

# GREAT BARRIER REEF RESORT ISLANDS

## Case Studies and Best Practice Examples



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## ENERGY

Recent concern over the negative impacts of greenhouse gases (GHGs) and their contribution to climate change have led to businesses undertaking initiatives to reduce their emissions and energy consumption. With advances in energy reduction technologies there is an opportunity for businesses to become more energy efficient.

### ENERGY EFFICIENT EQUIPMENT

- Check the energy efficiency rating on AC equipment and systems.
- Set AC at 24-25°C in summer and 17-19°C in winter.
- Do not rewind motors in AC systems, when failing has occurred, unless there is a guarantee of efficiency. The cost for a new motor may be lower than energy costs of a rewind motor over time.
- Consider replacing conventional boilers with condensing boilers for water heaters as it can reduce gas consumption up to 15%.

## RECORDING AND MONITORING ENERGY USE

Actively monitoring and recording energy use will help with understanding energy consumption, ensuring that energy saving initiatives are effective and GHG emissions are minimised.

**Smart meters** can provide real-time energy information and when integrated with a Building Management System (BMS), the meters can provide effective energy monitoring and management control, as well as reducing visitor consumption if made available to guests

**Sub-metering** is the installation of metering devices to measure the actual energy consumption after the primary utility meter. Data from sub-metering helps you to define baseline energy consumption, detect usage anomalies and identify key areas where energy saving opportunities may be feasibly implemented.

## AVOIDING AND REDUCING ENERGY DEMAND

The most effective way to reduce emissions and energy usage is to avoid generating them in the first place or by reducing usage through improving energy efficiency and reducing demand.

- Remove unnecessary equipment and optimise equipment capacity.
- Reduce the load on equipment by matching output to demand.
- Replace or retrofit old and inefficient equipment.
- Reduce operational hours of equipment.
- Specify standard equipment operation and procedures.
- Maintain regular inspection and cleaning of equipment.

## SWITCHING TO LOW EMISSION ENERGY SOURCES

Emissions from energy consumption are usually higher for non-renewable energy sources such as electricity generated from coal. More sustainable energy sources can be integrated into business operations through:

- Utilising alternative energy sources such as renewable power or fuel switching.
- Purchasing green power from offsite electricity providers.

## ENERGY EFFICIENT TECHNOLOGIES

Some technologies that could be retrofitted to existing equipment or considered for implementing into new building design to reduce energy usage are described below:

TECHNOLOGY	DESCRIPTION	COST (\$AUD)	ESTIMATED ENERGY	NOTES & LINKS
<b>Small scale solar (off-grid)</b>	For off grid resort islands without solar installed, it is suggested that an initial system of 20kW be installed. This should be able to be roof mounted if there is at least 200 square metres of north-facing unshaded roof space available.	\$1,200 per kilowatt installed but more likely to be over \$2,500 for island locations	Every 1kW of solar is approx. 1.5MWh of electricity, reduce 400 L of diesel used in generation and avoid 1.1 tCO <sub>2</sub> -e GHG	<a href="#">Panel sizes and quality varies with transport and installation costs increasing for more remote locations.</a>
<b>Medium scale solar &amp; battery (off-grid)</b>	Resorts that already have solar or more significant evening peak demand loads (air conditioning, hot water and cooking) may wish to install a larger solar array with batteries. An example would be to use a 70kW solar array for 40kW of average daytime demand to enable storage of up to 150kWh to offset the majority of evening loads.	\$1,500 per kilowatt-hour of capacity (Li-ion) but more likely to be over \$3,000 for island locations	Batteries do not provide energy or emission saving but the potential to use solar increases.	<a href="#">Battery sizes and technology varies.</a>
<b>Upgrading hot water systems</b>	Hot water systems are a major driver of energy demand. An upgrade to a higher energy rating system could achieve energy savings.	\$3,000 to \$3,500	20 to 30% savings	<a href="#">System sizes and technology varies.</a>
<b>Human Presence Sensors</b>	To sense room occupancy and determine equipment operation levels.	\$20 to \$9000	20 to 40% savings	<a href="#">Sensor types: infrared, movement, CO<sub>2</sub>, light.</a>
<b>Equipment timers</b>	To reduce operational hours, set relevant equipment on a timer to turn off when at low occupancy or activity.	\$50 to \$500 per piece	20 to 30% savings	<a href="#">Equipment timers: HVAC systems, electronic, analogue, digital and pneumatic.</a>
<b>Room key card switches</b>	Reduce energy usage in guest rooms by switching power off when the key card is removed.	\$5 to \$300 per piece	20 to 45% savings	<a href="#">What they are, cost, benefits, examples:</a>
<b>Programmable thermostat</b>	Allow automation of HVAC systems by automatically turning the unit off when set temperature has been reached and utilising occupancy timers to adjust operation to suit occupancy.	\$20 to \$300 per piece	10 to 30% savings	<a href="#">What is a programmable thermostat and how does it work:</a>
<b>Night purge ventilation</b>	Expel warm air built up from the day time to save energy by pre-cooling thermal mass of buildings overnight so the HVAC system does not need to work as hard in the morning to reach cool temperatures.	\$500 to \$2,500 to update current system	10 to 30% savings	<a href="#">What is night purging:</a>

NOTE: EarthCheck has no association with the companies or products provided. These links are simply provided on an information basis to assist members in understanding the aforementioned technologies.

## CASE STUDY: FITZROY ISLAND RESORT

Located south-east of Cairns on the Great Barrier Reef, Fitzroy Island is mostly a protected National Island Park hosting a diverse range of ecosystems such as mangroves, rainforest, coral beaches and open woodland.

To achieve energy efficiency, the whole property is undergoing retrofitting to LED lighting, altering the wattage from 40W to 4W which has made a noticeable improvement in energy consumption. Sensor and timer lights are implemented and adjusted seasonally. The resort is also working on reducing the use of lights in rooms due to the effectiveness of the LEDs.

Air conditioning units were reduced in size to serve a smaller number of rooms, increasing redundancy in their system, in case a unit failed. Staff have been asked to not leave air conditioners running while not in their rooms. All air conditioners throughout the property are located in shade to increase efficiency and the units have been treated so that they do not rust as quickly.

Outside shade trees have been planted and louvres built around windows to block sunlight. In addition, lightly coloured exterior walls reflect heat and this has reduced the need for AC units to work overtime to cool the space.

Images courtesy of TEQ and EarthCheck



## CASE STUDY: INTERCONTINENTAL BORA BORA RESORT THALASSO SPA

InterContinental Bora Bora Resort and Thalasso Spa is located on the coral island of Motu Piti Aau on the barrier reef of French Polynesia. Accurately named "An Eco-Friendly Jewel in the South Pacific", the five star resort successfully combines luxury and environmental protection.

The resort is widely recognised for its innovative Sea Water Air Conditioning System (SWAC System) that pumps sea water from the ocean, where the water is cool. The water passes through a titanium heat exchanger and cools a secondary freshwater system that provides cool air to the air conditioning systems throughout the hotel. The sea water is then returned to the ocean. The SWAC system consumes approximately 10 times less electricity than conventional air conditioning systems – 1million kW per year amounting to savings of AUD\$500,000 per year. For further watch the Bora Bora Intercontinental [SWAC system video](#).

Several other initiatives have been implemented to reduce energy consumption and related costs such as installing solar panels that have reduced energy consumption to 186.3 MJ per guest night. The installation of energy saving light bulbs, motion sensors and a Central Management Lighting system (initiates lights out at 11pm) has also contributed to reduced energy consumption. Emissions and energy usage has been significantly reduced due to availability of bicycles, electric carts and staff awareness—not leaving computers switched on or standby mode.



## WATER

There are many areas within a tourism operation that consumes water. Opportunities to reduce water use range from simple changes to procedures, to retrofitting old inefficient systems or installing new water efficient technologies.

### MONITOR LEAKS

- Incorporate visual leak inspections into maintenance, security or cleaning routines.
- Regularly read and record water meters and consider installing sub-meters to monitor unexplained spikes in water consumption from water leaks.

### ALTERNATIVE WATER SOURCE

- Consider alternative water sources such as rainwater diverted from gutters and storm water drains or collected in dams or tanks; recycled shower water; laundries; cooling tower blowdown; pool backwash and condensation from AC systems.

## REDUCING WATER CONSUMPTION

- **Cleaning:** request staff to minimise water used for cleaning.
- **Bathrooms:** Install low flow fixtures for showers, taps and fit dual flush toilets to reduce water consumption by up to 20% without affecting guest comfort.
- **Kitchens:** Water wastage in kitchens can often be the result of staff habits so increasing awareness of efficient water practices can be helpful. Where possible, install water efficient equipment or reduce usage frequency.
- **Laundries:** Commercial laundries can use significant amounts of water for washing, drying in steam heated dryers and steam pressing. Only operate washing machine when full and reuse wastewater from on gardens. Provide guests with the opportunity to reuse linen and towels rather than replacing them every day.
- **Cooling towers:** Reduce cooling load by raising set temperature of AC systems or reduce operating hours. Reduce unnecessary water loss from excessive overflow, splash, drift, leaks and blowdown. Alternative cooling tower water sources include recycled water, rainwater or AC condensate to substitute cooling tower make-up water.
- **Pools:** Check for leaks and cracks regularly. Link backwashing to a filter pressure gauge which will electronically initiate backwashing when necessary. Cover pools when not in use or during cooler periods and shade from umbrellas help to reduce evaporation. Install drainage barriers around the pool to collect splash and overflow. Install a rainwater tank to supplement pool make-up water.
- **Landscaping:** Implement watering schedules to reflect seasonal variations, vegetation types and daily weather conditions. Avoid irrigating during high evaporation times such as the middle of the day. Consider planting water efficient gardens— local species are best as they adapt more easily to your region's climate and soil.

Images courtesy of TEQ and EarthCheck

## WATER EFFICIENT TECHNOLOGIES

Some technologies could be retrofitted to existing equipment or implemented to reduce water consumption as below:

TECHNOLOGY	DESCRIPTION	COST (AUD)	ESTIMATED USAGE OR SAVINGS	NOTES OR LINKS
<b>Low flow fixtures</b>	Low flow fixtures on taps and showers can reduce water consumption without affecting guest comfort.	Shower fixtures = \$20 to \$300/piece Tap fixtures = \$5 to \$20/piece	Normal flow (taps) = 12L/min Reduced (taps) = 6L/min 10 to 70% savings	<a href="#">What are they, how to implement, cost, benefits</a>
<b>Dual flush toilets</b>	Dual flush toilets can use as little as 4L for a full flush and 2L for a half flush which is less than half the water of a standard toilet.	\$200 to \$400 for installation and equipment per toilet	Standard usage = 9 to 12L per flush Dual flush = 3-6L per flush 30 to 50% savings	<a href="#">What are they, how to implement, cost, benefits</a>
<b>Water softeners</b>	Softening of hard water (significant amount of calcium and magnesium in the water) to prevent clogged pipes, reduce detergent dissolving time and difficulty and prevent lime scale build up; contributing to reduced water usage and costs.	\$600 to \$7000 for equipment dependent on size	0.30 to 0.60 cents running cost per day Up to 30% in energy expenses, 35% on detergents	<a href="#">What is it and why use it?</a>
<b>Rain sensor</b>	Ensures automatic irrigation systems turn off when it is raining.	There are several different types	Dependent on rain frequency	<a href="#">Water efficient landscape and irrigation for non-resident facilities</a>
<b>Rain water tanks</b>	Rain water tanks provide an alternative and renewable source of water.	Depends on size, material, finish and strength of tank = \$700 to \$2,000	Depending on tank size and climate, mains water use can be reduced by up to 100%	<a href="#">General water tank information</a>
<b>Water sub-meters</b>	Water sub-meters can be used to monitor water consuming items such as cooling towers and pools, and also to segregate areas such as kitchens and guest rooms. It can alert you to any unexplained spikes in water consumption or drops in pressure from water leaks or where water consumption is highest.	Equipment and installation \$400 to \$600 per meter approximately	15% to 20% less water used	<a href="#">Water sub-meters</a>
<b>Aqua recycle</b>	This system allows wash water to be recycled in laundry machines.	\$2,500 per month for three years to own the system outright	Reduces water usage by 80%. Reduces sewer discharge by 95%. Cuts energy costs for heating water by up to 50%. Payback is less than 2 years.	<a href="#">Aqua recycle</a>

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## CASE STUDY: BEDARRA ISLAND

Located midway between Cairns and Townsville, Bedarra Island has implemented sustainable operational processes to significantly reduce their impact on the environment.

Previously, Bedarra generated water by a diesel-powered desalination plant. Currently they source fresh water from rainwater collected in storage tanks and during the drier months water is drawn from several perennial freshwater springs located on the island.

Older water reticulation infrastructure has been replaced to reduce the risk of any potential water leaks. To monitor potential water leaks, pressure gauges are installed on lines to check pressure which can assist with finding leaks. Staff are also asked to check for leaks and report them to management immediately.

Water efficiency is considered for technologies and appliances by ensuring that the most efficient equipment is used where possible. All toilets on the property are dual flush to reduce water consumption.

Bedarra use a BioCycle wastewater system that digests solid wastes and uses controlled natural processes to purify wastewater which can then be recycled through garden drippers, sprinklers and irrigation systems.

### SUSTAINABLE INITIATIVE:

**Lady Elliot Island** has removed non-native vegetation, such as water-intensive palm trees from the island, and replaced with native species.



## RADISSON BLU RESORT, DENARAU ISLAND FIJI

Denarau Island, set within 10 acres of lush tropical gardens and lagoon swimming pools, is located off the west coast of Fiji near the town of Nadi.

Radisson Blu Resort aims to reduce the demand on local potable water supplies with a water management plan, efficient fixtures, redesign and leak monitoring. The current water management plan encourages the use of sustainable water supplies such as rainwater, stormwater and treated wastewater.

Dual flush toilets have been installed in guest bathrooms and other facilities. Resort taps and shower heads have also been fitted with low flow water inhibitors to prevent unnecessary water waste.

The resort's stunning waterfall lagoon has been redesigned and cut down in size. This decision has significantly reduced evaporation rates in the pool area. Water features have also been relined to minimise water leakage. The lagoon redesign has led to 300,000 litres of water savings in a single year.

The resort currently performs at best practice level in their region as part of the EarthCheck Certified Program. Room inspectors and plumbers regularly perform routine maintenance and check equipment for leaks.

Images courtesy of TEQ and EarthCheck





## REDUCE

- Implement an inventory management system to monitor storage, waste and product purchasing.
- Discuss with suppliers the benefits of reducing packaging on products.
- Use visual reminders such as signage or colour coding to assist with waste initiatives.
- Maintain and ensure equipment is operating efficiently to prevent food spoilage.
- Give customers the opportunity to not have a straw with their drink.
- Reduce the amount of food products needed by implementing a food garden.
- Invest in glass or can crushers or waste compacting systems to ensure that rubbish bins are completely full before removal.

## REUSE

If waste cannot be eliminated and all efforts have been made to reduce the quantity of waste generated, there may be opportunities for its reuse either onsite or by external businesses, customers or community groups.

Reuse packaging and purchase items such as crockery, utensils or equipment that can be upgraded and repaired.

Images courtesy of TEQ and EarthCheck

# WASTE. REFUSE, REDUCE, REUSE, RECYCLE

## REFUSE

- Find a substitute if the product is hazardous or non-recyclable.
- Review standard operating procedures to ensure waste reduction issues are included.
- From July 1st 2018 plastic bags were banned across all of Queensland, therefore, needing to be eliminated entirely or substituted with a more sustainable option. This ban applies to lightweight plastic bags under 35 microns that are supplied free of charge. There are a variety of options [for a sustainable substitute](#) including woven polypropylene bags, paper bags or hand woven tote bags.
- Plastic in other forms such as straws, stirrers, lined coffee cups, water bottles, take away containers, cutlery and personal care products are also an issue needing to be addressed. These products can be eliminated, substituted or offered as optional to guests rather than supplied. For example, guests could be given the option of whether they would like a straw in their drink instead of automatically providing them. For example, alternative single-use straws such as bamboo or cardboard could be [substitutes](#) for plastic straws, and/or reusable straws such as metal or silicone could be available to purchase.

## RECYCLE

- Provide clear and visual signs and labels for different waste bins.
- Provide training to staff and education materials to guests on what and how to recycle.

## TREAT AND DISPOSE

- Treatment and disposal of waste should be adopted as a last resort and carried out through a licensed waste service provider, in line with local laws and regulations, and in a way that causes least harm to the environment.
- [Queensland disposal laws](#) have a new resource recovery and waste strategy. There will be levy zones and non-levy zones throughout Queensland (38 zones out of the 77 are proposed to be designated levy zones and will change the way waste is charged depending on where it is generated and disposed).

## GOVERNMENT CONTAINER REFUND SCHEME

As of November 1st 2018, Queensland introduces the container refund scheme. Queenslanders use nearly 3 billion beverage containers every year. The state-wide container refund scheme will provide an incentive of 10 cents per eligible container that is recycled.

## USEFUL WEBLINKS

[About the container refund scheme](#)

[Container refund points](#)

[Eligible containers](#)

## WASTE REDUCTION TECHNOLOGIES

Some technologies that could be implemented to eliminate, avoid or reduce waste production are described below:

TECHNOLOGY	DESCRIPTION	COST (AUD)	ESTIMATED USAGE OR SAVINGS	NOTES OR LINKS
<b>Composting machines</b>	An automated or non-automated composting technology processing organic waste into solid or liquid compost within days to weeks.	Depends on size and brand, ranges from \$200 to \$100,000 with size ranging from 1L to 1000L.	<p><i>Automated systems:</i> Usage ranging from 30 to 200 kWh/month</p> <p><i>Non-automated systems:</i> no energy usage, savings in reduced landfill waste production</p>	<p><a href="#">OSCA composter</a></p> <p><a href="#">Cloey composter</a></p> <p><a href="#">Bokashi liquid composter</a></p> <p><a href="#">Gaia Food Dehydrator</a></p>
<b>Self-compacting solar bins</b>	<p>Essentially a smart bin: when waste in the bin reaches a certain level it is compacted (powered by the sun) and the waste companies are notified to collect the bin.</p> <p>This reduces collection frequencies by 70-80% on average, removes waste as a food source from nearby species, and reduces carbon footprint from reduced truck pollution.</p>	\$5,000	<p>Reduces collection frequency by about 80% on average.</p> <p>Could save \$30 to \$50 a week on operational savings per bin.</p>	<a href="#">Big belly self-compacting bin</a>
<b>Glass crushers</b>	A machine that compacts glass into a safe to handle sand bi-product which could be used in construction products such as cement or other sand-based applications.	<p>Depends on size of machine.</p> <p>Approximately \$5,000 to \$35,000</p>	<p>Up to 75% volume reduction</p> <p>Saving \$30,000/year approximately</p>	<p><a href="#">Bottle Sonic</a></p> <p><a href="#">Bottle cyler</a></p>

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## CASE STUDY: ALILA VILLAS ULUWATU

Alila Villas Uluwatu are set on a clifftop plateau along the southern coastline on Bali's Bukit Peninsula. This resort is strongly committed to social, cultural and environmental responsibilities which they regard as essential for sustainable business.

Alila Villas Uluwatu has been designed to incorporate locally sourced and recycled materials such as old timber telegraph poles and wooden railway sleepers. One example of recycled materials in design is the outdoor cabana in the image on the left above. The resort has also designed art pieces from recycled materials such as the image above on the right.

This resort has been involved in Bali Recycling and Eco Bali companies. Green waste is composted on site and beverage cartons are recycled combined with increasing awareness about waste disposal, recycling and renewable sources.

Since joining the EarthCheck Certified program in 2009, this resort has saved approximately 25,000L of waste sent to landfill (equivalent to four smart cars) and are now performing at a best practice level for their region.



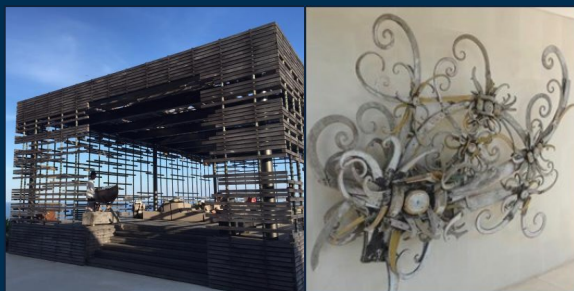
## CASE STUDY: BEDARRA ISLAND

Bedarra Island are continually striving to provide a luxury island experience in a more sustainable manner. Waste production has been significantly reduced on the island from a number of initiatives. Bedarra has an active waste management plan that ensures the separation of cardboard, aluminium, plastic, organics and glass.

To counter the unavailability of glass recycling facilities in North Queensland, Bedarra invested in a glass crushing machine that reduces glass to sand. The bi-product is used as aggregate in concreting and landscaping applications throughout the resort. The glass crusher is used for 10 minutes a day operating on solar to reduce energy usage. Aluminium products are collected and taken to the local rotary club for recycling.

Cardboard and organic products are composted to be used in the gardens. Plastics are taken to a recycling depot. The rest of the waste is taken to the main land to be transferred into a larger skip bin which is collected each week. The number of rubbish runs to the main land is reduced as the boats transporting the rubbish never leave with less than a full load. This reduces transport costs, emissions and increases staff efficiency.

Packaging is also targeted to reduce waste. Plastic straws have been replaced with paper straws in the bar to minimise plastic waste. Styrofoam boxes packaging seafood are returned to suppliers for reuse and insulated cases are repackaged on main land before the food is transported on the boat. The addition of a vegetable garden assists in reducing waste as the products that are grown do not need to be transported from the main land eliminating packaging.



Images courtesy of TEQ and EarthCheck

## TRANSPORT

Reducing your organisation's transport footprint is a visible and often immediate way of showing commitment to sustainability to your customers and staff. Transport plays a key role in promoting sustainable behaviour and therefore sustainable transport offers the chance for your organisation to make a real difference both in terms of impact reduction and efficiency savings.

An integrated approach to sustainable transport allows your business to benefit from operational and capital cost savings, increase employee productivity, improve staff retention rates, and exhibit environmental responsibility.



### AVOID

Teleconferencing or web conferencing is an efficient method to replace less important face to face meetings with new technologies being relatively cost effective.

Consider working from home, if possible, and communicate with staff via phone and emailing information and documents.

### REDUCE

- Consider local recruitment, to reduce the need for staff to travel to the property.
- Encourage staff to walk, cycle or car pool to work.
- Improve or implement facilities for secure and convenient bike parking.
- Offer incentives to employees who walk or cycle such as a weekly or monthly breakfast.
- Operate an emergency training session when guests check-in such as a training video on TV or a physical emergency training drill or provide an emergency procedure booklet that is easily located and available.
- Secure insurance policies to protect assets and organisations.

Images courtesy of TEQ and EarthCheck

## EFFICIENT TECHNOLOGIES

Some technologies that could be implemented to improve sustainability through transport are described below:

TECHNOLOGY	DESCRIPTION	COST (AUD)	ESTIMATED USAGE OR SAVINGS	NOTES OR LINKS
<b>Solar powered golf buggies</b>	Solar panels installed on the roof of golf carts to extend range and reduce charging costs	For the package to install on existing golf carts - \$750 to \$1,000	Increased driving range up to 25%. Extend battery life by up to 2 years and up to 20% savings on electricity costs	<a href="#">Erigeron Energy</a>
<b>Electric outboards</b>	Electric outboards have an electric motor and are connected to an onboard rechargeable battery	Depends on size of boat ranging from \$2,000 to \$12,000 for light boats to boats up to 10 tons	Lower maintenance costs, reduced running cost, can be emission free by installing solar panels to charge the boats	<a href="#">Eco Boats</a>
<b>Electric vehicles</b>	Electric vehicles use an electric motor powered by electricity from batteries or a fuel cell	<i>Golf carts</i> - \$5,000 to \$10,000 <i>Cars</i> – vary from \$20,000 to \$100,000 for a new car	Charging costs for an electric vehicle is 60-90% cheaper than fuel costs.	<a href="#">Electric vehicles</a>
<b>Biofuels</b>	Made from feedstock including waste starch, molasses, tallow, sorghum and waste cooking oil, biofuels are cleaner and renewable alternatives to petrol and diesel fuels	Search the cost of E10 (bioethanol) for your closest area: <a href="https://www.racq.com.au/cars-and-driving/driving/fair-fuel-prices">https://www.racq.com.au/cars-and-driving/driving/fair-fuel-prices</a>	Savings in greenhouse gas emissions by up to 50%.	<a href="#">Biofuels Association</a>
<b>Solar powered boats</b>	Can use solar panels on boats in lieu of running the motor, generator or plugging into shore power saving fuel and reducing noise pollution	\$200 to \$2000/kW without installation	Savings in emissions, fuel costs and running costs	<a href="#">Eco Boats/Solar Panels</a>



Images courtesy of TEQ and EarthCheck

## CASE STUDY: HAMILTON ISLAND

Hamilton Island resort is located north of Mackay in the Whitsunday region on the Great Barrier Reef. Unlike many other islands, Hamilton has its own airport and private marina making the island easily accessible.

There are no cars on Hamilton, only service vehicles, shuttle buses and golf buggies. The resort encourages walking as one of the best ways to explore the island.

Golf buggies were previously petrol powered and have now been replaced by electric powered buggies. The number of buggies that can be hired at any one time is capped (600) to reduce emission production and congestion on the island. There are approximately 600 privately owned buggies.

Shuttle buses, operating every day, are complimentary for visitors and guests. Bus stops are conveniently located throughout the island.



## CASE STUDY: ALLTOURNATIVE, MEXICO

Alltournative is a Mexican tour company that provides eco-friendly expeditions with a goal to preserve the Mayan Heritage and provide benefit to the economic, social and cultural development of local Maya communities in Riviera Maya.

In 2017, as part of the EarthCheck Program, the organisation performed above the average in their region for their energy consumption (including fuel usage) and greenhouse gas emissions.

Alltournative has implemented a preventative maintenance program: a 13 passenger average and carpool system that increased the optimisation of fuel consumption from 2.8 miles per gallon to 4.1 miles per gallon. This led to a reduction of 25.3% in carbon emissions, the equivalent of 198 vehicle emissions in one year.



Images courtesy of TEQ and EarthCheck

## RESILIENCE

As identified in the 2013 Global Assessment Report (UNISDR 2013), tourism is one of the most susceptible and vulnerable industries to disasters. The following examples are simple measures that can be implemented to ensure your organisation is more resilient:

- Ensure loose items are secured.
- Have an emergency or disaster action plan in place and communicate the plan to staff so they are aware of evacuation procedures and their responsibilities.
- Regularly trim back trees and overhanging branches near buildings.
- Install rain water tanks as an emergency water storage system.
- Incorporate visual leak inspections into existing maintenance, security or cleaning routines.
- Regularly read and record water meters and consider installing sub-meters to monitor unexplained spikes in water consumption from water leaks. cooling tower lowdown, pool backwash and condensation from AC systems.

The high exposure of tourism to disasters reflects the preference of many tourists to be close to areas of natural beauty, such as rivers and coastlines, on remote islands, mountainous terrains and in warm tropical environments.

Locations are often exposed to hazards such as cyclones, hurricanes, storm surges, floods, tsunamis and landslides. Building and development in high risk locations are also on the rise.

## TECHNOLOGIES

Some technologies that could be implemented to improve resilience within organisations are described below :

TECHNOLOGY	DESCRIPTION	COST (AUD\$ APPROX.)	NOTES OR LINKS
<b>Storm Shelter</b>	An above ground or underground shelter built from concrete, steel, fiberglass or plastic. Ensure shelters are sufficiently stored with sufficient supplies in case of a disaster	\$4,000 to \$12,000 taking approximately one week to build	<a href="#">Storm shelters</a>
<b>Satellite phone</b>	A mobile phone that connects to orbiting satellites instead of terrestrial cell sites to ensure organisations stay in touch in emergencies and when no cell tower signal can be found	\$700 to \$2,000 plus phone plan	<a href="#">Satellite phones</a>
<b>EarthCheck CrisisReady App</b>	EarthCheck's CrisisReady Program can be customised for destinations and their businesses to collectively manage risk	\$14,500 (standard app: 1,500 users) \$35,000 (premium app: 2,500 users)	<a href="#">EarthCheck CrisisReady Program</a>

*NOTE: EarthCheck has no association with the companies or products provided. These links are simply provided on an information basis to assist members in understanding the aforementioned technologies.*

Where resorts are considering a greenfield development, there will be additional flexibility for incorporation of these options in design. For example, structures can be designed to incorporate solar panels, lighting plans can be based on LEDs and ventilation optimised to limit air conditioning.

Where building design is being upgraded for energy efficiency it is possible that the additional cost of retrofits such as insulated panels, upgrades or automation of electrical systems, redesign of lighting and changes to ventilation may combine to outweigh the 'salvage value' of an existing building.

It is also important to ensure upgrades improve resilience against cyclones, including:

- roof replacement or upgrade to roof tie-down using an external over-batten system
- replacement of doors and frames
- window protection including cyclone shutters or screens
- tie downs of other external structures (such as powerhouses, shade structures and sheds)
- replacement of external hollow core doors with solid core external grade doors.

Before commencing work it may also be worth understanding how upgrades could provide a reduction in insurance premiums and incorporate these costs savings into project evaluation.

### **CASE STUDY: PALM BAY, LONG ISLAND**

Palm Bay Resort on Long Island lies within the Whitsunday Islands and World Heritage listed Great Barrier Reef. Palm Bay supports eco-tourism and presents their resort as one that lives in harmony with the natural environment.

Natural disasters such as flood, fire and cyclones can strike without warning. Palm Bay Resort provides an evacuation plan in a compendium in all guest rooms to ensure guests are aware of emergency response procedures.

The resort is able to operate in island mode without main land support after an emergency situation with fuel supplies up to one month and plentiful frozen foods, non-perishable and canned food.

Infrastructure is category 5 resilience rating for cyclones and storms. The resort stays well informed about current weather and refers to the harbour master for warnings. When a cyclone is warned to be a category 3 this initiates whole island evacuation. Dedicated meeting areas are located across the island and equipment such as candles and torches are readily available. A cyclone kit has been created and all staff are well trained in emergency procedures. In future, new buildings will be built on higher ground to reduce risks of inundation.



### **CASE STUDY: GREEN ISLAND**

Eco-sensitive Green Island is located north-east of Cairns on the Great Barrier Reef.

As with most islands on the Great Barrier Reef, Green Island has experienced cyclones. Fortunately infrastructure was not damaged as all buildings are cyclone proof. However the resort experienced a loss of business.

This island has the ability to last for two weeks in island mode with no mainland support. Diesel storage, a sewage plant and self-sufficient power from solar and diesel generators assist in keeping the island operational in emergency situations.

A full evacuation takes up to two hours initiating as soon as the island receives a warning and the resort allows all guests to depart the island before staff.

Images courtesy of TEQ and EarthCheck



# FINANCE

There are a number of financing opportunities available that can be pursued and are aligned to decarbonisation. These range from upfront capital grants, low interest loans and programs that provide an annual income.

## Clean Energy Finance Corporation Financing

The Clean Energy Finance Corporation Financing is working with the major financiers to support businesses to reduce their energy consumption. These programs offer discounted financing rates for renewable energy and energy efficient improvements as well as electric and low emission vehicles. Examples are provided below:

Commonwealth Bank:  
[Energy Efficient Equipment Finance](#)

NAB: [Energy Efficient Bonus](#)

Westpac: [Energy Efficient Financing Program](#)

ANZ: [Energy Efficient Asset Finance Program](#)

The CEFC also has a dedicated [Reef Funding Program](#) targeting clean energy projects in reef catchment areas.

## Large-Scale Renewable Energy Target (LRET) and Small-Scale Renewable Energy Scheme (SRES)

Installation of renewables that comply with [LRET](#) or [SRES](#) create certificates which can be sold to subsidise the capital cost or surrendered to claim the emissions abatement. By claiming this incentive, decarbonisation benefits will be transferred to the purchaser.

Although the Federal Renewable Energy Target (RET) will end in 2020, the certificates will still be traded until 2030. Small-Scale Technology Certificates are currently trading at \$36 per certificate and Large-Scale Generation Certificates at \$77 per certificate but likely to decline below \$30 over the next decade. These incentives have been factored into this pre-feasibility business case. For further information, please refer to the relevant websites for how LRET and SRES operate.

## Other Funding Programs

There are a wide range of different funding and financial assistance options available to businesses. Governments and non-government organisations (such as CEFC) often offer grants or funding throughout the year. An example of a financial assistance program is the Great Barrier Reef Island Resort Rejuvenation Program which awards grants from \$500,000 to \$5 million to maximise economic opportunities by helping to rejuvenate Great Barrier Reef resorts. [New grants or funding opportunities](#) are available for a range of programs.

Images courtesy of TEQ and EarthCheck



## OFFSETTING

Organisations are managing their greenhouse gas emissions to position themselves for growth and competitiveness in a lower-emissions future. Operators who have already reduced their greenhouse gas emissions as much as possible are looking into purchasing carbon offsets to further reduce their footprint. Businesses are also choosing to go one step further and demonstrate leadership and corporate responsibility by becoming carbon neutral.

Carbon neutral means reducing emissions where possible and compensating for the remainder by investing in carbon offset projects to achieve zero carbon emissions. In working towards carbon neutrality, buildings can achieve cost savings from improved energy productivity or other operational efficiencies, and can respond to demand from occupants and tenants for sustainable and energy-efficient accommodation.

### Benefits of Offsetting

Environmental benefits include supporting the maintenance of habitat for native animal and plant species, avoiding clearing of vegetation and re-establishing vegetation on previously cleared areas.

Social benefits include employment for local people through managing the project, reduced social welfare, and providing health and educational improvements.

Economic benefits arise from the income generated from the sale of offset credits. This income is delivered to the communities in which the project is located through employment and community support.

### How to Carbon Offset

**Step 1:** Ensure your organisation has taken the opportunity to avoid or reduce emissions as much as possible. It is essential that businesses only offset those emissions that are unavoidable.

**Step 2:** Calculate your carbon footprint to measure the impact your business is having on the environment. EarthCheck has created a tool for calculating carbon footprints for tourism organisations here. Similarly, [Energetics](#) assists businesses to reduce emissions, identify clean energy opportunities and work with business to determine an appropriate procurement strategy.

**Step 3:** Select the type of carbon offset project: categorized into five main types:

- I. **Renewable energy** – generate energy from renewable sources as an alternative to burning non-renewable fossil fuels or consider a [green power purchasing agreement](#).
- II. **Energy efficiency** – reduce emissions by implementing more energy efficient processes or technologies provided by the offset business.
- III. **Forestry or bio-sequestration** – long term projects that can take over 70 years to achieve full emission reductions. Avoids deforestation or plants trees in new areas or areas that have previously been cleared.
- IV. **Methane projects** – burning methane emitted from landfills, wastewater, industrial wastes or coal seam to generate electricity or heat.
- V. **Waste diversion projects** – prevent waste going to landfill where it will decompose and release methane which is reused or recycled or used to generate energy.

**Step 4:** Evaluate the offset provider and the project. In Australia, there are three ways for organisations to purchase carbon offsets on the market.

- I. Purchasing from a carbon offset project developer.
- II. Purchasing through a carbon offset service provider.
- III. Purchasing through a broker who does not own offsets but brokers the transaction between the seller and buyer.

There are currently approximately 70 carbon offset providers in Australia that vary according to:

- Types of offset
- Standard or rules they use to accredit/verify their offsets
- Where the offset project is located
- Price of offset

**Step 5:** Understand carbon offset standards. The carbon offset market has grown rapidly over the past few years and the easiest way to have confidence in an offset provider/project is to use one that meets a recognised international or national accreditation standard.

**Clean Development Mechanism (CDM) and Joint Implementation (JI)** – enable developed countries to assist developing countries to implement projects by accrediting projects in developing countries that can be sold on the voluntary or regulated market.

**Gold Standard** – is a certification scheme that recognises the best carbon offset programs in the CDM that not only reduce carbon emissions but also promote sustainable development.

**Verified Carbon Standard** – approves any project that meets its methodology standards.

**VER Plus** – a certification system that assists projects that did not meet the requirements under the CDM process but still wish to proceed under a similar mechanism.

**South Pole Group** – a partnership with EarthCheck provides support to organisations of all sizes in the travel and tourism industry to commit to reducing carbon emissions and to consider carbon offsetting and community adaptation and mitigation projects. For more offsetting information visit: <https://www.choice.com.au/home-improvement/energy-saving/reducing-your-carbon-footprint/articles/carbon-offsets>

### **Carbon Offsetting for Transport**

'Carbon offsets' can be purchased in order to reduce or recapture greenhouse gas emissions from the atmosphere in proportion to any greenhouse gas emissions from transportation.

- Some organisations offset by staff salary sacrifice or part of salary packaging. This reduces the cost of the offset to the organisation and is tax effective for the staff member. It is also a way of engaging staff on behavioral change initiatives.
- Assist in planting native ecosystems by donating to relevant organisations.
- Organisations can also consider offsetting transport related costs which are included in ticket prices, making it mandatory for all visitors. See the case study below on Lady Elliot Island who are currently offsetting transport costs in ticket prices.
- Minimum stay incentives such as a drinks voucher or one spa treatment offered to guests who stay for more than a certain period of time. This reduces transport costs by encouraging guests to stay longer ultimately reducing operation of transport. Green Island offers a 'Family Escape Package' enticing families to stay together rather than individual or couple travel with incentives such as free snorkel hire, a massage voucher, buffet breakfast, free Wi-Fi and a guided walking tour.

## CASE STUDY: LADY ELLIOT ISLAND

Lady Elliot Island is a coral cay situated at the southern tip of the Great Barrier Reef. The resort aims to be 100% sustainable by 2020 with their dedication to the preservation of the natural environment.

Lady Elliot Island have reduced energy consumption and carbon emissions by introducing a combination of solar and gas technologies, water desalination and behavioral adaptations. Access to the island is limited as guests can access the island only by plane.

Lady Elliot Island is reducing the number of flights to the island to ensure that the services are completely full when they run. The service can stop in at three different points (Gold Coast, Brisbane, Hervey Bay) to improve the efficiency and serviceability of the flights. They also implement the cost of offsetting the flights in the ticket, making all visitor flights to the island carbon neutral.



Images courtesy of TEQ and Max Pixel



## CASE STUDY: SYDNEY OPERA HOUSE

The Sydney Opera House is a multi-venue performing arts centre in Sydney. It is a UNESCO World Heritage Site and one of the most famous and distinctive buildings in Australia.

Being such a large property, the Sydney Opera House uses electricity equivalent to 2500 households a year and staff have been working to increase energy efficiency and decrease waste for the past decade. Incandescent bulbs were replaced with LED lights to reduce energy consumption. It has also introduced a building management control system (BMS) to monitor energy and water usage. Chiller units in a seawater cooling system were replaced also contributing to energy reduction. A waste management plan included the introduction of new recycling streams and transferring food waste to an organics facility improving waste recycling from 25% to 60%. These initiatives have contributed to a reduction in greenhouse gas emissions and the remaining emissions are offset.

To reduce its carbon footprint, the Sydney Opera House invested in renewables, tree planting and biodiversity projects to offset remaining emissions. The Sydney Opera House is carbon neutral and for further information read the [sustainability report](#).

# ACCREDITATION

Accreditation is the first step towards continuous improvement across all aspects of your organisation. Accreditation can assist your organisation to:

- Gain an understanding of how your organisation is performing environmentally, socially and on an economic basis
- Implement tools to improve performance and outcomes
- Develop a more efficient organisation
- Attract guests as they prefer an eco-friendly or green place to stay
- Ensure stakeholder confidence
- Develop organizational resilience, competitive advantage, innovation and growth

## Global Sustainable Tourism Council

The Global Sustainable Tourism Council (GSTC) establishes and manages global sustainable standards with the aim of increasing sustainable tourism knowledge and practices for public and private stakeholders. The GSTC is independent and neutral, serving the important role of managing its global baseline standards for sustainability in travel and tourism destinations. Its Destination and Operation Criteria sets the standard for leading destinations and operations.

The GSTC provide a list of accredited certification bodies that can provide sustainability accreditation for [operators/hotels](#) and [destinations](#).

## EarthCheck

EarthCheck is the world's leading scientific benchmarking, certification and advisory group for travel and tourism. Since 1987, we have helped businesses, communities and governments to deliver clean, safe, prosperous and healthy destinations for travelers to visit, live, work and play. We understand the value of big ideas and the importance of clear communication. We know that what can be good for the planet is also good for business.

[EarthCheck Products and Services](#) are built on the Agenda 21 principles for Sustainable Development endorsed by 182 Heads of State at the United Nations Rio De Janeiro Earth Summit in 1992. Tourism operations who display the EarthCheck Certified logo can clearly demonstrate their environmental and social performance and provide confidence for consumers that they walk the talk.

EarthCheck also provides Sustainability Training to build capacity for those engaged in the tourism industry. Fundamentals of Sustainability helps participants to tackle the evolving challenges and opportunities they face everyday by providing the strategies and techniques required for assessing practices, implementing change and identifying sustainable performance areas in the workplace and at home.

The Approaches to Sustainability course is the ideal stepping stone into the field of acting in a responsible and sustainable manner within the workplace as well as at home. Those wanting to know more about sustainability, to assist with understanding your performance as a business and to learn more about best practice sustainability initiatives visit [Fundamentals of Sustainability](#) and [Approaches to Sustainability](#).\*

*\*Please note that EarthCheck has prepared this information sheet. EarthCheck is a GSTC Accredited Certification Provider. Other Certification providers are available by accessing the links above.*

If you're interested in finding out more about the information presented in this document or have any concerns, please do not hesitate to contact EarthCheck on 07 3238 1900 or email [info@earthcheck.org](mailto:info@earthcheck.org).



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