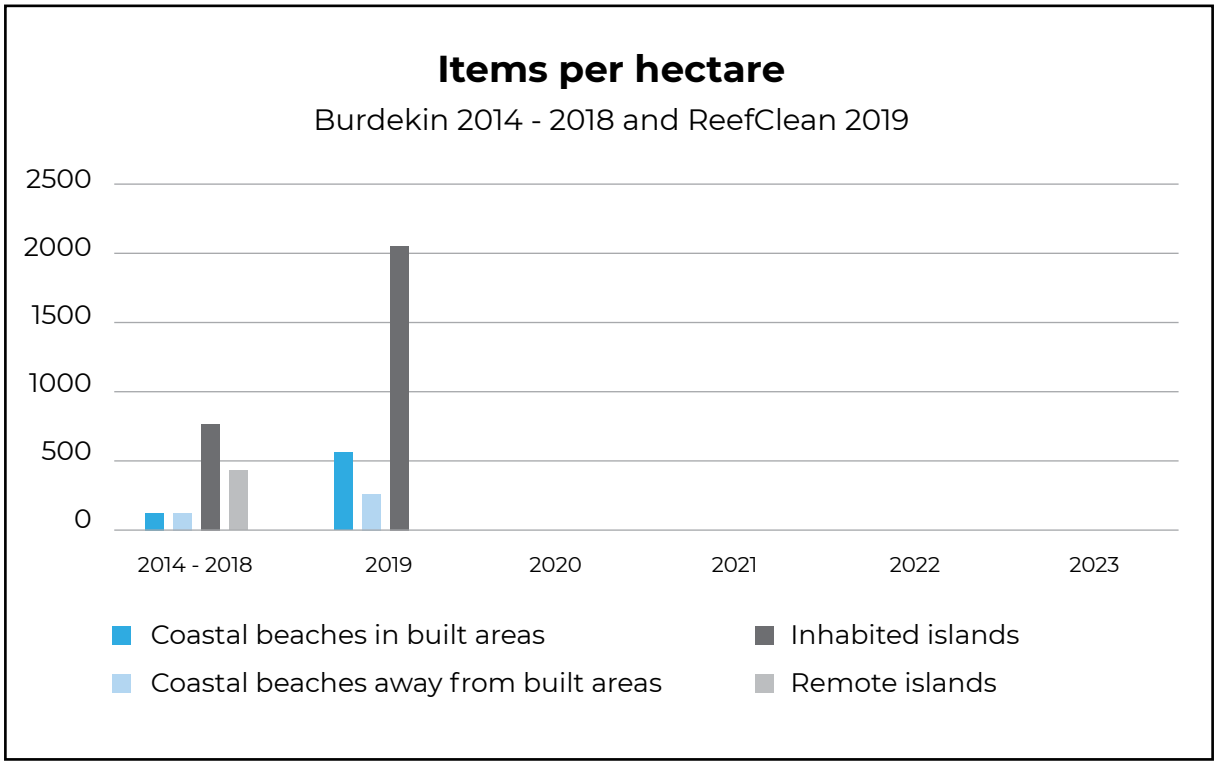
Four underwater clean-ups were held at Magnetic Island during 2019 with glass, plastic bits and pieces and fishing line being the top three items out of a total 121 items.

During the 2019 activities dead fish were observed in inland waterways. In previous years green turtles, unknown turtles, fish, stingrays, seabirds, land snakes, and domestic animals have been recorded.

Alva Beach community clean-up May 2019.

Burdekin clean-up sites





Items and sources - Burdekin

Coastal beaches in built areas

Clean-up sites / notes
Alva Beach
Rollingstone Beach
Saunders Beach

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	2620	50%
2	Glass or ceramic broken	388	7%
3	Plastic bags supermarket, garbage, dog poo, ice	321	6%
4	Lids & tops, pump spray, flow restrictor & similar	264	5%
5	Glass beer stubbies & pre-mixed alcohol bottles	189	4%
6	Aluminium cans	189	4%
7	Miscellaneous paper, labels & tickets	158	3%
8	Foam insulation & packaging (whole and remnants)	112	2%
9	Plastic film remnants (bits of plastic bag, wrap etc)	99	2%
10	Cigarette butts & filters	85	2%
		4425	**85%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Coastal beaches in built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Glass	Metal	Debris from the land	Debris from the sea
3	**5195**	**612**	**72%**	**12%**	**5%**	**44%**	**56%**

2014 - 2018 - Coastal beaches in built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Glass	Metal	Debris from the land	Debris from the sea
36	**28622**	**1844**	**63%**	**12%**	**8%**	**63%**	**37%**

Items and sources - Burdekin

Coastal beaches away from built areas

Clean-up sites / notes
Shelly Beach, Pallarenda

Top-ranking items

Rank	Item	Total	%
1	Fishing line in metres (Recreation)	160	24%
2	Plastic bits & pieces hard & solid	143	21%
3	Aluminium cans	46	7%
4	Glass or ceramic broken	37	5%
5	Metal scrap & remnants	35	5%
6	Plastic drink bottles (water, juice, milk, soft drink)	35	5%
7	Lids & tops, pump spray, flow restrictor & similar	20	3%
8	Foam insulation & packaging (whole and remnants)	17	3%
9	Miscellaneous paper, labels & tickets	16	2%
10	Glass beer stubbies & pre-mixed alcohol bottles	14	2%
		523	**77%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Coastal beaches away from built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Metal	Rubber	Debris from the land	Debris from the sea
1	**673**	**90**	**65%**	**13%**	**3%**	**52%**	**48%**

2014 - 2018 - Coastal beaches away from built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Glass	Metal	Debris from the land	Debris from the sea
8	**6657**	**1055**	**37%**	**29%**	**28%**	**58%**	**42%**

Items and sources - Burdekin

Inhabited islands

Clean-up sites / notes
Magnetic Island
Alma Bay
Nelly Bay Beach
Orpheus Island
Big Rock Bay
Boulder Beach
Cattle Bay
Fig Tree Beach
Hazard Bay
North Beach
Picnic Bay
Pioneer Bay
South Beach
Yanks Jetty

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	70735	79%
2	Lids & tops, pump spray, flow restrictor & similar	6262	7%
3	Plastic film remnants (bits of plastic bag, wrap etc)	1563	2%
4	Foam insulation & packaging (whole and remnants)	1358	2%
5	Plastic drink bottles (water, juice, milk, soft drink)	1294	1%
6	Rope & net scraps less than 1 metre	842	1%
7	Rubber footwear & thongs	731	1%
8	Plastic packaging food (wrap, packets, containers)	687	1%
9	Rope (estimated length in metres)	544	1%
10	Bleach & cleaner bottles	476	1%
		84492	**96%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Inhabited islands

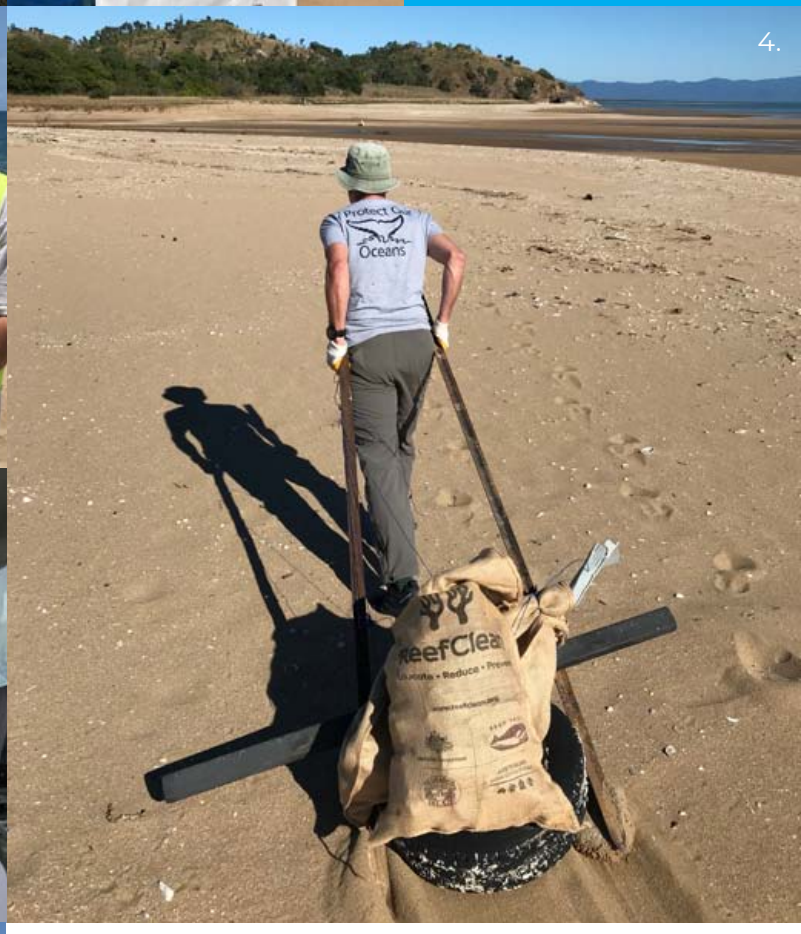
Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Foam	Rubber	Debris from the land	Debris from the sea
20	**89990**	**1891**	**95%**	**2%**	**1%**	**5%**	**95%**

2014 - 2018 - Inhabited islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Rubber	Glass	Debris from the land	Debris from the sea
42	**123469**	**4919**	**91%**	**2%**	**2%**	**20%**	**80%**

Burdekin

Photo gallery



1. Community clean-up volunteers at Shelly Beach, June 2019. 2. Alva Beach coastal monitoring site, December 2019. 3. Volunteers during debris monitoring activities at Queens Beach, Bowen 4. Community clean-up volunteers at Shelly Beach, June 2019. 5. Sorting debris during clean-up at Fig Tree Bay, Orpheus Island, March 2019. 6.. Clean-up volunteers at South Beach, Orpheus Island.

Mackay Whitsunday

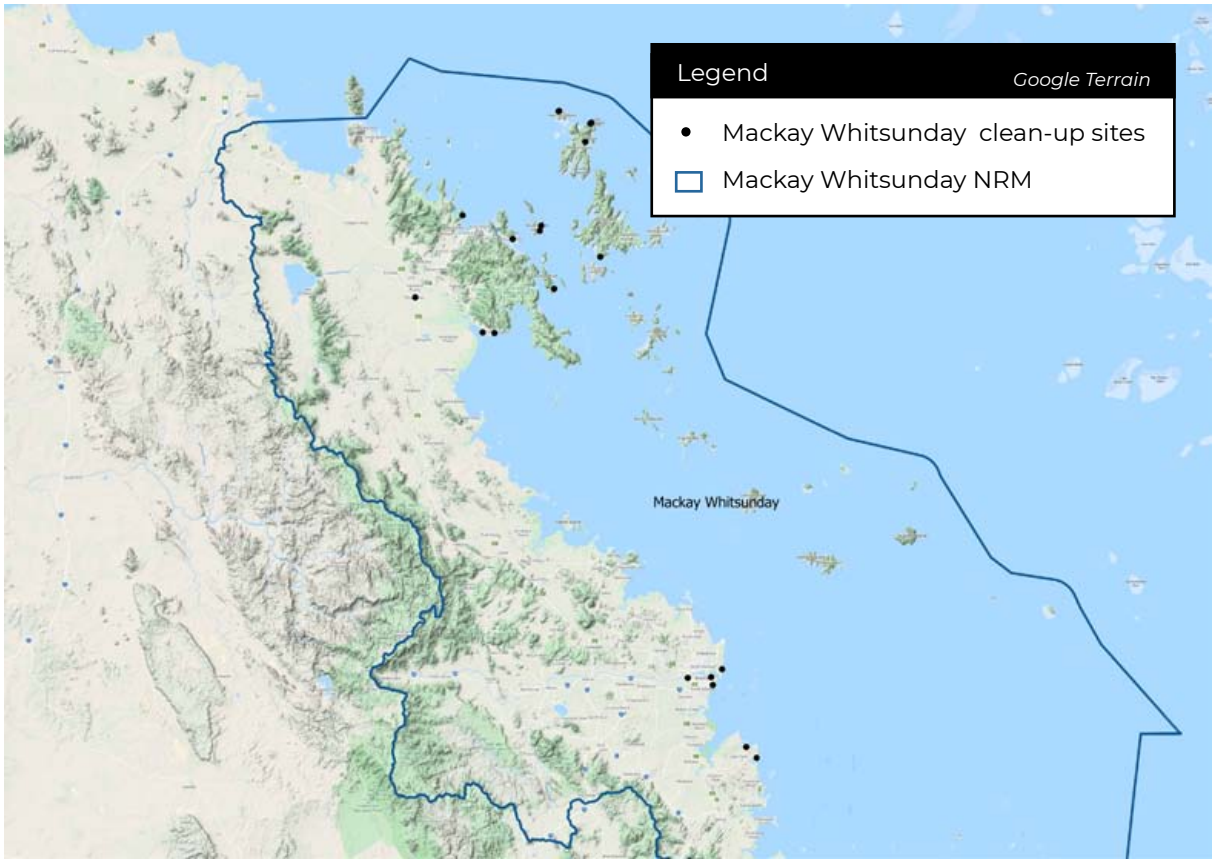
Mackay Whitsunday has the highest density of debris compared to the other regions and this occurs for both islands and coastal locations. The greater proportion of debris originates from offshore. The East Australian Current flows parallel to the coast but at an increasing distance offshore and beyond the outer reef. The South East Trade winds now blow more or less parallel to the coast and slightly into it, potentially transporting debris from sources within the southern section of the reef and from the East Australian Current as it veers toward the coast south at the southern extent of the reef. Occasional cyclonic activity can amplify debris loads. Local inputs of debris appear to be slightly more than half in larger centres and below one fifth for populated islands. No ReefClean 2019 activity occurred on remote and protected islands.

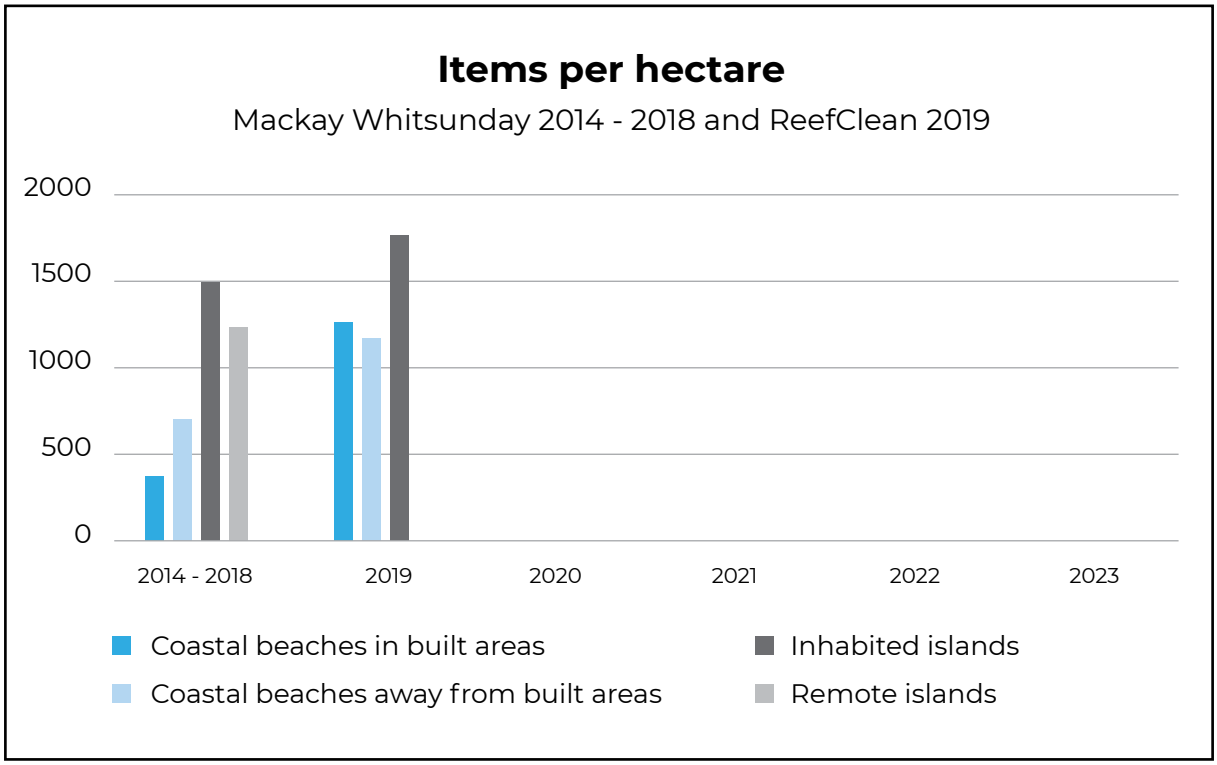
Underwater clean-ups were conducted at Hayman Island and Hook Island with the top three items being plastic drink bottles, fishing line and recreation & outdoor equipment from a total of 25 items.

During the 2019 monitoring activities some dead fish were recorded in inland waterways but no dead wildlife on the coasts or islands. In previous years green turtles, unknown turtles, sharks, sea snakes, fish and land snakes have been recorded.

Volunteers at the GBR Clean-up event in Mackay, October 2019

Mackay Whitsunday clean-up sites





Items and sources - Mackay Whitsunday

Coastal beaches in built areas

Clean-up sites / notes
Town Beach, Mackay

Top-ranking items

Rank	Item	Total	%
1	Plastic film remnants (bits of plastic bag, wrap etc)	1227	43%
2	Cigarette butts & filters	540	19%
3	Paper & cardboard packaging	156	5%
4	Remnants burnt plastic	147	5%
5	Plastic packaging food (wrap, packets, containers)	113	4%
6	Straws, confection sticks, cups, plates & cutlery	72	3%
7	Lids & tops, pump spray, flow restrictor & similar	68	2%
8	Glass or ceramic broken	66	2%
9	Rope & net scraps less than 1 metre	51	2%
10	Metal bottle caps, lids & pull tabs	44	2%
		2484	**87%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Coastal beaches in built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Paper	Metal	Debris from the land	Debris from the sea
1	**2850**	**54**	**83%**	**6%**	**5%**	**59%**	**41%**

2014 - 2018 - Coastal beaches in built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Foam	Glass	Debris from the land	Debris from the sea
82	**96202**	**6672**	**76%**	**7%**	**5%**	**56%**	**44%**

Items and sources - Mackay Whitsunday

Coastal beaches away from built areas

Clean-up sites / notes
Bluff Point North East Side, Pioneer Bay

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	1602	51%
2	Lids & tops, pump spray, flow restrictor & similar	166	5%
3	Plastic film remnants (bits of plastic bag, wrap etc)	157	5%
4	Plastic drink bottles (water, juice, milk, soft drink)	138	4%
5	Foam insulation & packaging (whole and remnants)	131	4%
6	Processed timber, pallets & other wood	112	4%
7	Plastic packaging food (wrap, packets, containers)	75	2%
8	Rubber footwear & thongs	74	2%
9	Rope & net scraps less than 1 metre	72	2%
10	Rope (estimated length in metres)	53	2%
		2580	**81%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Coastal beaches away from built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Foam	Wood	Debris from the land	Debris from the sea
1	**3135**	**569**	**82%**	**5%**	**4%**	**6%**	**94%**

2014 - 2018 - Coastal beaches away from built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Foam	Glass	Debris from the land	Debris from the sea
26	**84440**	**8938**	**87%**	**3%**	**3%**	**19%**	**81%**

Items and sources - Mackay Whitsunday

Inhabited islands

Clean-up sites / notes
Blue Pearl Bay, Hayman Island
Luncheon Bay, Hook Island
North Turtle Bay, South Molle Island
Saba Bay, Hook Island
South East Bay, Long Island
Southern Tip, Whitsunday Island
Turtle Bay, South Molle Island

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	35445	68%
2	Lids & tops, pump spray, flow restrictor & similar	8669	17%
3	Rope & net scraps less than 1 metre	866	2%
4	Rope (estimated length in metres)	846	2%
5	Plastic film remnants (bits of plastic bag, wrap etc)	492	1%
6	Glass or ceramic broken	449	1%
7	Foam insulation & packaging (whole and remnants)	443	1%
8	Rubber footwear & thongs	438	1%
9	Plastic drink bottles (water, juice, milk, soft drink)	428	1%
10	Toothbrushes, brushes & combs, hair ties etc	322	1%
		48398	**95%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Inhabited islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Rubber	Foam	Debris from the land	Debris from the sea
9	**52511**	**1414**	**96%**	**1%**	**1%**	**13%**	**87%**

2014 - 2018 - Inhabited islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Rubber	Foam	Debris from the land	Debris from the sea
101	**323596**	**20993**	**93%**	**2%**	**2%**	**13%**	**87%**

Mackay Whitsunday

Photo gallery


1.


2.


3.


4.


5.


6.

1. Hook Island underwater and island clean-up coordinated by Reef Check Australia, October 2019 2. Conservation Volunteers Australia at Half Tide Beach March 2019. 3. Data collection with the Eco Barge Clean Seas team. 4. AUSMAP training in Airlie Beach June 2019. 5. Eco Barge Clean Sea's community clean-up event at South Molle Island, September 2019. 6. Eco Barge at South Molle Island June 2019.

Fitzroy

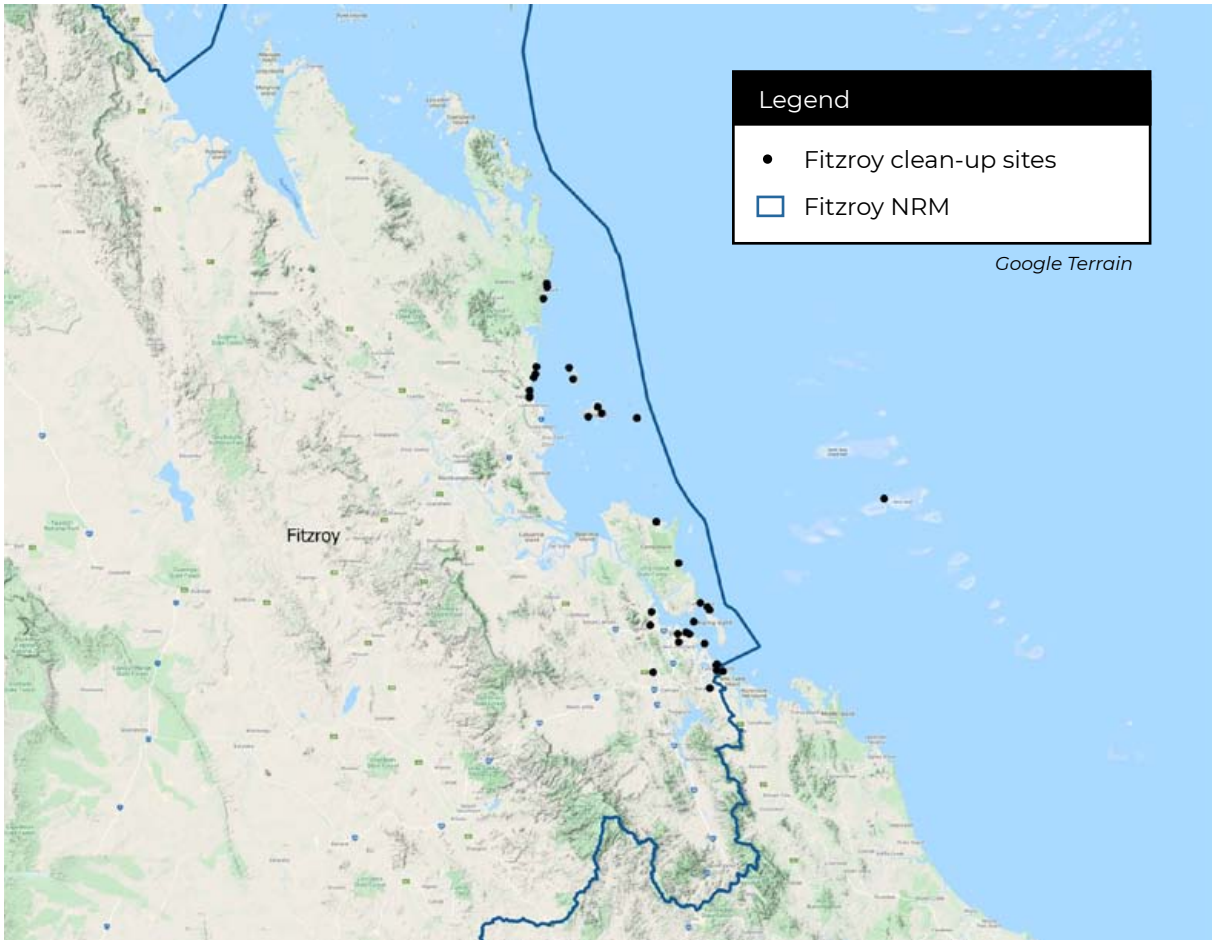
Fitzroy has a lower density of debris compared to the other regions with islands showing a higher density than coastal locations. More of the debris load appears to originate from offshore. The East Australian Current veers toward the coast at this point. The South East Trade winds blow more or less parallel to but slightly in toward the coast, potentially transporting debris from the southern reef area. Occasional cyclonic activity can amplify debris loads. Local inputs of debris appear to be slightly more than half in larger centres and below one fifth for populated islands.

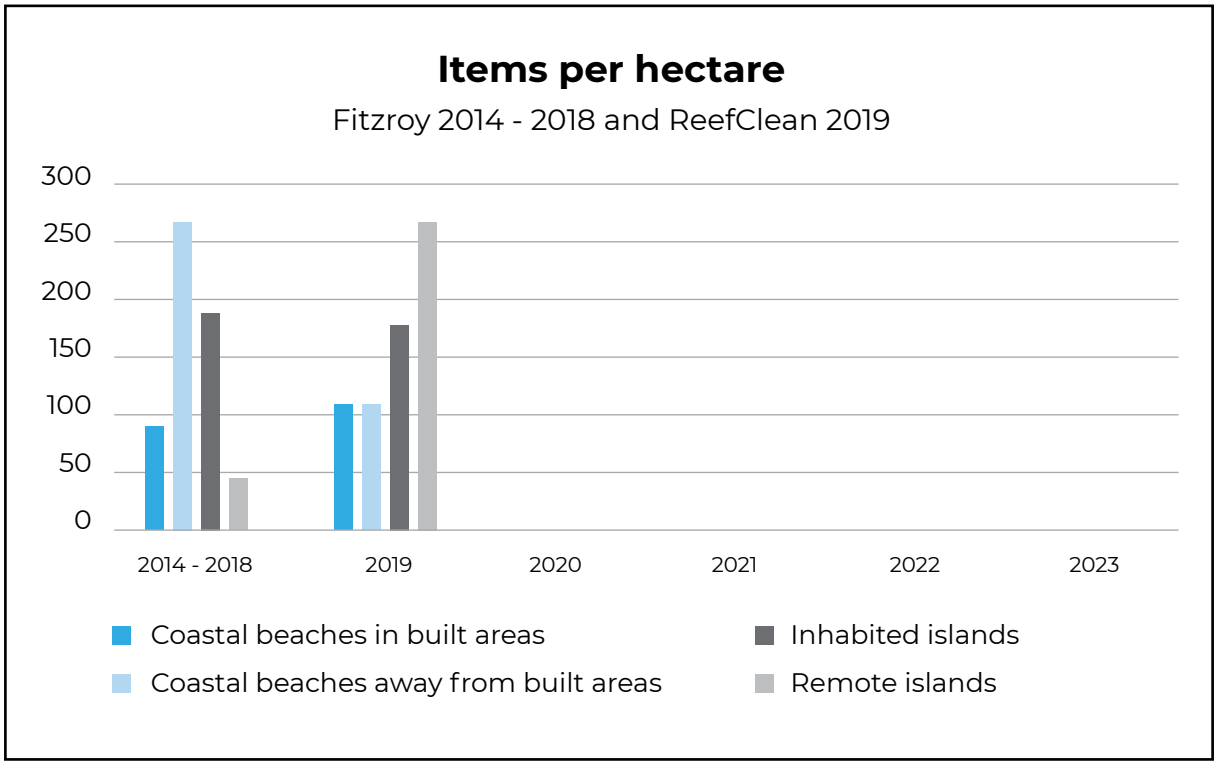
Underwater clean-ups were held at Egg Reef and Heron Island during 2019 with fishing line, plastic bits and pieces and glass being the top three items out of a total of 430 items.

During the 2019 activities dead fish and seabirds were recorded. In previous years flatback turtles, green turtles, unknown turtles, seabirds, fish and crustaceans, sharks, sea snakes, domestic animals and native animals have been recorded.

Young beach lovers at the GBR Clean-up event, Farnborough Beach, October 2019

Fitzroy clean-up sites





Items and sources - Fitzroy

Coastal beaches in built areas

Clean-up sites / notes
Wild Cattle Creek Boat Ramp, Tannum Sands
Barney Point, Gladstone
Canoe Point, Tannum Sands
Farnborough Beach
Lillys Beach North End, Tannum Sands
Spring Head to Barwells Creek, Yeppoon
Yeppoon Main Beach

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	1815	26%
2	Cigarette butts & filters	1632	23%
3	Lids & tops, pump spray, flow restrictor & similar	412	6%
4	Foil wrappers, packets, bladders & alfoil	322	5%
5	Plastic film remnants (bits of plastic bag, wrap etc)	297	4%
6	Rope & net scraps less than 1 metre	240	3%
7	Glass or ceramic broken	166	2%
8	Plastic drink bottles (water, juice, milk, soft drink)	150	2%
9	Straws, confection sticks, cups, plates & cutlery	140	2%
10	Plastic packaging food (wrap, packets, containers)	134	2%
		5308	**75%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Coastal beaches in built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Metal	Glass	Debris from the land	Debris from the sea
9	**7071**	**403**	**76%**	**9%**	**5%**	**53%**	**47%**

2014 - 2018 - Coastal beaches in built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Metal	Glass	Debris from the land	Debris from the sea
183	**93242**	**15721**	**69%**	**13%**	**6%**	**46%**	**54%**

Items and sources - Fitzroy

Coastal beaches away from built areas

Clean-up sites / notes
Five Rocks Beach, Byfield
Nine Mile Beach, Byfield
Three Rivers Beach, Byfield

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	7998	61%
2	Lids & tops, pump spray, flow restrictor & similar	1815	14%
3	Rope & net scraps less than 1 metre	676	5%
4	Plastic drink bottles (water, juice, milk, soft drink)	264	2%
5	Bleach & cleaner bottles	191	1%
6	Foam insulation & packaging (whole and remnants)	187	1%
7	Rope (estimated length in metres)	182	1%
8	Rubber footwear & thongs	164	1%
9	Cyalume glow sticks	122	1%
10	Plastic packaging food (wrap, packets, containers)	115	1%
		11714	**88%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Coastal beaches away from built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Rubber	Foam	Debris from the land	Debris from the sea
6	**13010**	**1561**	**95%**	**2%**	**2%**	**2%**	**98%**

2014 - 2018 - Coastal beaches away from built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Glass	Foam	Debris from the land	Debris from the sea
24	**59044**	**11791**	**87%**	**3%**	**3%**	**8%**	**92%**

Items and sources - Fitzroy

Inhabited islands

Clean-up sites / notes
East Beach, Quoin Island
Esplanade Beach, Curtis Island
Long Beach, Great Keppel Island
Mazie Bay, North Keppel Island
North East Shore, Facing Island
North West Shore, Facing Island
Red Beach, Great Keppel Island
Stone Hut, Curtis Island
Wreck Beach, Great Keppel Island

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	15362	65%
2	Lids & tops, pump spray, flow restrictor & similar	3407	14%
3	Rope & net scraps less than 1 metre	810	3%
4	Glass or ceramic broken	547	2%
5	Plastic drink bottles (water, juice, milk, soft drink)	296	1%
6	Foam insulation & packaging (whole and remnants)	242	1%
7	Rubber footwear & thongs	210	1%
8	Plastic film remnants (bits of plastic bag, wrap etc)	210	1%
9	Strapping band scraps	185	1%
10	Rope (estimated length in metres)	159	1%
		21428	**90%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Inhabited islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Glass	Rubber	Debris from the land	Debris from the sea
10	**23672**	**1291**	**92%**	**3%**	**1%**	**15%**	**85%**

2014 - 2018 - Inhabited islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Glass	Foam	Debris from the land	Debris from the sea
43	**41951**	**2368**	**87%**	**6%**	**2%**	**18%**	**82%**

Items and sources - Fitzroy

Remote and protected islands

Clean-up sites / notes
Conical Island, Keppel Bay Islands National Park
Joey Lees Beach, Curtis Island NP

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	1141	63%
2	Lids & tops, pump spray, flow restrictor & similar	239	13%
3	Rope & net scraps less than 1 metre	69	4%
4	Plastic drink bottles (water, juice, milk, soft drink)	55	3%
5	Rubber footwear & thongs	45	2%
6	Foam insulation & packaging (whole and remnants)	44	2%
7	Bleach & cleaner bottles	32	2%
8	Processed timber, pallets & other wood	23	1%
9	Strapping band scraps	14	1%
10	Bait containers & lids, bait savers	13	1%
		1675	**92%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Remote and protected islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Rubber	Foam	Debris from the land	Debris from the sea
2	**1811**	**296**	**91%**	**3%**	**2%**	**2%**	**98%**

2014 - 2018 - Remote and protected islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Metal	Other	Debris from the land	Debris from the sea
5	**953**	**64**	**78%**	**7%**	**4%**	**15%**	**85%**

Fitzroy

Photo gallery

1. Joey Lees Beach, Curtis Island, October 2019
2. Keppel Bay Community Clean-up with Capricornia Catchments, December 2019 3. Five Rocks Community Clean-up organised by Capricornia Catchments, September 2019. 4. Debris collected from the beaches of Curtis Island, October 2019. 5. Hard work – Curtis Island Clean-up coordinated by Conservation Volunteers Australia October 2019. 6. Volunteers sort debris at the Community Clean-up, Farnborough Beach, October 2019

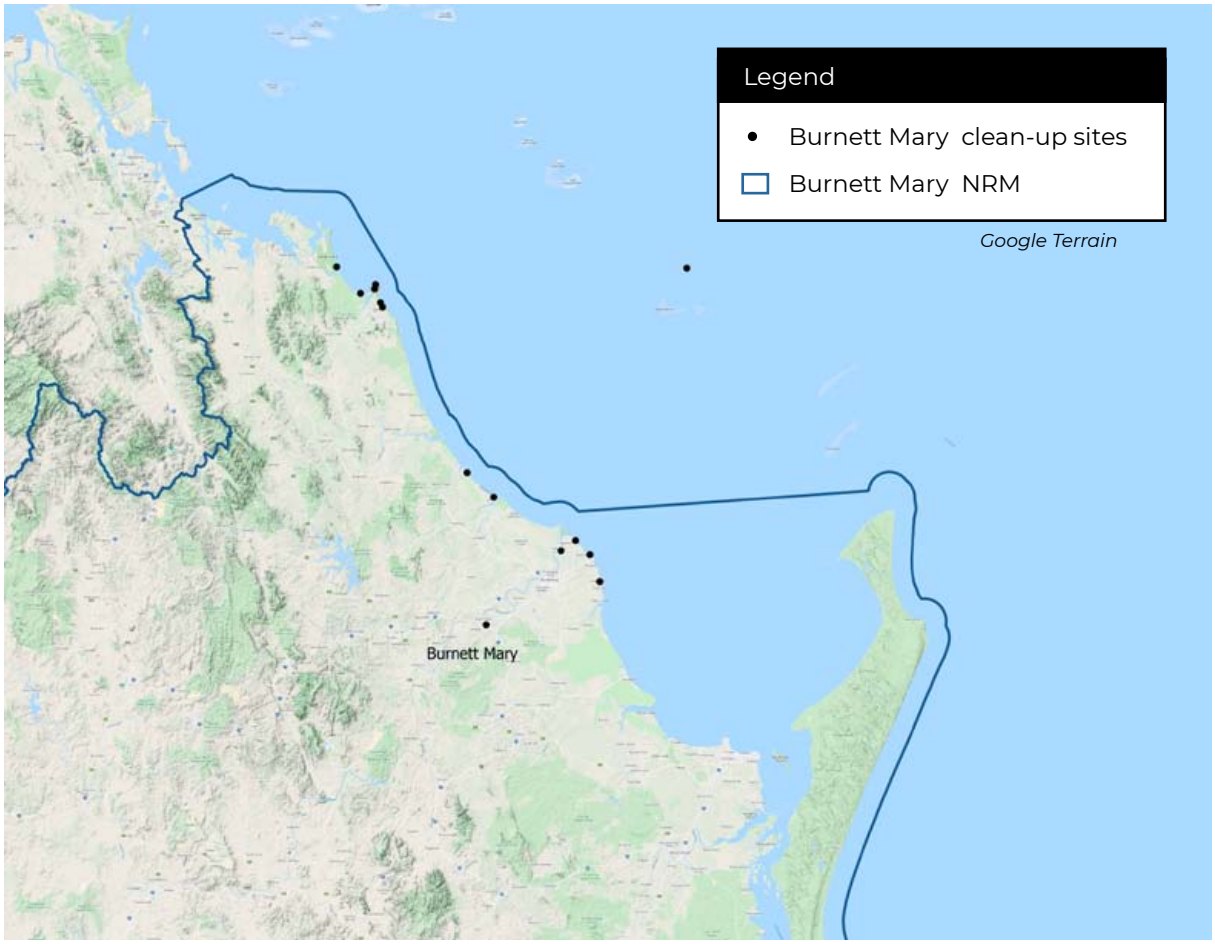
Burnett Mary

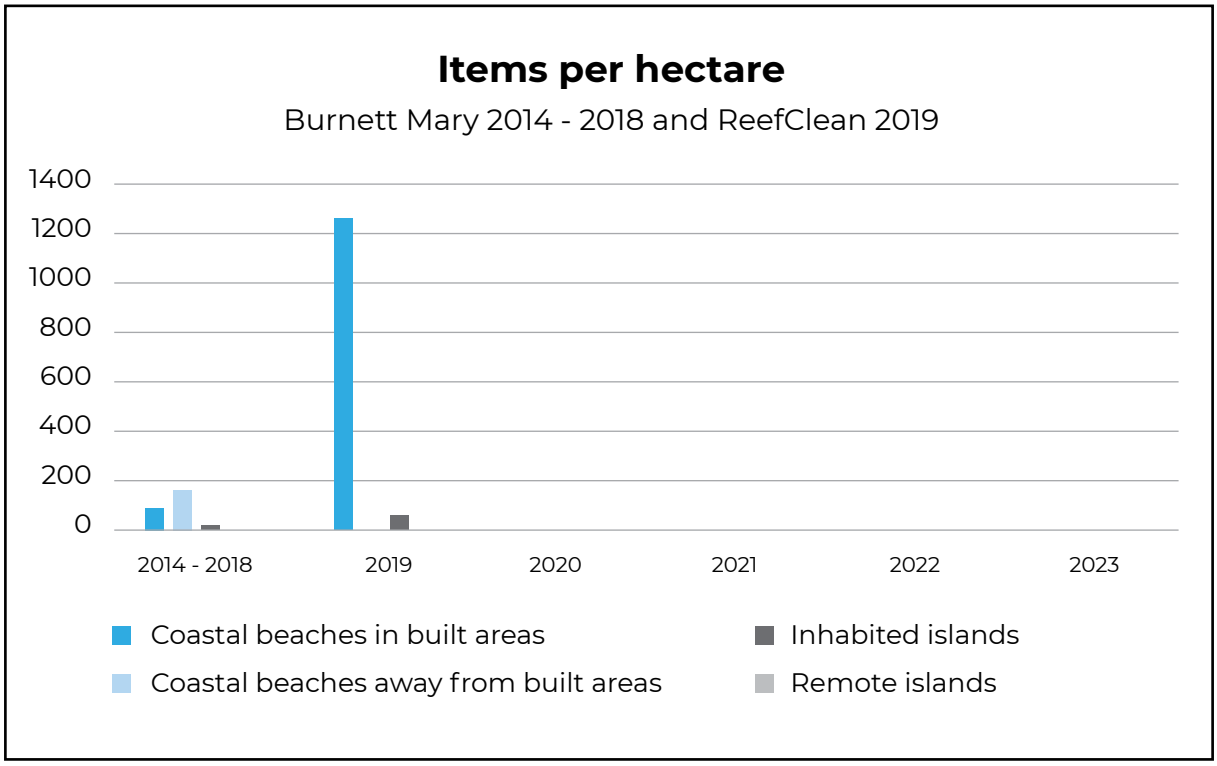
Burnett Mary has a lower density of debris compared to the other regions apart from Fitzroy. The 2019 data shows a spike in density on coastal beaches in built areas, but this is from a limited number of events and data may not be adequately representative of the location type. The East Australian Current flows toward the eastern side of Fraser Island at this point. The South East trade winds blow slightly in toward the coast, but debris sources from well offshore may be partly intercepted on the Fraser Island coast. Occasional cyclonic activity can amplify debris loads. Local inputs of debris appear to be more than half in larger centres and approaching half for populated islands. There were no ReefClean 2019 activities for coastal beaches away from built areas and remote and protected islands.

During the 2019 activities there were no recordings of dead wildlife. In previous years a loggerhead turtle hatchling, sea snakes, seabirds and domestic animals have been recorded.

Bustard Bay Community Clean-up site, October 2019

Burnett Mary clean-up sites





Items and sources - Burnett Mary

Coastal beaches in built areas

Clean-up sites / notes
Innes Park Beach, Innes Park
Sea Coves of Seventeen Seventy

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	2199	48%
2	Cigarette butts & filters	839	18%
3	Lids & tops, pump spray, flow restrictor & similar	273	6%
4	Glass or ceramic broken	249	5%
5	Rope & net scraps less than 1 metre	147	3%
6	Metal bottle caps, lids & pull tabs	139	3%
7	Paper & cardboard packaging	127	3%
8	Plastic film remnants (bits of plastic bag, wrap etc)	126	3%
9	Foil wrappers, packets, bladders & alfoil	111	2%
10	Foam insulation & packaging (whole and remnants)	63	1%
		4273	**92%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Coastal beaches in built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Metal	Glass	Debris from the land	Debris from the sea
2	**4564**	**37**	**81%**	**7%**	**6%**	**47%**	**53%**

2014 - 2018 - Coastal beaches in built areas

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Glass	Metal	Debris from the land	Debris from the sea
34	**6732**	**347**	**61%**	**17%**	**12%**	**71%**	**29%**

Items and sources - Burnett Mary

Inhabited islands

Clean-up sites / notes
Eurimbula Creek, Bustard Bay
Lady Elliot Island

Top-ranking items

Rank	Item	Total	%
1	Plastic bits & pieces hard & solid	702	24%
2	Plastic film remnants (bits of plastic bag, wrap etc)	457	16%
3	Glass or ceramic broken	385	13%
4	Foam insulation & packaging (whole and remnants)	137	5%
5	Foil wrappers, packets, bladders & alfoil	126	4%
6	Glass beer stubbies & pre-mixed alcohol bottles	123	4%
7	Aluminium cans	122	4%
8	Lids & tops, pump spray, flow restrictor & similar	122	4%
9	Miscellaneous paper, labels & tickets	80	3%
10	Rope & net scraps less than 1 metre	69	2%
		2323	**79%**

Item origin legend
Land group - High probability of these items being local in origin
Intermediate group - Origin of these items is proportional to the LSSI
Offshore group - High probability of these items being of offshore origin

ReefClean 2019 - Inhabited islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Glass	Metal	Debris from the land	Debris from the sea
3	**2929**	**118**	**58%**	**18%**	**11%**	**34%**	**66%**

2014 - 2018 - Inhabited islands

Data source clean-up statistics			Materials			Land and sea source index	
Clean-ups	Items removed	Weight Kg	Plastic	Glass	Metal	Debris from the land	Debris from the sea
63	**8858**	**204**	**50%**	**37%**	**6%**	**55%**	**45%**

Burnett Mary

Photo gallery

1. Bustard Bay 2019 clean-up coordinated by Conservation Volunteers Australia, 2. Screen printing t-shirts with volunteers at the GBR Clean-up event at Innes Park, October 2019. 4. Ready to go, volunteers at Bustard Bay clean-up event, October 2019. 4. Volunteers sort debris collected during a community clean-up event, Bustard Bay, October 2019. 5. GBR Clean-up volunteers at Innes Park, October 2019.

ReefClean Partnering Agencies and Organisations

Thanks to all ReefClean partnering agencies, organsiations and volunteers for all their support and efforts during 2019. We look forward to working with you again in the coming year!

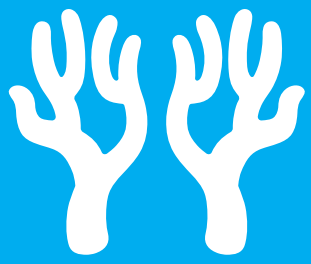
- Absolute North Charters
- Australian Army
- Australian Border Force
- AUSMAP
- AusWaste
- Badu Island Community
- Badu Island State School
- Boyne Island Environmental Education Centre
- Burdekin Shire Council
- Capricorn Coast Landcare Group
- Capricorn Coast LMAC
- Capricornia Catchments
- Central Queensland University Conoco Phillips Science Education Experience, QC STEM hub
- Clean Up Australia
- Cleanwater Group
- Conservation Volunteers Australia
- Cook Shire Council
- Cooktown State School
- CQUni Coastal and Marine Ecosystems Research Centre (CMERC)
- Discovery Coast Environment Group
- Djunbunji Land and Sea Rangers
- Douglas Shire Council
- Eco Barge Clean Seas Inc
- Freedom Fast Cats
- Fitzroy Basin Association
- Fitzroy Island Resort
- Friends of Conservation Gladstone
- Gidarjil Development Corporation
- Gidarjil Land and Sea Rangers
- Gidarjil Skilling Queenslanders for Work
- Girringun Aboriginal Corporation
- Gladstone Harbour Watch
- Gladstone Local Marine Advisory Committee
- Gladstone Ports Corporation
- Gladstone Regional Council
- Great Adventures Reef & Green Island Cruises
- Great Barrier Reef Marine Park Authority
- Green Island Resort
- Gudjuda Reference Group
- Gunggandji Land and Sea Rangers
- Gunggandji-Mandingalbay Yidinji Peoples Prescribed Body Corporate Aboriginal Corporation
- Hinchinbrook Shire Council
- Hopevale Aboriginal Council
- Jabalbina Yalanji Aboriginal Corporation
- JRT
- Kuuku Ya'u Kanthanampu Aboriginal Corporation
- Lady Elliot Island Resort
- Livingstone Shire Council
- Lockhart River Aboriginal Shire Council

ReefClean Partnering Agencies and Organisations *(continued)*

- Low Isles Caretakers
- Miallo State School
- Mossman State High School
- NPARC Apudthama Land & Sea Rangers
- North Keppel Island Environmental Education Centre
- OceanWatch Australia
- Orpheus Island Research Station
- Parkers Liquid Waste
- Port Curtis Ferry Services
- Queensland Parks and Wildlife Service
- Reef Check Australia
- Rockhampton Regional Council
- Sea Shepherd
- South Cape York Catchments
- St Catherine's Catholic College
- Surfrider Foundation - Capricorn Branch
- TAFE Queensland - Cairns Campus
- Tagai State College
- Tangaroa Blue Foundation
- Tannum Sands State High School
- Team Turtle CQ
- The School for Field Studies
- Torres Strait Regional Authority - Land & Sea Management Unit (TSRA - LSMU)
- Townsville City Council
- Veolia Environmental Services
- Windswell Kitesurfing & Standup Paddle Port Douglas
- Woppaburra TUMRA
- Yarrabah Aboriginal Shire Council
- Yarrabah State School
- Yeppoon State High School
- Youth Justice North Townsville
- Yuku Baja Muliku Land and Sea Rangers

Ghost net removed by volunteers at the 5 Beaches Loop Clean-up at the tip of Cape York in September 2019.

Tackling marine debris pollution impacting
the Great Barrier Reef



ReefClean

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