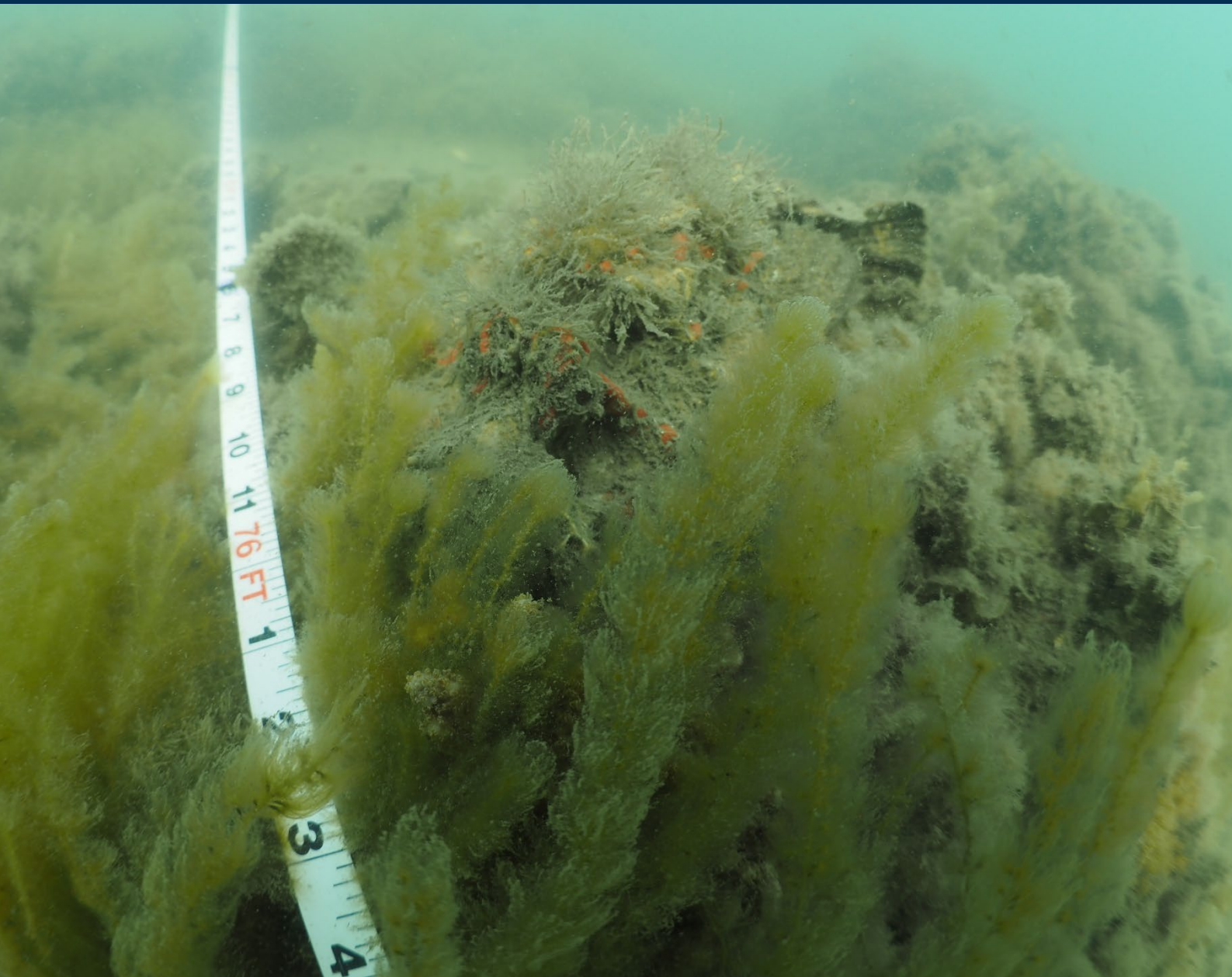


Reef Check Australia

Moreton Bay Season Summary 2024- 2025



REEF CHECK AUSTRALIA

www.reefcheckaustralia.org

This report should be cited as: J. Salmond. Reef Check Australia Moreton Bay Season Summary Report 2024-2025. Reef Check Foundation Ltd.

Reef Check Australia

Moreton Bay Season Summary 2024- 2025



This project was delivered through the combined efforts of dedicated volunteers, professional dive operators, expert advisors, collaborative partners, and valued funding agencies. Their collective support continues to strengthen our reef monitoring network across Queensland

Behind every survey and data point is a team of people who care deeply for our reefs. Volunteers, dive operators, advisors, collaborators, and funders - each played a vital role in bringing this project to life.

A heartfelt thank you to the incredible citizen scientists who lent their time and energy to surveys, community engagement, clean-up events, and data entry across Moreton Bay.

Our sincere gratitude goes to:

Jodi Salmond, Jose Gonzalez, Lucy Wells, Misa Nirasawa, Pablo Fuenzalida.

Your care and commitment keep this work alive.

Many of the images used within this document were taken by Reef Check Australia General Manager Jodi Salmond. The image on the front is of a Stonefish, taken at St Helena, by Jodi Salmond

Reef Check acknowledges the Quandamooka people, Traditional Custodians of the land and sea country on which these activities took place, and we pay our respects to their Elders past, present and future.

This project is supported by the Port of Brisbane as part of their environmental monitoring program.



Thanks to Wet Boat Adventures for getting us safely out to the site and supporting monitoring efforts in the Bay.



MESSAGE FROM OUR GENERAL MANAGER

Moreton Bay: Resilience in Motion

Moreton Bay continues to remind us that resilience isn't a fixed state - it's a living, shifting balance between change and connection. Each season brings its own story, written by tides, storms, and the incredible people who keep showing up to care for these reefs.

Over the past year, our volunteer teams have navigated challenging conditions -limited visibility, heavy sediment, and the lingering effects of past floods -to deliver another round of high-quality, long-term reef health data. Their consistency in the water, season after season, allows us to track subtle but important trends across six key monitoring sites.

While nutrient indicator algae and silt continue to shape much of what we see beneath the surface, we also witnessed pockets of recovery: resilient corals, diverse soft coral communities, and a steady return of fish and invertebrates. These small wins remind us that the Bay is still very much alive - adapting, evolving, and worth every effort to understand and protect.

Beyond the data, this season has been about deepening collaboration. Our teams supported restoration efforts at Peel Island, worked alongside new partners, and led both land-based and underwater clean-ups to help keep the Bay as debris-free as possible. Through workshops, community events, and training programs, we've continued to build capacity and connection - growing not just knowledge, but care.

Every dive, every data sheet, and every conversation contributes to a bigger picture: one where science, community, and curiosity work hand in hand. Moreton Bay may sit at the intersection of urban life and wild nature, but it remains one of the best examples of what's possible when people and purpose align.

To everyone who contributes their time, skill, or support - thank you. You are the current that keeps this work in motion.



General Manager, Reef Check Australia

TABLE OF CONTENTS

MESSAGE FROM OUR GENERAL MANAGER.....	3
TABLE OF CONTENTS	4
1.0 PROJECT INTRODUCTION	5
2.0 REEF CHECK METHODOLOGY.....	5
3.0 MORETON BAY SITE OVERVIEW AND PARTNERSHIPS	8
4.0 2024-2025 REEF HEALTH SNAPSHOT.....	9
5.0 SITE REPORTS	12
5.1 GREEN ISLAND NORTH, SITE 1.....	12
5.2 GREEN ISLAND WEST, SITE 1	13
5.3 MUD ISLAND, CORAL GALORE.....	14
5.4 MUD ISLAND, RUBBLE PATCH	15
5.5 ST HELENA, PALINDROME.....	16
5.6 ST HELENA, RAY OF SUNSHINE	17
6.0 DISCUSSION, NOTES AND RECCOMENDATIONS	18
APPENDIX A. COMPARATIVE BAY WIDE GRAPHS FOR 2025 DATA.....	20



1.0 PROJECT INTRODUCTION

Reef Check Australia has been monitoring reef health across Moreton Bay since 2007, establishing one of the longest-running citizen science reef datasets in subtropical Australia. These ongoing surveys provide essential insights into changes in coral cover, substrate composition, and reef resilience over time - particularly as coastal development, sedimentation, and climate variability continue to shape this dynamic marine environment.

In 2025, surveys were completed at six established monitoring sites across Green Island, Mud Island, and St Helena Island. Each site was assessed seasonally to capture variation across summer and winter months. Despite periods of poor visibility and challenging weather, volunteers successfully completed all scheduled surveys, continuing to provide critical data that supports research, management, and conservation of these unique subtropical reef systems, and building on nearly two decades of data and dedication.

Moreton Bay's reefs sit at a unique ecological intersection - a meeting point of tropical and temperate influences. Their persistence within an urban catchment makes them both vulnerable and remarkably resilient. Ongoing monitoring is critical to understanding how these systems adapt and what actions can help safeguard their future.

Monitoring locations are shown in Figure 2.

2.0 REEF CHECK METHODOLOGY

Reef Check surveys follow a globally standardised protocol (Hill & Wilkinson, 2004) to collect data on:

- **25 substrate categories** (benthic cover),
- **14 indicator invertebrates**, and
- **10 reef health impacts**, as well as
- **Fish assemblages** using a modified tunnel transect.

Each survey site consists of an 80 m transect laid at a constant depth, divided into four 20 m sections separated by 5 m gaps (Figure 1a). This design enables comparisons within sites (replicate transects) and between sites (across years and regions).

Substrate surveys use the point-intercept method, recording the substrate type every 50 cm along each 20 m section (Figure 1b).

Invertebrate and impact surveys use a 5 m belt transect, where divers conduct a systematic U-shaped search for indicator species and impacts over each 20 m replicate (Figure 1a). Each search lasts 7–10 minutes.

Fish surveys are conducted along a 5 m tunnel transect (Figure 1c).

These methods align with Reef Check's global framework, allowing Moreton Bay data to be compared with sites across Queensland, the Indo-Pacific, and international monitoring networks.

For more information on Reef Check Australia, survey methods, sites and previous reports, please go to www.reefcheckaustralia.org.

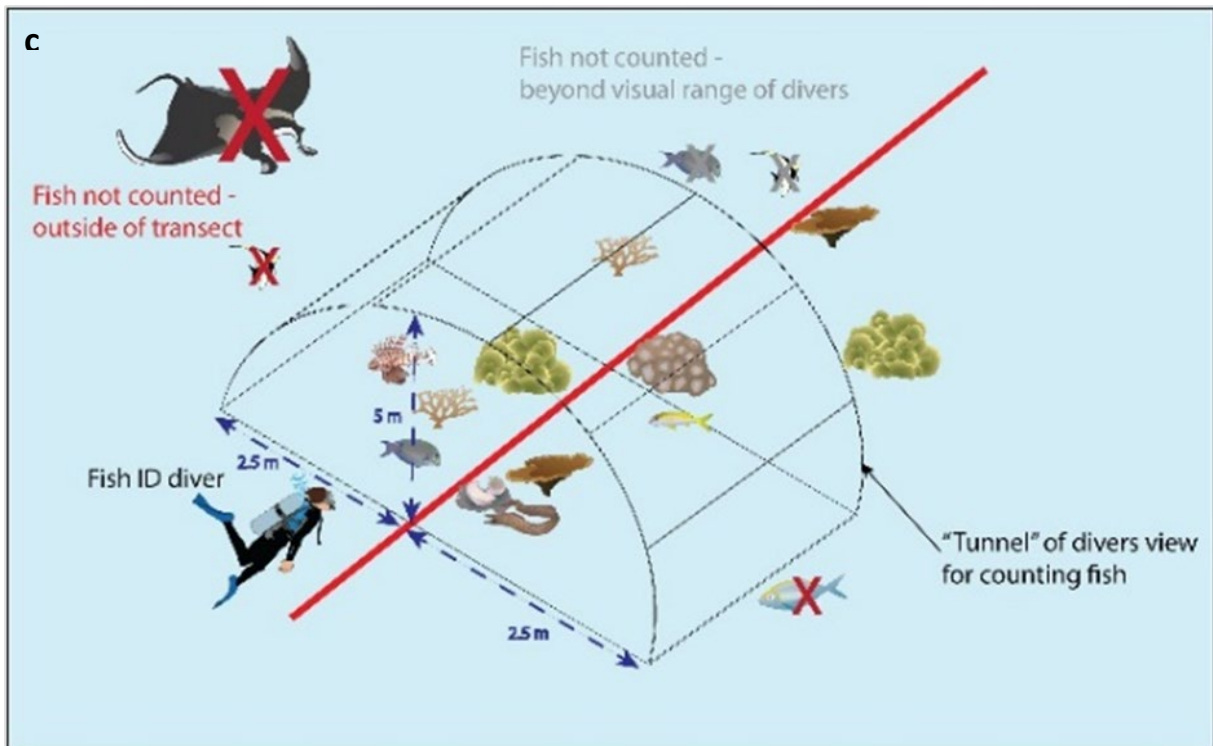
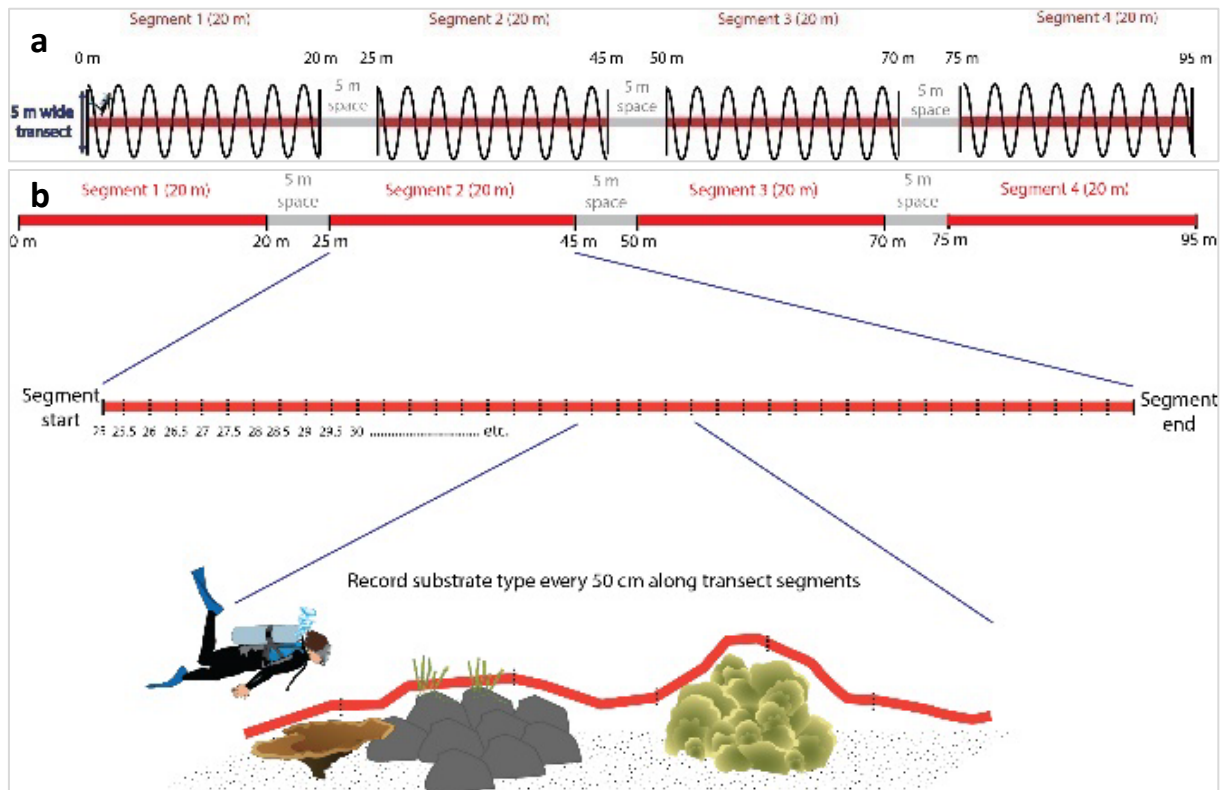


Figure 1: Reef Check survey methodology based on Hill and Wilkinson, 2004 showing (a) line intercept and belt survey transect layout consisting of 4 x 20 m replicates, (b) line intercept substrate survey protocol showing data collection points at 50 cm intervals, and (c) diagram of the belt transect tunnel for fish surveys (Image by Roelfsema et al, 2014).

Table 1. Codes for Reef Check Australia substrate categories

Category Group	Subcategory / Code	Description
Hard Coral	HCB	Hard Coral – Bleached
	HCBR	Hard Coral – Branching
	HCE	Hard Coral – Encrusting
	HCF	Hard Coral – Foliose
	HCM	Hard Coral – Massive
	HCP	Hard Coral – Plate
	HC	All other hard coral growth forms
Soft Coral	SCB	Soft Coral – Bleached
	SCL	Soft Coral – Leathery
	SCZ	Soft Coral – Zoanthids
	SC	All other soft coral growth forms
Recently Killed Coral	RKC	Recently Killed Coral (white skeleton, algae <1 cm)
	RKCNIA	Recently Killed Coral with Nutrient Indicator Algae
	RKCTA	Recently Killed Coral with Turf Algae
Rock	RC	Bare consolidated substrate
	RCCA	Rock with Coralline Algae
	RCTA	Rock with Turf Algae
Sponge	SP	All other sponge growth forms combined
	SPE	Sponge – Encrusting
Algae	NIA	Nutrient Indicator Algae
	MA	Macroalgae
Other Substrate Types	OT	Other (includes Halimeda, tunicates, seagrass, etc.)
	RB	Rubble
	SD	Sand
	SI	Silt

3.0 MORETON BAY SITE OVERVIEW AND PARTNERSHIPS

Reef Check Australia conducts reef health monitoring at more than 40 priority sites across Southeast Queensland, including over 20 coral and rocky reef sites within Moreton Bay. Collectively, these locations capture the diversity of the Bay's nearshore coral habitats - from shallow fringing reefs and patch reefs to rubble and sand-influenced systems - providing valuable insight into the health and resilience of subtropical coral communities.

Within this broader regional network, six long-term monitoring sites are supported through partnership with the Port of Brisbane. These core sites were selected to represent areas of environmental and management significance near port operations, offering valuable data to help assess reef condition, sedimentation, and ecological change over time.

Together, the Moreton Bay sites form part of a long-term effort to understand how nearshore coral communities respond to fluctuating water quality, temperature, and sediment dynamics. Data from these sites contribute to both regional management programs and national reef databases, supporting evidence-based decision-making and long-term ecosystem stewardship.

Photo transect imagery from Reef Check surveys is also uploaded to AIMS ReefCloud, contributing to national data-sharing and machine-learning initiatives for automated coral cover analysis. This ensures that local community-collected data supports both regional and national monitoring programs.

Field operations are made possible through collaboration with Wet Boat Hire and a dedicated community of trained Reef Check volunteers. These partnerships provide essential vessel access, logistical support, and local expertise to ensure safe and consistent survey delivery.

In addition to underwater surveys, Reef Check Australia coordinates community training, education, and debris-removal activities throughout the Bay, helping connect residents to their local marine environment and build shared responsibility for reef health.

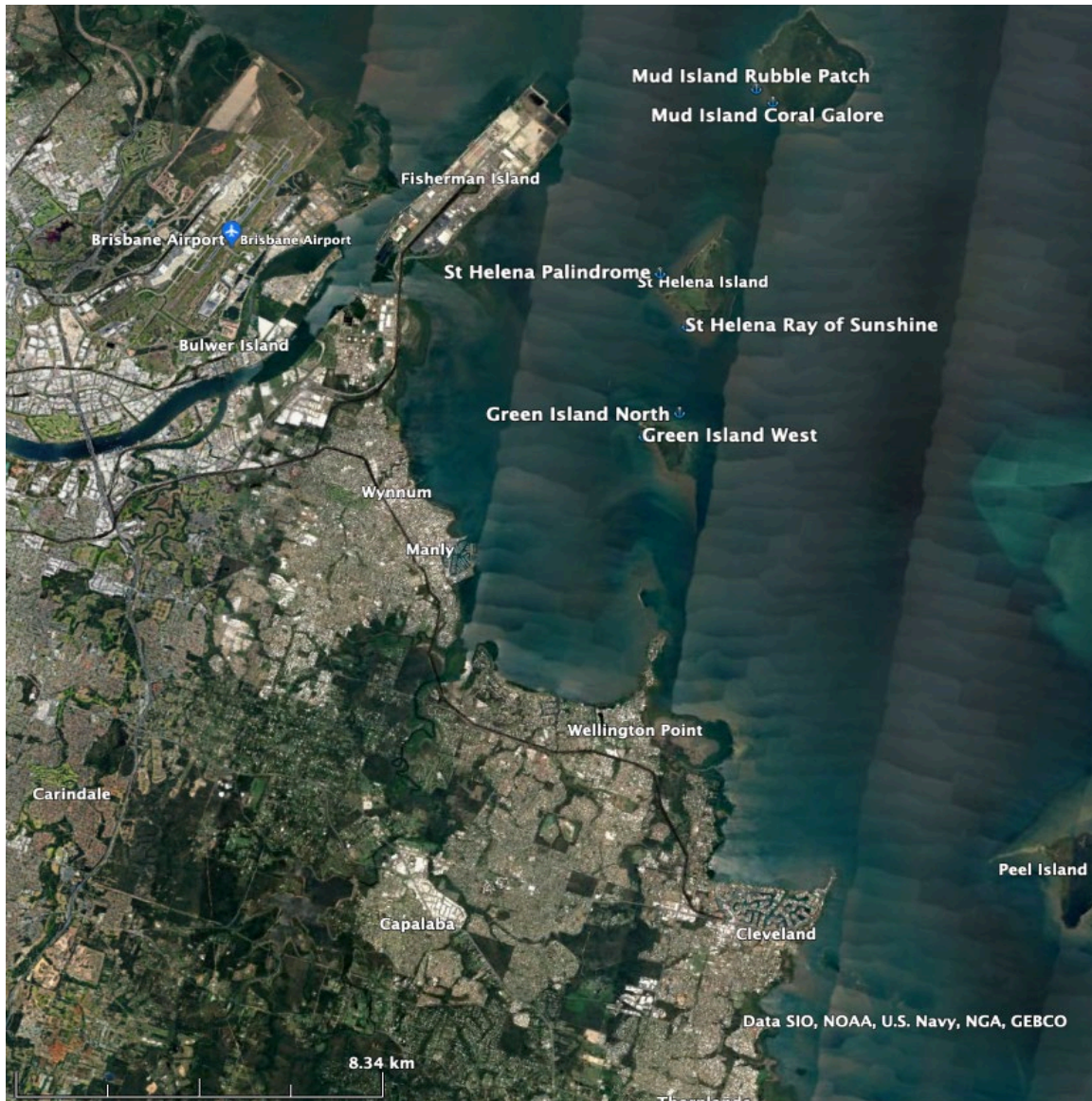


Figure 2. Location of Port of Brisbane Reef Check Australia monitoring sites across Moreton Bay. The map highlights survey sites at Green Island, Mud Island, and St Helena Island.

4.0 2024-2025 REEF HEALTH SNAPSHOT

The following summary provides an at-a-glance overview of reef health findings from Reef Check Australia's 2024–2025 monitoring season in Moreton Bay. These results reflect data collected across six long-term monitoring sites supported through the Port of Brisbane partnership.

For a high-resolution copy of the snapshot, please reach out.

2024- 2025 SNAPSHOT: MORETON BAY MONITORING



MORETON BAY IMPACT

Reef Check Australia volunteers contributed 4,310 hours nationally, with over 800 hours dedicated to Moreton Bay reef monitoring, training, and community engagement.

Across six monitoring locations at Mud Island, St Helena, and Green Island, teams completed 12 seasonal reef health surveys (summer and winter), investigating changes in local reefs. Ten new volunteers joined our network, helping deliver long-term monitoring, citizen-science training, and hands-on local action across the Port of Brisbane region.

REEF HEALTH INDICATORS

The 2025 Moreton Bay surveys show stable reef condition with seasonal shifts shaped by turbidity and algae growth. Despite high silt and algae, coral recovery is visible at several sites.

Coral Cover

- Hard coral: ~4-6% (summer) → ~9-13% (winter)
- Highest at St Helena – Ray of Sunshine.
- Remains below 2023 levels (flood legacy effects).
- Soft Coral: ~0-18% (summer) → ~0-8% (winter)
- Highest at Green Island and Mud Island: Coral Galore in summer.

Coral Bleaching

- Summer: up to 20% of colonies affected; colony-level bleaching typically 30–50% when present.
- Winter: <5% of colonies affected; signs of seasonal recovery.

Algae & Silt

- Algae dominated substrate (30- 75%), especially in summer, when sediment levels peaked.
- Silt cover highest at Green Island North (≥ 10 cm) in summer; improved by winter
- Macroalgae remains elevated post-2022 floods

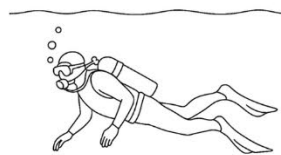
Marine Debris

- Debris generally low (fishing line/small items).
- Large crab pot removed at Green Island North after localised damage.

Invertebrates & Marine life

- Drupella snails highest number at Mud Island.
- Low number of fish recorded throughout all surveys

WHAT WE'RE SEEING UNDERWATER



During the 2025 Moreton Bay surveys, our teams recorded a range of marine life; from turtles and rays and nudibranchs, across the bay's shifting sediments and algae-dominated reefs. Each observation contributes to Ecologically Significant Reef Area (ESRA) assessments and national biodiversity databases that inform reef protection and management.

Together, our volunteers and partners are building one of the longest continuous citizen-science reef datasets in Southeast Queensland. Continued monitoring will track changes in species, sediment, and reef recovery - ensuring Moreton Bay data continues to shape local management and national conservation planning.



Moreton Bay Season Summary 2024- 2025

Table 2: Summary table of RCA monitoring findings for surveys conducted in Inner Moreton Bay in 2024-2025 season. Information includes a basic site summary of average hard and soft coral cover (%), nutrient indicator algae (NIA) cover (%), total macroalgae (MA) abundance, and silt levels as a percentage, and loading (N=none, L=low, M=medium, H=high), as well as a summary of the invertebrates and impacts found at each site: average coral bleaching of the population (%) and colony level, and abundance of reef impacts (coral disease, marine debris, coral damage, and scars). All figures showing a count, rather than a percentage, are a total across all 4 transects at the site (i.e. at total across 80m length, 400m².)

Site Name		Basic Benthic Site Summary						Invertebrates & Impacts							
		Hard Coral Coverage (%)	Soft Coral Coverage (%)	Nutrient Indicator Algae (%)	Macro Algae (# per survey)	Silt (%)	Silt Loading	Drupella Snail (#)	Drupella Scar (#)	Unknown Scar (#)	Coral Damage (#)	Coral Disease (#)	Coral Bleaching Population (%)	Coral Bleaching Colony (%)	Marine debris (#)
Green Island	Green Island North; Summer	5.6	14	42	53	57	H	1	0	2	1	0	21	43	2
	Green Island North; Winter	9.4	5.6	24	10	34	H	3	0	0	0	0	2.5	23	4
	Green Island West; Summer	6.3	14	31	31	37	H	2	2	0	4	0	28	48	0
	Green Island West; Winter	13	7.5	31	15	33	M	1	0	0	0	2	5.3	5	3
Mud Island	Coral Galore; Summer	2.5	14	34	35	8.1	H	0	0	3	1	0	33	73	1
	Coral Galore; Winter	1.3	6.9	29	13	0	L	15	0	0	0	0	10	36	3
	Rubble Patch; Summer	0	1.3	76	122	0	M	0	0	0	4	0	1.3	23	0
	Rubble Patch; Winter	0	0.6	55	48	0	L	8	0	0	2	0	0	0	0
St Helena	Palindrome; Summer	1.9	8.1	34	40	44	H	0	0	0	0	0	23	44	0
	Palindrome; Winter	1.9	2.5	28	7	36	M	11	0	0	0	0	0	0	0
	Ray of Sunshine; Summer	9.4	5	45	38	28	H	0	0	1	0	0	43	51	0
	Ray of Sunshine; Winter	7.5	1.9	25	5	3.8	L	6	0	0	0	0	5	21	0

5.0 SITE REPORTS

5.1 GREEN ISLAND NORTH, SITE 1

Monitored since 2015 | Depth ~5 m

Located on the northern side of Green Island, this long-term site reflects the dynamic conditions of Moreton Bay’s nearshore reefs. It is a shallow, inner-bay coral community shaped by Brisbane’s tidal flows and fine sediment inputs. Coral colonies here persist among high silt and nutrient indicator algae - a reminder of the resilience needed to thrive in such changeable conditions.

Benthic trends: Since the 2022 floods, silt loading has remained high and nutrient indicator algae continue to dominate. Macroalgae, historically seasonal, has continued to flourish post-floods, likely fuelled by nutrient inputs and reduced water clarity. Hard coral cover increased from 5.6% in summer to 9.4% in winter, while soft coral fluctuated between 14% and 6%. This balance between coral, algae, and silt highlights ongoing sediment and nutrient pressures.

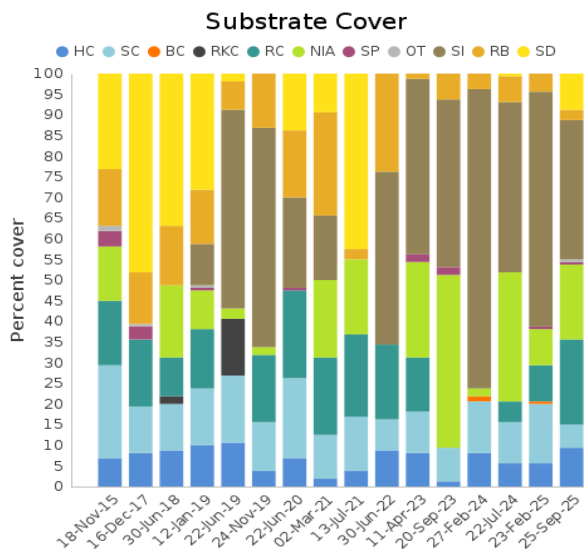


Figure 5.1.1. Benthic type and percent cover: Green Island North, Site 1, 2015 – 2025

Reef health indicators: Approximately 45% of individual coral colonies showed some bleaching during the summer survey, with approximately 21% of the overall coral population affected. By winter, bleaching had remained at an average of ~45% per affected colony, however population levels had dropped to 5%. No coral disease or structural damage was observed.

Low, consistent levels of fishing line and debris were recorded, and large abandoned crab pots smothering corals were removed during both surveys. Fish abundance has noticeably declined over recent years, suggesting potential shifts in local habitat use or water quality impacts.

This site shows stable, low coral cover, with persistent algae and silt dominance. Subtle signs of coral recovery highlight this reef’s quiet resilience within Moreton Bay’s changing environment.



Image 5.1A Site photo



Image 5.1B Bleached coral



Image 5.1C Metal debris

5.2 GREEN ISLAND WEST, SITE 1

Monitored since 2017 | Depth ~4m

Located on the western side of Green Island, this site reflects similar nearshore conditions to Green Island North - shallow, turbid waters shaped by tidal movement, sediment inputs, and nutrient fluctuations from the Brisbane River. Despite these challenges, small but persistent coral communities continue to hold on among rubble, sponge, and algae-covered rock.

Benthic trends: Hard coral cover almost doubled between seasons, increasing from 6% in summer to 13% in winter. Soft coral cover decreased from 14% to 7.5%, while nutrient indicator algae and silt continued to dominate the site throughout the year. Macroalgae, which has flourished since the 2022 floods, remained abundant and may be limiting coral settlement. The combination of algae and silt continues to influence light availability and overall reef growth potential.

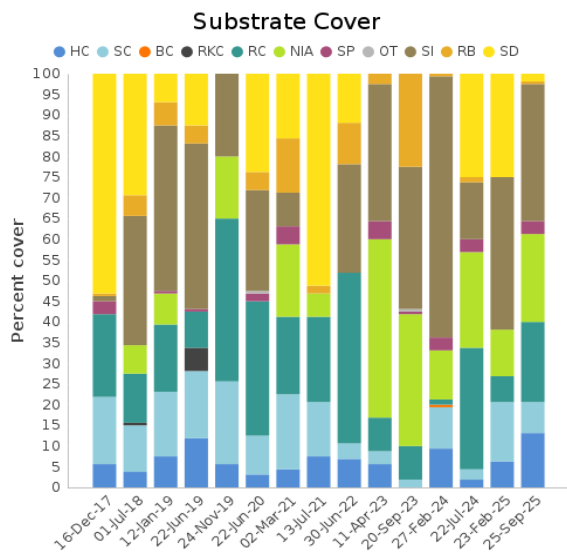


Figure 5.2.1. Benthic type and percent cover: Green Island West, Site 1, 2017 – 2025

Reef health indicators: During the summer survey, approximately 50% of individual coral colonies were recorded as bleached, with 28% of the overall coral population affected. By winter, bleaching was less extensive, with 10% of colonies, and 10% of the population affected. Localised coral damage was recorded in summer, and low levels of coral disease along with some

scattered marine debris were recorded in winter only. Fish abundance remained low; slightly higher in summer, consistent with seasonal variability and the site’s nearshore turbidity.

While coral cover remains low, the seasonal recovery observed at Green Island West - along with reduced bleaching and limited disease - suggests some capacity for resilience despite ongoing sediment and nutrient pressures typical of Moreton Bay’s nearshore reefs.



Image 5.2A Green Island West Site Photo



Image 5.2B Macroalgae – Padina spp.



Image 5.2C Site Photo

5.3 MUD ISLAND, CORAL GALORE

Monitored since 2017 | Depth ~5m

Situated in central Moreton Bay between the Port of Brisbane and Moreton Island, Coral Galore represents one of the few coral-bearing reef slopes within this highly turbid region. Despite consistently high sediment and nutrient levels, this site continues to support small but persistent coral and invertebrate communities, offering valuable insight into how nearshore reefs adapt to environmental change.

Benthic trends: Hard coral cover has declined notably since the 2022 floods, dropping from ~20% to 2-3% in 2025. Soft coral cover remained moderate, ranging from 14% in summer to 7% in winter, while nutrient indicator algae (30–40%) and silt dominated the substrate throughout the year. Macroalgae has continued to flourish post flood and may be restricting coral recruitment. Together, silt and algae reflect ongoing sediment and nutrient loading across central bay habitats.

Fish abundance remained low across both seasons, consistent with reduced structural habitat. Occasional sightings of rays and cryptic reef species highlight that ecological activity persists despite limited coral framework.

Coral Galore continues to demonstrate resilience amid Moreton Bay’s high-turbidity environment. However, declining coral cover and sustained algal dominance since the 2022 floods suggest a longer-term phase shift toward sediment-tolerant communities. Continued monitoring will help track whether this reef can recover coral cover under improving water quality conditions.

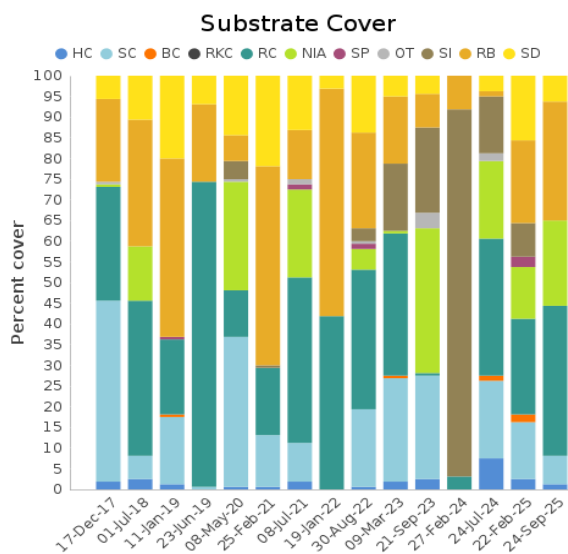


Figure 5.3.1. Benthic type and percent cover: Mud Island, Coral Galore, 2017 - 2025

Reef health indicators: Summer 2025 survey showed 70% of individual coral colonies bleached, and 30% of the population affected. By winter, bleaching eased to 35% colony level and 10% of the population. A small number of coral scars, fishing line, coral disease and debris were noted. *Drupella* snails were observed in winter, suggesting localized grazing pressure, while other invertebrates remained scarce.



Image 5.3A Site photo



Image 5.3B Hard coral covered in algae



Image 5.3C Fishing line and macroalgae; *Sargassum* spp.

5.4 MUD ISLAND, RUBBLE PATCH

Monitored since 2017 | Depth ~3m

Located on the southern edge of Mud Island, Rubble Patch is a shallow, low-relief reef flat dominated by loose coral rubble, sand and sediment. The site sits in an exposed position that receives strong tidal flow and high turbidity, limiting coral settlement but supporting algae, sponges and small invertebrates typical of near-bottom bay habitats.

Benthic trends: Hard coral cover remains extremely low, with minimal measurable recovery since the 2022 floods. Soft coral cover was 3% in winter 2025 and absent in summer. The substrate was dominated by algae (34–55%) and silt, with macroalgae counts increasing from 9 in summer to 48 in winter. Nutrient indicator algae and rubble together reflect a highly disturbed, sediment-influenced environment where frequent resuspension restricts coral recruitment.

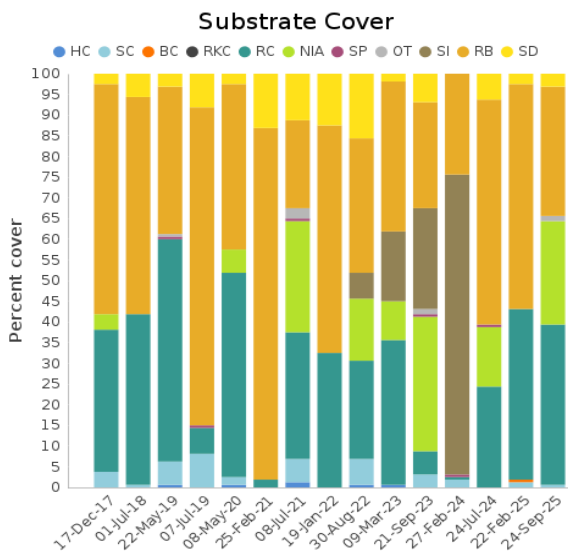


Figure 5.4.1. Benthic type and percent cover: Mud Island, Rubble Patch, 2017 – 2025

Reef health indicators: No coral disease or predation was recorded in either survey. Low-level bleaching (<5%) occurred in summer but was absent by winter. Coral damage was minimal (two minor fragments noted). *Drupella* snails were recorded in small numbers (~8 individuals). Marine debris remained minimal, limited to a few fishing-related items.

Fish abundance was very low, typical of heavily silted inner-bay reefs. Occasional rays and small benthic species were observed among the rubble.

Rubble Patch remains a low-coral, high-algae site that provides a useful comparison to more developed reefs such as Coral Galore. The consistently low coral cover highlights the limits of recovery potential under strong turbidity and sediment influence.



Image 5.4A Site photo



Image 5.4B Sponge, soft coral and algae



Image 5.4C Hard coral amongst the macroalgae

5.5 ST HELENA, PALINDROME

Monitored since 2018 | Depth ~4m

Located on the northern side of St Helena Island, this low-energy site is characterised by a flat, silty seabed with patchy coral colonies and dense algal growth. Limited water movement allows fine sediment to accumulate, creating challenging conditions for coral recruitment and growth. Despite this, small coral clusters persist among rubble and sponge, supporting a modest but active reef community.

Benthic trends: Hard coral cover remained low in 2025, ranging from ~3% in summer to ~2% in winter. Soft coral cover was slightly higher (8–12%) but continued to fluctuate seasonally. Nutrient indicator algae (35–60%) and silt dominated the substrate throughout the year, with sediment depths exceeding 5cm at points during the winter survey. This persistent turbidity limits light penetration and likely restricts coral recruitment and recovery following the 2022 floods.

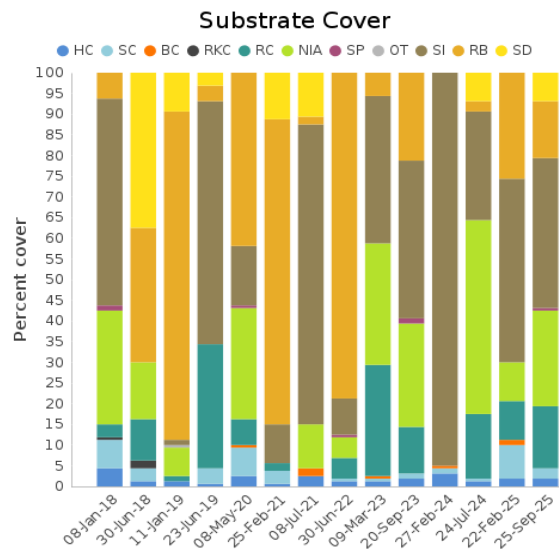


Figure 5.5.1. Benthic type and percent cover: St Helena Island, Palindrome, 2018 – 2025.

Reef health indicators: Low-level bleaching (<5% of colonies, <10% of population) was observed in summer only. No disease or damage was recorded. Debris and fishing line were minimal. Few fish and mobile invertebrates were sighted, consistent with the site’s flat, silty conditions and reduced structural complexity. Nudibranchs and

other small invertebrates were sighted, adding colour to an otherwise silty landscape.

While Palindrome supports only small coral patches, its stability across seasons highlights the quiet resilience of nearshore subtropical reefs adapting to chronic turbidity. Despite consistently high silt levels, living colonies and bursts of marine life continue to persist; a reminder that even in challenging conditions, this reef endures. Recovery potential remains limited until sediment loads and light conditions improve.

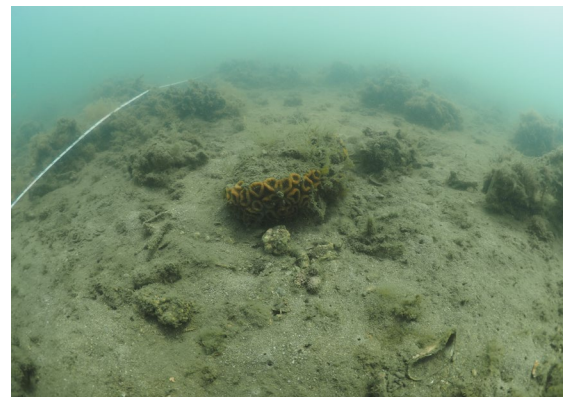


Image 5.5A Site photo showing high silt levels



Image 5.5B Nudibranch



Image 5.5C High levels of filamentous, nutrient indicator algae

5.6 ST HELENA, RAY OF SUNSHINE

Monitored since 2018 | Depth ~4m

Located on the **southern side** of St Helena Island, Ray of Sunshine is a fringing reef facing Green Island and the tidal channels. While the site experiences regular sediment movement, it typically retains slightly clearer windows than nearby reefs.

Benthic trends: Hard coral cover remained relatively stable in 2025, with 9% recorded in summer and 7.5% in winter. Soft coral declined from 5% to 2%, while rock and coral rubble collectively increased to more than 45% of the substrate in winter-likely representing long-dead coral skeletons now consolidated into reef framework. Silt levels dropped sharply from 27% in summer to just 4% in winter, suggesting improved water movement and sediment flushing through the cooler season. Nutrient indicator algae remained consistent (around 20-22%) and continued to dominate surfaces between coral patches.

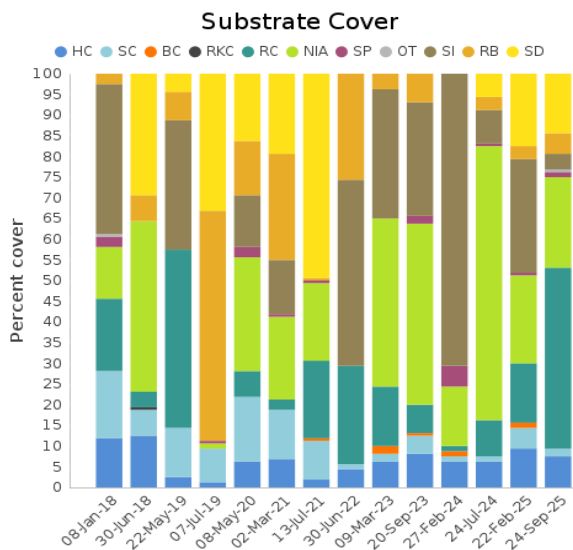


Figure 5.6.1. Benthic type and percent cover: St Helena Island, Ray of Sunshine, 2018 - 2025

Reef health indicators: Mild bleaching was observed in summer (affecting ~20% of colonies, ~5% of the population) with no bleaching recorded in winter. No coral disease, or major damage were noted, though a small number of *Drupella* snails and debris items were recorded.

Fish and invertebrate activity remained low but steady, consistent with the site's flat topography and partial algal cover.

Ray of Sunshine remains one of the more coral-dense reefs in southern Moreton Bay. The 2025 data suggest that while flood impacts continue to shape community composition, improved winter clarity and reduced siltation may be creating small recovery windows for coral growth and settlement.



Image 5.6A Site photo

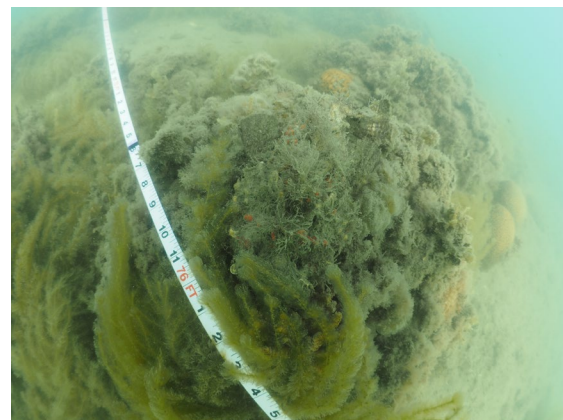


Image 5.6B Stonefish hiding in the algae

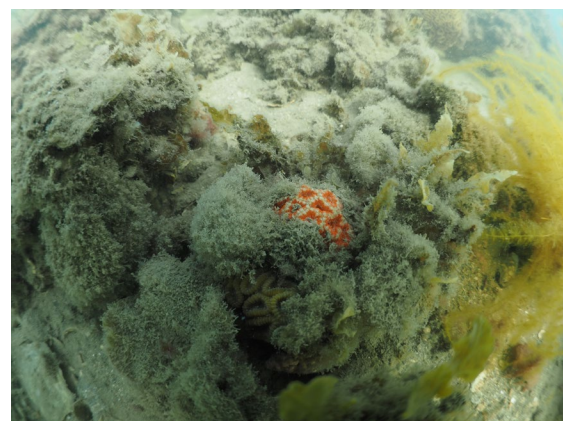


Image 5.6C Hard encrusting coral amongst algae and silt

6.0 DISCUSSION, NOTES AND RECCOMENDATIONS

The 2024–2025 Moreton Bay surveys highlight a system still shaped by the sediment and nutrient legacy of the 2022 flood events. The six monitored reefs form part of the inner-bay reef complex of central Moreton Bay, situated between the Port of Brisbane and St Helena Island. Fine sediment deposition remains widespread across this region, with frequent turbidity and algal overgrowth limiting coral recovery. While coral cover remains low overall, small seasonal improvements—particularly at more exposed sites—suggest resilience persists in this dynamic subtropical environment.

Regional trends: Coral communities across all six monitored sites remain at reduced levels compared to pre-flood conditions. Hard coral cover averaged 5–9% in 2025, with soft coral fluctuating between 5 and 14%. Persistent nutrient indicator algae and macroalgae continue to dominate, especially at sheltered sites such as Mud Island and St Helena, where elevated nutrient inputs and low light restrict coral recruitment.

At the same time, silt loading remains variable, with only partial sediment clearance observed during winter surveys at some locations; particularly Mud Island (both sites), and St Helena’s Ray of Sunshine. These sites show modest visibility improvements, but sediment and algal accumulation remain key constraints across much of the bay.

Drupella snails, which feed on living coral tissue, were recorded at several sites, indicating localised grazing pressure. Even at moderate densities, these corallivorous snails can slow recovery by targeting stressed colonies and new coral recruits, and increases over time would be an early warning sign for managers. In very high numbers, Drupella have caused significant coral loss in other regions, including parts of the Great Barrier Reef where sustained outbreaks have prompted targeted removal programs; however, densities observed in this survey appear more consistent with background grazing than an active outbreak. Fish abundance continues to trend low across all surveys, reflecting reduced coral framework and habitat complexity. However, sporadic sightings of rays, wobbegongs and other mobile species demonstrate that ecological activity persists even in highly turbid environments.

Post-flood context: Recent work by Grinham et al. (2024) confirmed that fine sediments and associated nutrient fluxes remain the dominant pressure on Moreton Bay’s benthic systems. Their research estimated sediment ammonium fluxes exceeding 17,000 t yr⁻¹—around 180 times greater than all point-source inputs combined—suggesting the bay has entered a phase of chronic eutrophication risk. These findings mirror Reef Check Australia’s field observations: sustained macroalgal proliferation, reduced coral recruitment, and persistent turbidity at multiple sites.

Despite these constraints, some encouraging signs were noted. Coral bleaching levels were lower in winter and animal activity; small rays, stonefish (the first one spotted on any one of these sites ever) and a variety of nudibranchs indicate continuing ecological function even under degraded conditions. The consistency of coral presence across years reinforces that near-shore subtropical reefs can persist within a narrow tolerance window when given periods of reduced stress.

Future Outlook: As Moreton Bay’s reefs continue to recover from the legacy of the 2022 floods, early signs of stabilization are emerging - but full ecological recovery remains uncertain. While coral cover has remained low, the persistence of living colonies and gradual sediment clearance at higher-flow sites provide cautious optimism. Ongoing dominance of nutrient indicator algae and silt across sheltered reefs highlights the continued stress imposed by runoff and turbidity.

The next 12 months of monitoring will be critical for identifying whether coral recruitment begins to rebound under improved seasonal conditions and whether observed algal declines in winter represent a longer-term shift. Strengthening water-quality partnerships and tracking light availability will help determine if these reefs can maintain resilience under increasing urban and climatic pressures.

Recommendations

- Continue long-term monitoring to document recovery trajectories and assess whether coral cover stabilises or improves under changing sediment regimes.
- Strengthen partnerships with the University of Queensland, Port of Brisbane, DES, and Healthy Land & Water to expand sedimentation, turbidity, and light attenuation monitoring at central bay sites.
- Incorporate benthic imagery and light-attenuation metrics into seasonal surveys to better quantify fine-sediment and water-quality impacts.
- Support restoration linkages between monitoring and active interventions (e.g. Peel Island reef restoration trials) to provide comparative insights into recovery potential under management.
- Maintain community engagement and citizen-science participation to ensure long-term data continuity and local stewardship.

APPENDIX A. COMPARATIVE BAY WIDE GRAPHS FOR 2025 DATA

The following figures present comparative data from all six monitored reef sites across Moreton Bay, illustrating key ecosystem indicators for 2025. These graphs summarise trends in benthic composition, invertebrate abundance, coral impacts, bleaching incidence, and fish populations. Collectively, they provide a snapshot of overall reef condition and highlight variation in ecological structure and resilience across Moreton Bay.

Comparative figures are derived from standardised Reef Check Australia transect data collected during the 2025 monitoring season. Data were compiled from both summer (February) and winter (September) surveys using consistent methodologies outlined in Section 2.0.

