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The Great Barrier Reef Marine Park – a valuable resource



Why is the Marine Park worth protecting?

The Great Barrier Reef Marine Park is ecologically, economically and socially important as it:

- Provides important breeding sites and habitat for marine animals such as marine turtles, whales, dugongs and seabirds
- Features significantly in the cultural heritage, spiritual values and day-to-day living of Aboriginal and Torres Strait Islander peoples
- Features strongly in Queensland's tourism and recreational appeal
- · Provides employment for thousands of people living in Queensland
- Offers a variety of recreational activities
- Is used for educational purposes and scientific research
- Is an important area for commercial and recreational fishers
- Contributes over \$5.1 billion through tourism activities to the Australian economy each year.

The Great Barrier Reef Marine Park is the world's largest coral reef ecosystem and its rare beauty continues to amaze people from all corners of the globe. Home to an amazing variety of plants and animals, the Marine Park is about 2300 kilometres long, stretching along Queensland's coast from the northern tip of Cape York to just north of Bundaberg. It covers an area of 348 000 square kilometres which is about 70 million football fields and is larger than New Zealand.

Although coral reefs initially made the area famous, the Great Barrier Reef Marine Park is made up of an extraordinary variety of important habitats including fringing coastal reefs, mangroves, seagrass beds, sandy and coral cays, sandy or muddy bottom communities, continental islands and deep ocean areas.

The Great Barrier Reef is the earth's largest World Heritage Area. It became a World Heritage Area in 1981 when it was recognised for its outstanding universal value.

Who uses the Marine Park?

Millions of people use the Great Barrier Reef Marine Park every year. Whether it is for work or leisure the Reef provides both employment and fun for people locally, nationally and internationally. Tourism is by far the largest industry in the Marine Park, followed by commercial and recreational fishing. Other Marine Park activities include research, shipping and aquaculture. The Marine Park is also culturally significant to Aboriginals and Torres Strait Islanders who have lived off the land and sea for thousands of years.

People are not the only users of the Marine Park. Thousands of whales migrate to the warmer tropical waters of the Marine Park during winter months to breed and it is home to six of the world's seven species of marine turtle. The Great Barrier Reef Marine Park is home to many other marine species that rely on its health to survive.

What is sustainability?

A simple definition of the term sustainable is 'meeting ones present needs without preventing future generations from meeting their needs'. When referring to the environment it could mean 'using the products of nature in a way that will not destroy them for future use'. We must look at human impacts on the Great Barrier Reef Marine Park and determine how we can use the Park today yet still protect its precious resources for the future. Reef Beat 'Sustainability' will focus on impacts on the Marine Park and look at what we can do to ensure we enjoy the Great Barrier Reef Marine Park today and into the future.











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Protecting plants and animals in the Great Barrier Reef Marine Park

The Great Barrier Reef Marine Park is home to an amazing variety of marine plants and animals, including a number of protected species. The Great Barrier Reef Marine Park Authority and other management agencies and community groups work to conserve this unique marine life.

The plants and animals in the Marine Park face many threats, including climate change and related coral bleaching, habitat loss due to poor water quality, boat strikes, disease, entanglement in fishing gear, illegal poaching, pollution and marine debris.

Protected species in the Marine Park

A protected species is a plant or animal in the Marine Park that is protected by law and needs special management. A protected species is either threatened (its population has declined), iconic (it is one of Australia's most well-known plants or animals), or at risk (it faces pressure from human-related activities).

Protected species in the Marine Park include:

Giant clams •

Helmet shells •

Giant triton shells •

Potato cod • Queensland groper •

Maori wrasse • Barramundi cod •

Crocodiles •
Sea snakes •
Seabirds •

Marine turtles •

Dugongs •

Whales and dolphins •

Seahorses, pipefish and seadragons • Grey nurse, whale and great white sharks •

(For a complete list of protected species in the Marine Park, please go to www.gbrmpa.gov.au)

The Marine Park is home to:

- Approximately 1500 species of fish
- About 360 species of hard coral and one third of the world's soft corals
- 5000-8000 species of molluscs (for example: octopus, oysters)
- 22 species of seabirds that live and breed on the islands
- One of the world's most important dugong populations
- 30 species of cetaceans (whales and dolphins)
- 6 species of marine turtles, all listed as protected.

What's being done to protect plants and animals in the Marine Park?

The Great Barrier Reef Marine Park Zoning Plan 2003 defines what activities are appropriate in which locations throughout the Marine Park. This protects the unique plants

and animals of the Marine Park and helps to ensure their continued existence. Zoning also provides additional support for protected species like dugongs and marine turtles.

The Great Barrier Reef Marine Park Authority works with other government agencies and community groups to respond to issues such as climate change and declining water quality. The Queensland Government's Department of Primary Industries and Fisheries has implemented fishing closures as well as size and bag limits on fish catch to allow for the reproduction of certain species to continue.

Help us protect precious marine life in the Great Barrier Reef Marine Park

- Don't litter: a piece of rubbish on the ground in your school can make its way into the ocean
- Keep your distance when whale and dolphin watching or if you see a turtle nesting. Let the animals go about their activities without interference.
 - Whales: 100 metres is a safe place to stay

 Turtles: keep a distance of at least two metres
- Be responsible when out on the water (dispose of litter carefully, go slow etc)
- In Queensland, if you see sick, injured or dead dugongs, marine turtles, whales or dolphins, please ring the EPA Hotline on 1300 130 372 (local call cost)
- Use Voluntary Vessel Transit Lanes in the Hinchinbrook Area.





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Sustainable fishing in the Great Barrier Reef Marine Park

Commercial and recreational fishing are the second largest activities in the Marine Park (after tourism) and Queensland's commercial fisheries are a significant contributor to the national and state economies. Management agencies seek to achieve a healthy balance between conserving fisheries resources, maintaining profitable commercial opportunities and ensuring enjoyable recreational opportunities.

Who manages fisheries in the Marine Park?

The Queensland Department of Primary Industries and Fisheries is responsible for fisheries management in the Marine Park. However, the Great Barrier Reef Marine Park Authority works closely with the Queensland Government on fisheries issues that are significant to the health and long-term sustainability of the Reef.

The Authority recognises commercial and recreational fishing is an important and reasonable use of the Marine Park. It also acknowledges fishing can affect species and their habitats and consequently has the potential for ecological effects in both the fished areas and the reef system as a whole. The Authority is working to ensure all fishing activities in the Marine Park meet Australian Government Guidelines for the ecologically sustainable management of fisheries.

Types of fishing activities that occur in the Great Barrier Reef Marine Park:

- Line fishing
- Crabbing
- Bait netting
- Spearfishing
- Trawling
- Trolling
- Netting (other than bait netting)
- Dive-based fishing for aquarium fish, coral, sea cucumber, trochus and tropical rock lobster

What's being done to keep fisheries ecologically sustainable in the Marine Park?

The Queensland Department of Primary Industries and Fisheries works to ensure fisheries are managed in a sustainable manner by:

- Developing new or amending existing fisheries management arrangements to make commercial and recreational fishing practices more sustainable. This may include:
- placing limits on the size of fish species that can be legally taken
- introducing bag limits on the number of fish an individual can catch and keep
- monitoring how, when and where different types of commercial nets or other fishing equipment can be used
- putting in place spawning season closures to help protect fish stocks
- Monitoring the amount of fish stocks being harvested
- Ensuring fishermen abide by the rules and regulations when out on the water.

The Great Barrier Reef Marine Park Authority through collaboration with the Queensland Government and stakeholders, seeks to ensure sustainable fisheries by:

- Establishing the *Great Barrier Reef Marine Park Zoning Plan 2003* to better protect the biodiversity (plants and animals) within the Marine Park. The Zoning Plan defines what activities can occur in which locations in the Marine Park
- Ensuring adequate monitoring and assessment are undertaken to determine the impacts of fishing activities and the status of harvested stocks, non-target species and the ecosystems on which they depend
- Supporting research relevant to better understanding the ecological impacts of fishing.

Let's keep fishing sustainable!

- Check the relevant Great Barrier Reef Marine Park zoning map for the area you're visiting and take your map with you.
- Check the fishing regulations outlined in the Queensland Department of Primary Industries and Fisheries Guide to recreational boating and fishing in Queensland or head to their Fishweb website at www.dpi.qld.gov.au/fishweb.
- Leave the Reef the way you found it, or cleaner!
 Take rubbish back with you, carefully and quickly return to the water all undersized or unwanted fish, and anchor your boat with care.





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Sustainable tourism in the Great Barrier Reef Marine Park

Tourism is the most significant commercial use of the Great Barrier Reef, with the outstanding natural feature attracting 1.9 million visitors each year. It contributes over \$5 billion to the Australian economy and generates around 63 000 jobs in regional communities.

The Great Barrier Reef Marine Park Authority works with tourism operators to protect and present the World Herritage values of the Marine Park.

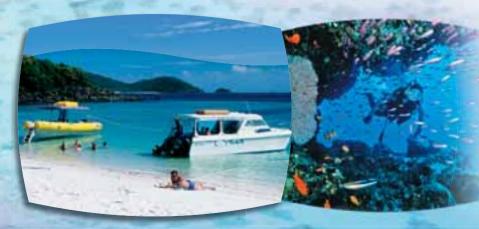
Managing tourism in the Marine Park

The Great Barrier Reef Marine Park Authority and the Queensland Parks and Wildlife Service have developed management tools and processes to provide for a range of tourism opportunities throughout the Marine Park whilst also ensuring the Reef is protected. Many initiatives have been developed to ensure tourism operators work at the highest environmental level. These include:

High standard operations – The Marine Park Authority encourages high standard marine tourism to ensure operations follow best practices and provide high quality, low impact experiences. There are a number of certified high standard operations in the Marine Park, ranging from large-scale pontoon-based experiences to smaller "live aboard" operations and low-key kayaking adventures.

Visitors to the Reef can look for the Eco Certified Ecotourism logo (pictured right) to identify high standard operators.





There are a diverse range of tourism operations that occur in the Great Barrier Reef Marine Park. These include:

- Day tours (snorkelling, diving, visiting islands, etc.)
- · Diving and fishing charters
- Aircraft or helicopter tours
- Cruise ships
- Beach hire
- Watersports (jet skiing, parasailing, etc.)
- Passenger ferries
- · Whale watching and swimming with whales
- Bareboats (self-sail)

Onboard - The Marine Park Authority has developed the publication Onboard - The tourism operators handbook for the Great Barrier Reef.

The handbook provides potential and current tourism operators with all they need to know about conducting a tourism operation in the Great Barrier Reef and includes responsible reef practices and information on the high standard rewards programme.

Reporting and monitoring initiatives – Tourism operators are out on the water every day and therefore are ideally placed to assist the Marine Park Authority in monitoring the health of the Marine Park and reporting illegal activity. Tourism operators support and participate in Eye on the Reef – monitoring Reef health at individual locations, Bleachwatch – monitoring the effects of coral bleaching, Eyes and Ears – encouraging tourism operators to report illegal activity in the Marine Park and Water Quality Monitoring – monitoring water quality at inner reef sites.

Environmental Management Charge (EMC) – Tourism operators collect an Environmental Management Charge from each visitor to the Reef. This small fee goes towards managing the Marine Park and contributes to reef research and conservation.

Best practices when out on the water or visiting islands

You can help protect our Marine Park by following these simple practices:

- Choose a high standard operator when visiting the Reef
- Avoid leaning on, standing on, holding onto or touching any part of the Reef
- Avoid touching anything with your fins and try not to disturb the sand
- Observe animals and do not touch, poke, handle, prod or chase them
- Take your rubbish and any litter you find back to the mainland.





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Sustainable development in the Great Barrier Reef Marine Park catchment

More than 70 per cent of Queenslanders live within 40 km of the coast and the population is increasing. As a result, land in the Great Barrier Reef catchment is being extensively cleared and modified for urban development. This includes an expansion of cities, towns and other developments, such as mineral processing facilities, port facilities, resorts and tourist infrastructure.

How does coastal development impact on the Marine Park?

More than 50 per cent of wetlands have been destroyed through land clearing or loss since European settlement. Wetlands are important as they act as 'filters' to the Reef. When wetlands are cleared, there is nothing to prevent nutrients and sediments from entering the Marine Park.

The Great Barrier Reef catchment is the main source of pollution to the Marine Park. Water runoff links the land to the Marine Park. Therefore, how the land is used and managed affects the quality of water in rivers, estuaries and the Reef. The inshore areas close to the coast are under stress from human activity associated with coastal developments and other land-based activities. The vast majority of the 2900 reefs that make up the Great Barrier Reef are in good condition but some of the 450 reefs closer to land are showing impacts consistent with a decline in water quality. Activities in the home, workplace or school that may impact on water quality include putting harsh chemicals and paints down the drain and not disposing of rubbish properly, allowing it to make its way into drains, creeks, rivers and

may impact on water quality include putting harsh chemicals and paints down the drain and not disposing of rubbish properly, allowing it to make its way into drains, creeks, rivers and the Reef.

The Great Barrier Reef catchment

The Great Barrier Reef catchment is the land area that surrounds the rivers that drain into the Great Barrier Reef. This area is the main source of excess sediments, nutrients and other pollutants entering the Reef.





How are we managing the impact of urban development on the Marine Park?

The Queensland Government has responsibility for land and water management practices adjacent to the Great Barrier Reef Marine Park, however the Australian Government, through the Great Barrier Reef Marine Park Authority, seeks to protect the Marine Park by supporting environmentally sustainable development.

Water quality has been identified by the Great Barrier Reef Marine Park Authority as a critical issue for the future sustainability of the Marine Park. Reducing the sediment and nutrient loads entering the Marine Park from coastal catchments is seen as the most important water quality issue. Public education campaigns and identifying areas of high nutrient and sediment losses and working with land managers to reduce their outputs are just some of the ways the Marine Park Authority manages water quality. The Marine Park Authority has the power to regulate or prohibit acts that may pollute water and harm plants and animals in the Marine Park, and supports local councils in their environmental efforts through the Reef Guardian Councils programme.

You can do your bit to help improve the quality of water entering the Great Barrier Reef Marine Park

- Keep drains and gutters free of chemicals and rubbish

 what goes into the drain can end up in creeks and
 rivers and may end up in the ocean
- Recycle, reduce, reuse: by minimising our waste we reduce the chance of rubbish entering our waterways
- Wash your car on the lawn instead of in your driveway or on the street, to keep detergents out of nearby drains
- Always use biodegradable and phosphate-free products
- Put all litter in the bin.





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Sustainable farming in the Great Barrier Reef catchment

Today it is estimated that 80 per cent of the land adjacent to the Great Barrier Reef Marine Park supports agricultural production, primarily beef cattle grazing and cropping (for example, sugarcane and cotton). Poor agricultural practices can result in the discharge of sediments, nutrients and pesticides into our wetlands and the Great Barrier Reef, particularly during flood events. Agricultural development has had a substantial impact on the quality of water entering the Great Barrier Reef catchment. Some examples include the draining of wetlands for crop production, and the use of wetland riparian areas for livestock grazing.

How does poor water quality affect the Marine Park?

Corals and other important marine animals and plants may be affected by poor water quality. If nutrients and sediments are not filtered out through wetlands, they can make their way into the Marine Park. Sediment can smother coral and block important sunlight from getting through, while the phosphorous and nitrogen in fertilizer runoff can promote the growth of algae that compete with coral, restricting its growth and reproduction.

Farming activities that occur in the Great Barrier Reef catchment include:

- Cattle grazing
- Cereal crops
- Sugarcane
- Cotton
- Vegetables and herbs horticulture
- Fruits horticulture
- Intensive animal production, dairy

How are we managing the impact of agricultural development on the Marine Park?

The Queensland and Australian Governments are working with local government, industry and the community to improve the water quality entering the Marine Park through the Reef Water Quality Protection Plan (Reef Plan). Reef Plan was developed in response to concerns about damage to the Great Barrier Reef from increasing levels of sediment, pesticides and fertilisers reaching the Reef.

It aims to "halt and reverse the decline in water quality entering the Reef" by rehabilitating and conserving areas of the catchment.

The Reef Plan focuses on relatively low cost measures such as encouraging good planning and assisting landholders to adopt best management practices that are both profitable and environmentally sustainable. Significant changes to land management practices have been occurring in the agricultural industry. Landholders are developing strategies to minimise the loss of nutrients, chemicals and sediment into waterways. The Reef Plan acknowledges this work undertaken by farmers and builds on the strategies and plans already in progress.



Farmers are doing their bit to look after it

Farmers can, and are, adopting best environmental land practices to not only help improve water quality and protect the Reef, but to reduce costs on their farms. They are adopting practices that help keep fertilizers and pesticides on their crops and not in wetlands. These include:

- Contour ploughing helps to conserve soil and retain water
- Establishing efficient irrigation systems improves efficiency of water use and fertilizer application, and reduces energy usage
- Green cane harvesting and trash blanketing reduces the loss of nutrients and pesticides on farms
- Fencing fencing paddocks allows the rotation of stock to prevent overgrazing of particular areas. This means there is more ground cover that helps to trap nutrients and pesticides used on farms. Fencing can also help to protect riverbank vegetation and reduce erosion.



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Using sea country sustainably

The Great Barrier Reef has been an essential part of the lives of Indigenous Australians for thousands of years. There are more than 70 Traditional Owner groups living adjacent to the Marine Park and they hold a vast knowledge of the marine environment, its animals and their habitats. The groups' various traditional customs and spiritual lore are still practiced, and they maintain strong cultural links to their sea country. Storytelling, ceremonies, fishing and hunting continue today.

Under their customs and traditions, Aboriginal and Torres Strait Islander people have used, and continue to use natural resources for many different purposes and the value of those resources is immeasurable. Traditions and customs like fishing and collecting, and the hunting of marine animals such as dugong and turtle, have long been a part of Aboriginal and Torres Strait Islander customs and are of high cultural importance.



Indigenous hunting, fishing and collecting in the Marine Park

Dugong, turtle, fish and shellfish are a significant part of the diet of many Aboriginal and Torres Strait Islander people. In some Indigenous communities, people choose to fish or hunt regularly to provide food for their families. Indigenous fisheries generally target species including reef fish, crabs, sharks, rays and shellfish. Hunting of some species is also important for certain ceremonies.

Working together to keep the traditional use of marine resources sustainable

'Traditional use of marine resources' is defined in the Great Barrier Reef Marine Park Zoning Plan 2003 as 'the undertaking of activities in accordance with Aboriginal or Torres Strait Islander custom or tradition, for the purposes of satisfying personal, domestic

Government agencies are actively working with Traditional Owners, Indigenous peoples, other relevant groups and marine industries to ensure the traditional use of marine resources is managed at sustainable levels.

Traditional Use of **Marine Resources Agreement** (TUMRA)

The first TUMRA was accredited on 8 December 2005. Developed by the Girringun Traditional Owners, the TUMRA applies to sea country between Rollingstone and Mission Beach. This means Girringun Traditional Owners will work with Commonwealth and State Government agencies to manage traditional hunting in the Marine Parks (including the State Marine Park).

Under the agreement, which is accredited until 2008, the Traditional Owners have agreed to not hunt dugongs, to limit turtle harvesting, and to monitor illegal Marine Park activities through cooperative working arrangements.

The Indigenous Partnerships Liaison Unit within the Great Barrier Reef Marine Park Authority continues to work with Traditional Owner groups to manage the sustainable traditional use of marine resources in the Great Barrier Reef Marine Park.









We encourage everyone to learn more about the tradition, culture and heritage of Aboriginal and Torres Strait Islander people and to respect their values. You can also help by protecting the many special cultural and heritage sites of importance to Traditional Owners throughout the Great Barrier Reef Marine Park.



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Sustainable communities, sustainable living

Communities along the Great Barrier Reef catchment are supporting the idea of living sustainably. Supermarkets are swapping plastic bags for environmentally friendly bags, homeowners are installing water saving devices and businesses are now more aware of the electricity they use and are finding ways to reduce their usage. Local councils are also working to protect the environment and encourage sustainable living. Here's what you can do!

Best environmental practices at home

- Turn off the tap while cleaning your teeth
- Operate your washing machine and dishwasher only when you have a full load
- Start composting and set up a worm farm
- Use reusable shopping bags, rather than plastic bags.

Best environmental practices in the workplace

- Install dual-flush toilets and efficient urinals

 they use half as much water as
 conventional toilets
- Reuse office paper use recycled paper and promote double sided printing and copying
- Take your own coffee mug rather than using polystyrene cups
- Encourage recycling.

Reef Guardian Councils do their bit to look after it

The Great Barrier Reef Marine Park Authority's Reef Guardian Councils programme encourages councils to protect and conserve the Marine Park for future generations. Reef Guardian Councils are involved in many environmental initiatives, including:

- Installing gross pollutant traps to stop plastic bags and bottles reaching the Marine Park
- Monitoring water quality in urban waterways
- Running wastewater treatment and catchment tours for schools and the community
- Running waste management programmes, including event and kerbside recycling.

What is climate change?

Greenhouse gases are present naturally in the atmosphere and maintain the Earth's surface temperature by trapping some of the sun's energy. This process keeps the earth at a temperature suitable for life. Climate change occurs when increasing levels of greenhouse gases trap more heat in the atmosphere and influences air and sea temperatures, rainfall, sea level and storm frequency. Human activities (such as burning fossil fuels like oil based products and coal) are largely responsible for increased greenhouse gases.

How is climate change affecting the Marine Park?

Changes to the Great Barrier Reef climate are already impacting on corals, seabirds, turtles and fish. Increased temperatures can cause coral bleaching, an imbalance in the gender ratio of marine turtles and a lack of food for marine animals. Scientists predict that water temperature will continue to rise in the future and this will impact on industries and communities that depend on the Reef.

You can help 'cool the globe'

- Set up a car pool for your workplace or school.
 Or use public transport, walk or cycle to work or school
- Install/use energy efficient lighting in your house, school or workplace and turn off lights when you leave an area
- Buy energy efficient appliances
- Wash clothes in cold water and use the sun to dry clothes
- Switch off appliances like TVs and computers at the power point instead of leaving them on 'standby' when not in use.







Reef HQ Aquarium does their bit to look after the environment

Staff at Reef HQ Aquarium in Townsville have taken on the challenge of reducing their electricity usage, and are seeing great results!

Some of the key initiatives have included:

- Installing more efficient lighting in the public areas of the Aquarium
- Ensuring staff turn off lights and computers when away from their desk
- Installing solar energy panels to chill the tanks more energy efficiently.

These simple but effective initiatives are already showing promising results in reducing power and saving money and more importantly, protecting the Great Barrier Reef Marine Park.



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Sustainable schools

Hundreds of schools throughout Queensland are living sustainably and doing all they can to protect their environment and the Great Barrier Reef through the Reef Guardian Schools programme. The programme is an education initiative by the Great Barrier Reef Marine Park Authority that develops partnerships between students and their communities to work towards a sustainable future for their environment and our Great Barrier Reef. Many schools have discovered just how easy and fun it is to be a sustainable school. They are making small changes to everyday activities or working on larger scale projects that involve the local community.

How to be a sustainable school

Reef Guardian Schools are leading by example when it comes to living sustainably. Whether it is improving water quality, addressing the issue of climate change, improving the local environment or educating the wider community on best environmental practices, the achievements of all schools involved in the programme are outstanding. Just some of the projects Reef Guardian Schools are involved in are listed below.

Improving water quality and conserving water:

- Installing water saving devices such as dual flush toilets, waterless urinals, flow reducers and rainwater tanks
- Heading out to local wetlands to monitor water quality
- Developing competitions that involve families and their waterwise practices at home.

Minimising energy use:

- Placing signs and slogans around the school reminding students and staff to conserve energy by turning off light switches and computers when not in use
- Developing whole school energy efficiency plans including auditing energy usage on a regular basis
- Holding an energy efficiency stall and alternative energy displays at school open days.

Reducing, recycling, reusing:

- Installing recycle bins and placing signage around the school reminding students to recycle
- Using compost bins, building worm farms and holding regular "emu" parades (clean-up parades)
- Students conducting surveys of home recycling, and encouraging improvements in family recycling behaviour.

Improving the local environment:

- Improving local wetland areas by removing introduced weeds and revegetating
- Heading out to local coastal areas to conduct rubbish clean-ups and monitor seagrass areas
- Stencilling messages on drains located in the community to remind people that what goes into drains can end up in the Great Barrier Reef.

Educating peers and the community on best environmental practices:

- Hosting a youth forum to teach peers about living sustainably
- Distributing flyers and brochures to the local community about best practice environmental messages
- Seeking local media coverage of school environmental activities to get environmental best practice messages to communities.







