

Chapter 7

Application of Environmental Management Performance

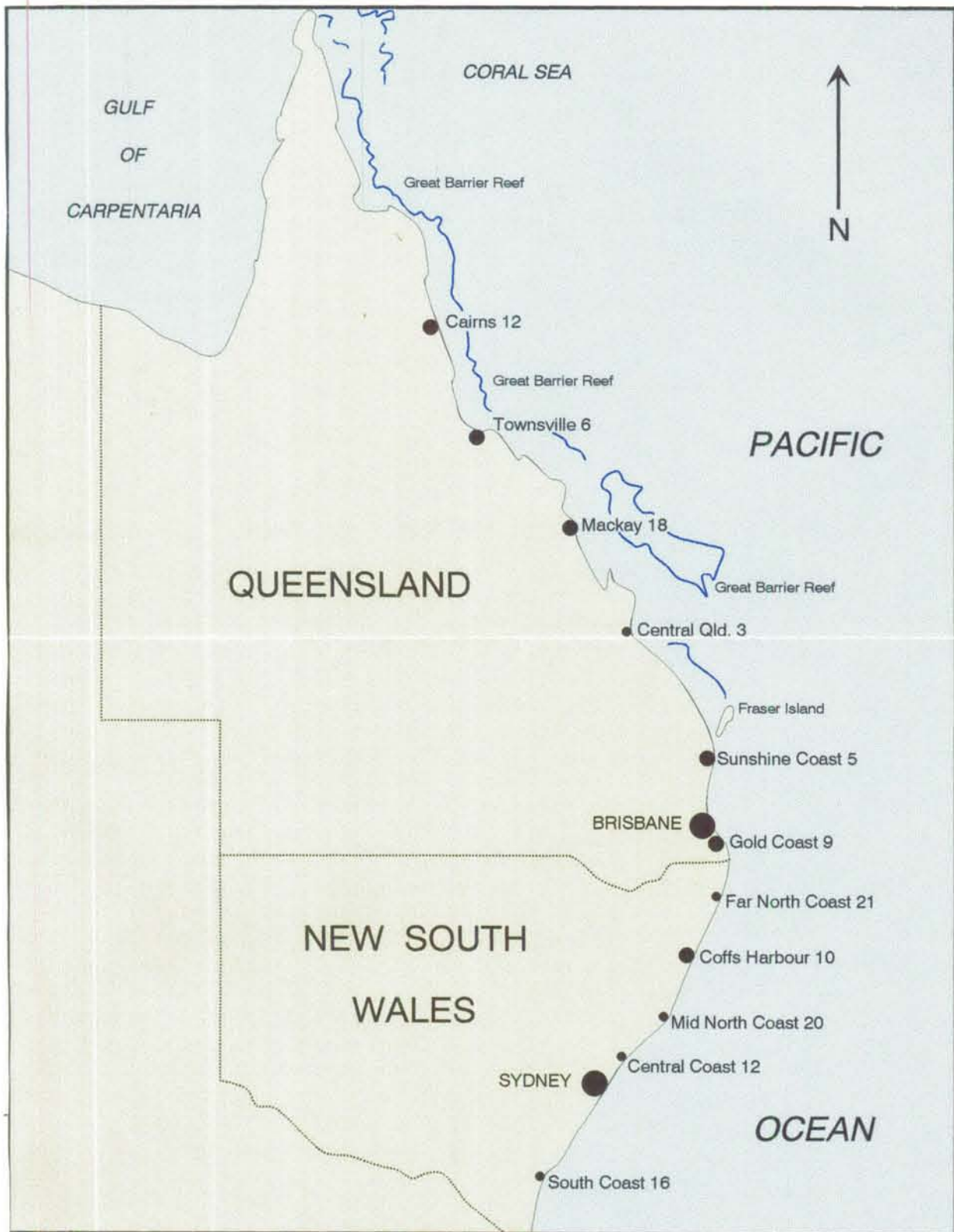
Auditing to Australian Beach Resorts

7.1. Introduction

The strong growth in international holiday travel to Australia and the increasing demand for quality resorts in the domestic market have stimulated a substantial amount of interest and activity in resort development. The combination of climate and coastal attractions and the fact that the population is concentrated along the eastern coastline (see **Figure 7.1**), have resulted in both the states of New South Wales and Queensland, in particular, experiencing a proliferation in proposals for construction of resorts and associated facilities (Jack, 1991).

As noted in Chapter 6, the term “resort” is used to refer to purpose-built tourist facilities on the one relatively self-contained site, and offering accommodation, food, shopping outlets, and opportunities for recreation and entertainment (Ding and Pigram, 1996). The term “integrated resort” is not yet clearly defined, but it conveys the principal function of a true holiday “resort”. Integration means the combining of various types of tourist accommodation with cultural, recreational, shopping, and entertainment activities and events on the site or within the resort area. A non-integrated resort, by contrast, generally provides little more than tourist accommodation on site, or offers an activity such as game, fishing, scuba driving or sight-seeing, etc. (Helber, 1985). Legislation which deals with this kind of resort development is now evolving in Australia. Queensland has pioneered this trend with

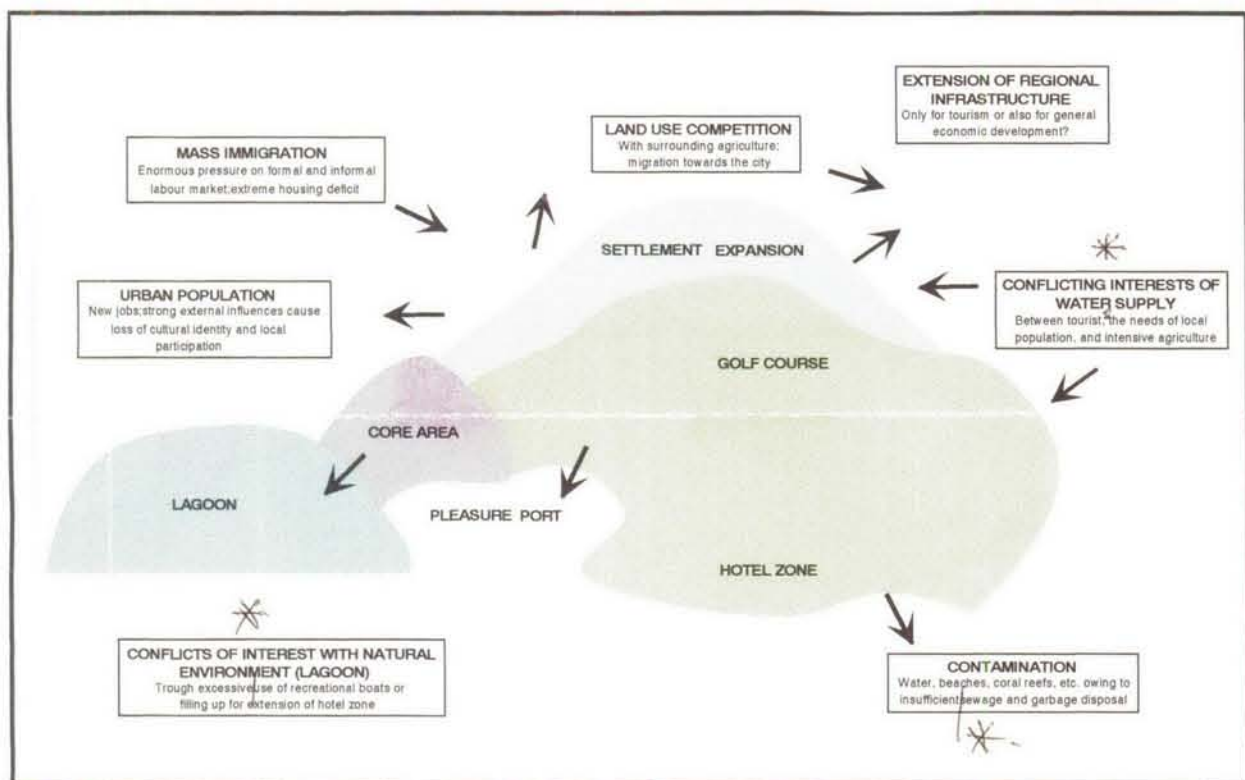
Figure 7.1. Beach Resorts in Australia



the Integrated Resort Development Act 1987 (Qld) which is intended “to provide for the approval of schemes and integrated resort development, to make provision to assist in the establishment, operation and management of approval in integrated resort developments” (Atherton, 1991:113).

Resort development can generate substantial impacts, and sometimes lead to conflicts with the local environment and communities (**Figure 7.2**). Sustainability, in terms of the concept of an integrated resort, is not only planned but also managed as an integrated development with consideration given to its compatibility with the natural environment and benefits to local communities (McIntyre, 1993).

Figure 7.2: Potential Impacts of Resort Development



Source: McIntyre, G. 1993.

“The success of an integrated tourist resort depends on a number of factors. These include a good transportation infrastructure with easy access to and within the resort for guests and staff, and an architectural design that blends into the surrounding natural environment, reflecting traditional local designs and using as many local materials as possible. Specific natural geographical attractions should be preserved and incorporated into the resort wherever feasible, and it needs adequate utility services, such as water supply, electric power, telecommunications, sewage and solid waste disposal system.”

(Inskeep and Kallenberger, 1992:1)

As discussed earlier, the response of the tourism industry to environmental requirements arises from external pressure or from internal opportunities. The opportunities and potentials benefits from sound environmental performance are great and the risks from inadequate performance are equally high. Many integrated resorts have environmental management systems in place for waste, energy, water, etc. However, less attention appears to be paid to auditing the effectiveness of these procedures. To help resort management meet environmental requirements, measures are needed to demonstrate progress. An Environmental Management Performance Auditing (EMPA) approach provides resort management with a tool to assess environmental performance, identify any negative environmental impacts and

evaluate opportunities to change current practices in order to improve that performance.

The application of EMPA for some integrated beach resorts along Australian eastern coastline can yield valuable insights into the approaches, principles and proven techniques of environmental management for resorts as well as the types of problems that can be encountered. Although each resort is unique, the experience gained can also provide useful ideas that resorts may be able to adapt to their own needs in pursuit of effective environmental management.

7.2. Field Survey

Generally, in field research, a large number of case studies are considered desirable. However, given the scale of operations typical of integrated resorts and the logistical decision to focus the research in the Coffs Harbour region, a more limited number of examples of resort development and management were selected for intensive study and provided an adequate data base. All six resorts surveyed in the Coffs Harbour region were chosen according to the adopted definition of an integrated resort.

Before undertaking field surveys, an informal telephone interview was carried out. The main purpose of this interview was to obtain the consent of resort management to the survey. This interview was broadly based and after receipt of a positive response, a formal letter and questionnaire were forwarded to the six resorts focused on general aspects of the resort's environmental management practices (**Appendix 1: Letter and Questionnaire 1 and 2**). The positive response to this initial questionnaire from four

of the sample resorts was encouraging and these resorts were confirmed to further survey as representative.

Willing co-operation from management was essential to the research as the second stage of the field survey involved initial on-site interviewing of the four resort managers. The aim of the on-site interview was to obtain more detailed insight into the resort's individual environmental management performance. Data were also sought on consents, existing practices and procedures, measurements, internal reports, guidelines from trade associations or consultant reports, and documentation from regulatory authorities. To ensure that the field survey received full support from resort management, it was necessary to let managers know clearly in advance about the proposed activity. For the on-site survey, several detailed area questionnaires were designed relating to landscaping, energy efficiency, and sewage treatment and disposal (**Appendix 2: Questionnaire 3-10**). Each questionnaire used a combination of open and closed questions so as to ensure ready response and analysis, while providing the managers with the opportunity to express their ideas freely. Although time and resource constraints limited the time spent at each of the four resorts, the on-site survey enabled a thorough investigation of the resort's environmental practices.

Based on the information gained from these on-site surveys, it was realised that the results were insufficient for adequate conclusions to be drawn. Therefore, the sample was expanded to include two more integrated beach resorts in Queensland, Green Island Resort and Kingfisher Bay Resort. These resorts were chosen because they are frequently documented for their environmental initiatives.

The final group of case studies selected were Aanuka Beach Resort, Boambee Bay Resort, Nautilus Beach Resort, and Opal Cove Beach Resort in the Coffs Harbour region of New South Wales, Green Island Resort in the Great Barrier Reef region and Kingfisher Bay Resort on the western coast of World Heritage listed Fraser Island.

7.3. Characteristics of Selected Integrated Beach Resorts

7.3.1. Location

An extensive information was gathered profiling the six resorts selected for study.

Figure 7.3: Location of the Sampled Resorts in Queensland

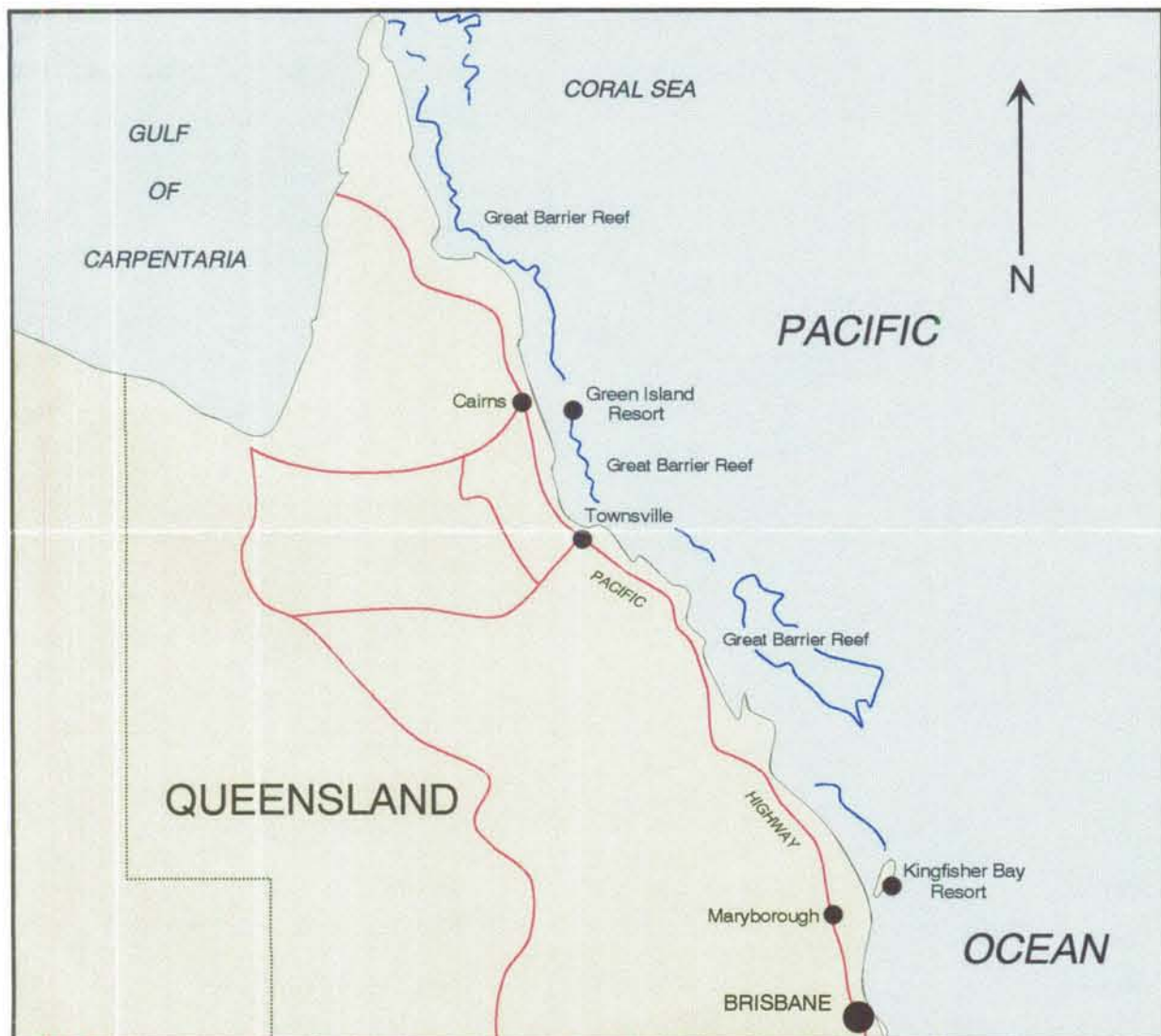
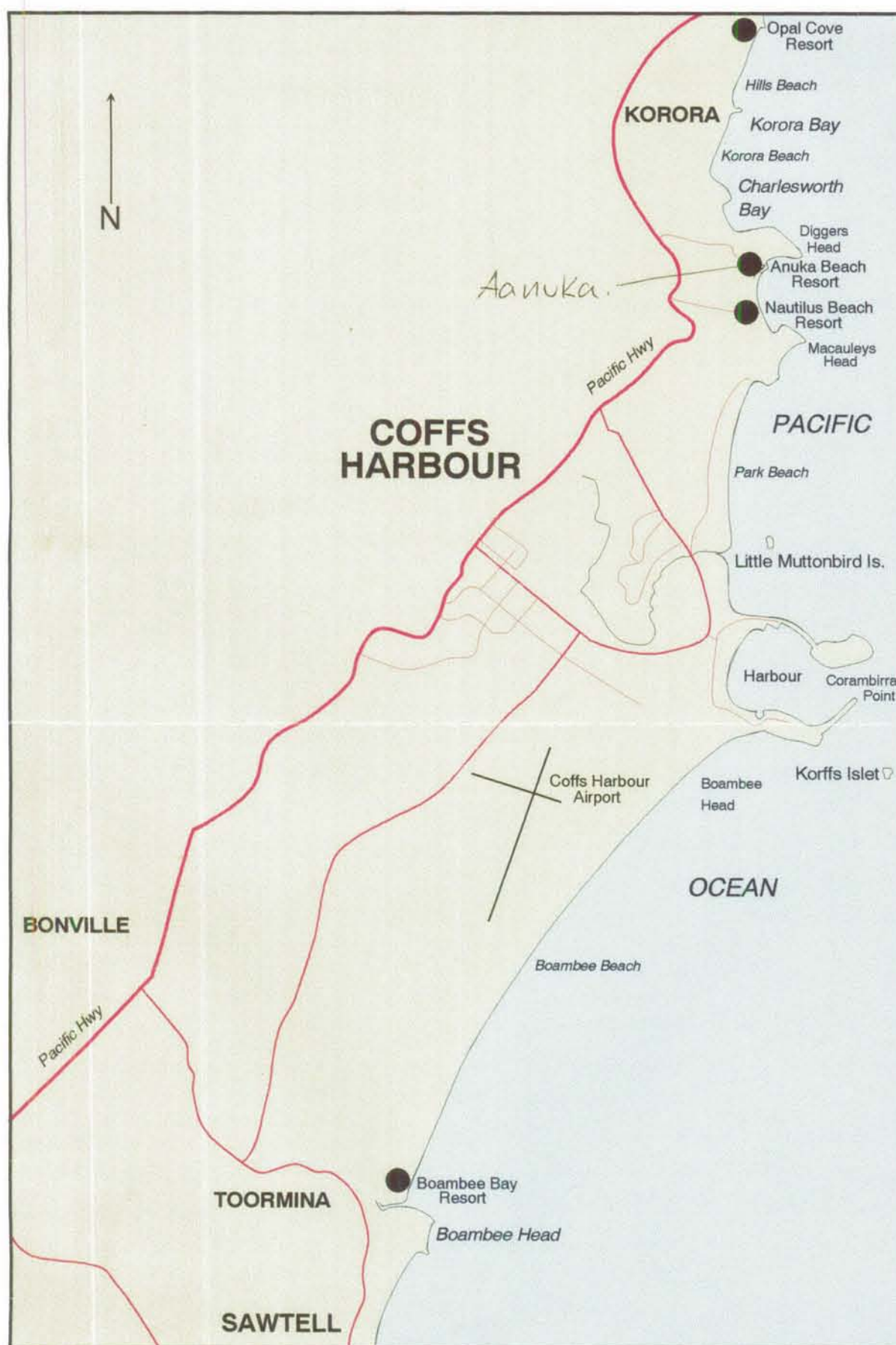


Figure 7.4: Location of the Sampled Resorts in Coffs Harbour



The Coffs Harbour region, located on the North Coast of New South Wales half way between Sydney and Brisbane, takes in about 50 kilometres of coastline, and has experienced rapid population and tourist growth in recent years. Most of the population and tourist growth has been focused on the coastal strip. From Figure 7.3, it can be seen that all four selected resorts are located at intervals along the coast of the Coffs Harbour region. The last two sampled resorts are island resorts, located off the coast of Queensland, the state which undoubtedly has been focal point of Australia's tourism growth since the 1980s. **Table 7.1** indicates the latitudinal location and region of each resort in the samples.

Table 7.1: The latitudinal location and region of each resort in the samples

Resort	Latitude	Region Located
Aanuka	30°16' S	Coffs Harbour
Boambee Bay	30°22' S	Coffs Harbour
Nautilus	30°16' S	Coffs Harbour
Opal Cove	30°15' S	Coffs Harbour
Green Island	16°45' S	Great Barrier Reef
Kingfisher Bay	25°19' S	Fraser Island

7.3.2. Climate

The climate of the Coffs Harbour region is sub-tropical. It is rated among the best in Australia, with a mean summer temperature of 28 degrees and a comfortable 18 degrees in winter. The average annual rainfall is 1625mm with 41 per cent falling in the months from January to March. A favourable characteristics of the Coffs Harbour

area is that it is located on the southern extremity of the cyclone belt and therefore rarely receives the full effects of cyclonic disturbances.

Climate exerts a strong influence on the attractiveness of Coffs Harbour as an area for living and holidaying. The warmth and long hours of sunshine combined with attractive surroundings encourage a growing tourist sector and a range of outdoor recreation.

The Coffs Harbour area receives an approximate yearly average of 7.4 hours of sunlight per day and as Table 7.2 below shows the area receives considerably more winter sunshine than the southern capital cities, making it particularly attractive for year-round tourism.

Table 7.2: Average Hours of Sunshine per day

Region	Winter	Summer
Coffs Harbour	7.3	7.5
Brisbane	7.8	8.2
Sydney	6.2	7.2
Melbourne	3.7	7.7

The climate of Kingfisher Bay Resort on Fraser Island is also sub-tropical year-round and similar to Coffs Harbour, with an average temperature of 29 degrees in summer and 22 degrees in winter. The average length of sunshine per day is eight hours.

The climate of Green Island is tropical and characterised by hot (wet) summers and warm (dry) winters. On average, mean temperature varies by less than 10 degrees between summer and winter. Mean January temperatures range from a minimum of 25 degrees to a maximum of 32 degrees and for July, from a minimum of 16 degrees to a maximum of 25 degrees. Annual average rainfall is 2018mm, with over 60 per cent of this received in the three months from January to March. Direct impact by severe tropical cyclones is relatively infrequent. On average, Green Island may be expected to be influenced by a tropical cyclone once every six to seven years. Sunshine hours average 8.2 per day.

7.3.3. Attractions

Undoubtedly the main tourist attractions of the sampled resorts are a warm and sunny climate and beaches. However, the Coffs Harbour region and the islands also possess several other attractions, of which the principal ones are:

- general scenic beauty and physical features, and
- cultural character.

The scenic beauty and natural attractions include a variety of magnificent natural reserves, the Dorrigo plateau and rainforests near Coffs Harbour, the reef and corals of Green Island in the Great Barrier Reef Marine Park, and the World Heritage Wilderness of Fraser Island.

It is not only the existence of these features, but also the high standard of their preservation and presentation that gives added attraction to the coastal regions where these resorts are located.

7.3.4. Facilities and Activities

The range of resort facilities and activities is set out in Appendix 3. One of the main purposes of tourists visiting resorts is seeking pleasure from recreational activities. Therefore, recreation is a central feature of resort operation. The range of facilities and activities offered at the resorts studied provides an indication of both the level of development and the scope of recreational opportunities.

In Coffs Harbour, the resorts offer unspoiled beaches which provide excellent beach swimming, fishing, windsurfing and some of Australia's best deep sea sighting. There are also opportunities for hot air ballooning, magnificent rainforests, four wheel drive treks, white water rafting and a breathtaking 90,000 hectare underwater world called the Solitary Island Marine Reserve which is perfect for scuba diving.

The Kingfisher Bay Resort on Fraser Island which is World Heritage listed, provides visitors with opportunities to experience the heritage values of Fraser Island and the Great Sandy Strait on nature's terms. Bushwalking and 4WD ranger-guided ecotours provide an informative view of the cultural and natural heritage of the island, and opportunities to learn more about the Aboriginal heritage, lifestyle, myths and legends, as well as whale watching.

Green Island Resort is focused on providing visitors with a varied environmental experience, including reef-walking, bush-walking, snorkelling and scuba-diving.

The style of a resort's facilities and activities reflects that resort's image and target market. The number of activities provided indicates the range of recreational opportunities, the nature of those activities and the resort's overall orientation. The survey results indicate that while the particular emphasis of resort activities may vary, a large number of activities provided at resorts are dependent upon the natural environment. These include bush-walking, sailing, surfing, windsurfing, water-skiing, sky-diving, surf-skiing, scuba diving, snorkelling, reef-walking, and fishing. These activities also have been documented for their potential environmental impacts (Romeril, 1989; Kenchington, 1989). This raises implications concerning the acceptability of some activities offered at resorts.

7.3.5. Accessibility

With reference to resorts, the term, accessibility, is used to refer to the degree of access to a resort in terms of distance, time or cost, and the choice of travel mode (Brannock, 1984). Accessibility has often been the single or most important factor in the development and expansion of resorts. If a resort is not adequately accessible, it is unlikely that it will achieve its market goals. Access can be by air, road, water or rail, depending on the distance from major market sources.

The distance to a resort is an accessibility criterion which can be significant to a potential visitor's budget, independent of the mode of transport available (Brannock,

1984). The sampled resorts in Coffs Harbour are all located right on the beach within a 10-20 kilometre radius of the city which is serviced daily from both Sydney and Brisbane by plane, coach and train. The resorts are only 10-20 minutes driving time from the Coffs Harbour Airport, Bus Terminal and Train Station, are also easily accessed by road about 550 kms from Sydney, and 420kms from Brisbane

Kingfisher Bay Resort is located on Fraser Island which lies at the southern end of the Great Barrier Reef. The resort is a one-hour flight or 3.5 hours drive from Brisbane followed by a 35 minutes boat ride to the resort.

Green Island Resort is situated on the Great Barrier Reef, 27 kms north-east of Cairns. Access to the resort is a three hours flight or 12 hours drive from Brisbane, followed by 40 minutes boat trip to the resort.

7.3.6. Infrastructure

Provision of adequate infrastructure for a resort is essential. Enjoyment and satisfaction of visitors are, in part, a response to the availability and performance of a range of services and facilities making up the resort infrastructure (Pigram, 1987). Generally, transportation facilities and services, water supply, electric power, sewage and solid waste disposal, drainage and telecommunication are all components of infrastructure typically required for resort development. Adequate infrastructure is also very important to maintain good environmental performance, prevent environmental problems, and achieve resource conservation by means such as

recycling sewage effluent to provide a supply of irrigation water for resort landscaping (Inskeep, 1991).

The infrastructure of the four sampled resorts in the Coffs Harbour region is well developed. The airport is sufficiently large to handle current levels of traffic and the road network is extensive and in good condition. Electric power, telephone and sewerage services for the resorts are connected with the main Coffs Harbour network and are adequate. The only major infrastructure problem in the resorts is the lack of facilities to treat solid waste for recycling.

The supply of electric power in the Kingfisher Bay Resort is provided by the resort's own generators which will be replaced by mainland power in approximately 10 years. The telephone is connected with mainland network and all power and telephone cables have been installed underground. The water supply in the resort is adequate with drinking water drawn from the island's large ground water reserves. Sewage is treated with a three-stage treatment using the advanced biotechnological enviroflow system. Solid waste is separated into recyclable and non-recyclable materials and then compacted on site and removed to the mainland for disposal or re-use.

The Green Island Resort has its own diesel-fuelled power house comprising four generators. Generally, only two of these generators are in use at any one time. The water supply to the resort is totally dependent on supplies from the mainland. Therefore, the provision of adequate water storage for the resort necessitated the construction of a storage facility (70,000KL). Two to three barges a week from the

mainland transport the resort's water needs. Water is treated by ultraviolet radiation rather than by chemicals. Not all treated water is discharged into the sea. A significant amount is used to irrigate vegetation on resort. Other uses to which this water is put include flushing toilets and for the fire service. Sludge residue from the treatment plant is pumped onto a barge approximately once every month and transported to the mainland for processing in the Cairns City Council treatment plant.

All waste from the resort is barged back to the mainland and cardboard, paper and aluminium are separated from the waste stream for later recycling. Vegetable waste and food scraps generated from within the resort are placed in large composting bins for later use on the resort's gardens. A refrigerated room was constructed to house a compactor used to process food waste. In this way odour has been reduced. The remaining waste, along with the contents of bins from the day visitor area and National Park (both of which are not subject to separation), is compressed by a compacting machine and later transported to the mainland. All cleaning products used on site are biodegradable and nitrate-free.

7.4. Environmental Management Systems.

7.4.1. Initiatives and Processes

As discussed earlier, an environmental management system is a strategic approach to continuous environmental performance improvement. Environmental management becomes fully integrated with other management activities throughout the resort. Environmental Management Performance Auditing (EMPA), in this sense, can be

seen as one stage in this process, i.e. the measurement of performance in achieving targets and objectives.

Management in the resorts studied realise the significance of their environmental performance for four principal reasons:

- regulatory pressures and costs;
- competitive opportunities;
- market acceptance and image; and
- employee quality and motivation.

(1). Regulatory Pressures and Costs

As legislation and regulations become more stringent, compliance costs increase and are likely to continue to grow. This will increase the pressure on resort operations to ensure that pollution levels such as sewage discharge, and waste disposal are monitored and managed to meet regulatory requirements. This is particularly with island resorts such as Green Island and Kingfisher Bay. Resorts cannot only be fined for the breach of consent, but may also have to bear the cost of cleaning up which almost certainly will exceed the fine. Sometimes, breaches of discharge consents or failure to control waste materials can cause withdrawal of consent and business closure.

(2). Competitive Opportunities

Environmental issues offer a range of opportunities for improving the competitive position of a resort's services and products. Within the resort, the application of

environmental concepts in management, such as waste reduction, reuse and recycling, can bring real cost savings. Resorts which are putting in place measures to reduce energy consumption, to increase efficient use and recycling of resources and to reduce waste, have experienced the benefits of cost saving, and hence improved the competitiveness of the operations.

(3). Market Acceptance and Image

The main market sources of the resorts are the visitors. A resort's management of its environmental performance is commonly subject to intense public scrutiny and media attention. The resort must secure the goodwill of all its shareholders, guests, employees, suppliers and the wider community, to develop, retain and enhance its market position. Concern for environmental performance is shared by all shareholders. In particular, guests are now in a better position to assess and compare the environmental performance of individual resorts and their services and products, and resorts are feeling pressure from this perspective.

The survey shows that all the sampled resorts have established a position of environmental leadership, are well managed, well respected, and above all, profitable. By way of example, the Green Island Resort marketing strategy highlights the environmental aspects of the resort and its current brochure states that Green Island is:

... one of the most environmentally sensitive tourist developments in the world, designed and built with extreme care to preserve the island's delicate environment. It has been constructed to be

sympathetic to irreplaceable natural surroundings which are protected and nurtured with passionate responsibility.

(Harris and Leiper, 1995:105)

According to resort management this message has been significant in attracting guests to the resort, as they appreciate the fact that their stay will have minimal impact on the island's environment. The resort management also believes that tourists will increasingly ask questions about the environmental practices of their accommodation, and Green Island Resort will be well placed to respond to these.

Therefore, a resort that is developing its operations through a sound track record of environmental responsibility is well placed in projecting a favourable corporate image and competitive market position.

(4). Employee Quality and Motivation

Resorts want to recruit the best possible staff and retain them. The resorts studied have realised that an effective response to public expectations and concerns about environmental performance can succeed in motivating their staff and attracting the best recruits. Most of the sampled resorts have approached their own employees for suggestions and activities aimed at improving environmental performance.

Various initiatives are in place among the sampled resorts, but achieving sustainable development is among every resort's stated environmental objectives. Typical are the

approaches adopted by Green Island Resort in far north Queensland and Aanuka Beach Resort at Coffs Harbour.

Green Island Resort has been developed in keeping with best practice environmental management, and with attention to siting, design, materials, sources of supplies, and disposal of wastes. Said to be Australia's first 5-star "ecotourist resort", Green Island Resort is built on a coral cay and offers luxurious accommodation under the rainforest canopy, with structures suspended to protect the delicate ecology of the forest floor. The redevelopment of Green Island Resort in 1994 was subject to strict controls imposed by Cairns City Council and the Queensland Department of Environment and Heritage regarding:

- the layout of the resort;
- design details including materials and finishes;
- waste disposal, and
- construction methods.

A Code of Environmental Practice was drawn up by the developers and given to site staff and contractors to convey an environmental conservation philosophy to all those involved in development and construction of the resort. The Code explains the fragile nature of the island and provides practical advice on:

- avoidance of the spread of weeds, exotic plants and diseases;
- maintenance of ecosystems, fauna and flora;
- the importance of the groundwater aquifer to survival of native rainforest;
- cultural heritage, both European and Aboriginal;

- national parks and marine parks; and
- tourists, visitors and other people on the island.

This approach has now been carried over into the implementation of best practice operational procedures for the day-to-day running of the resort. Green Island Resort represents an impressive and expensive approach to resort development in harmony with nature and the beauty of the tropical island setting. It provides further evidence of the commitment of developers and operators of tourism facilities in Australia to endorse and apply best practice principles to management of resort environments (Pigram, 1995).

Further south on Australia's eastcoast, a conference was organised at Coffs Harbour in 1990 around the theme of "The Green Resort". The purpose was to examine and formulate design principles for resort developments along the Australian coastline. Concepts such as environmentally compatible methods of waste disposal, more energy-efficient design and operations, including solar power, and sensitive and aesthetically pleasing resort architecture, were discussed (Oppenheim, 1990).

The scheduling of the conference at Coffs Harbour was no coincidence; rather it complemented an emerging trend towards environmental responsibility in resort development in the region. Typical of this trend is Aanuka Beach Resort.

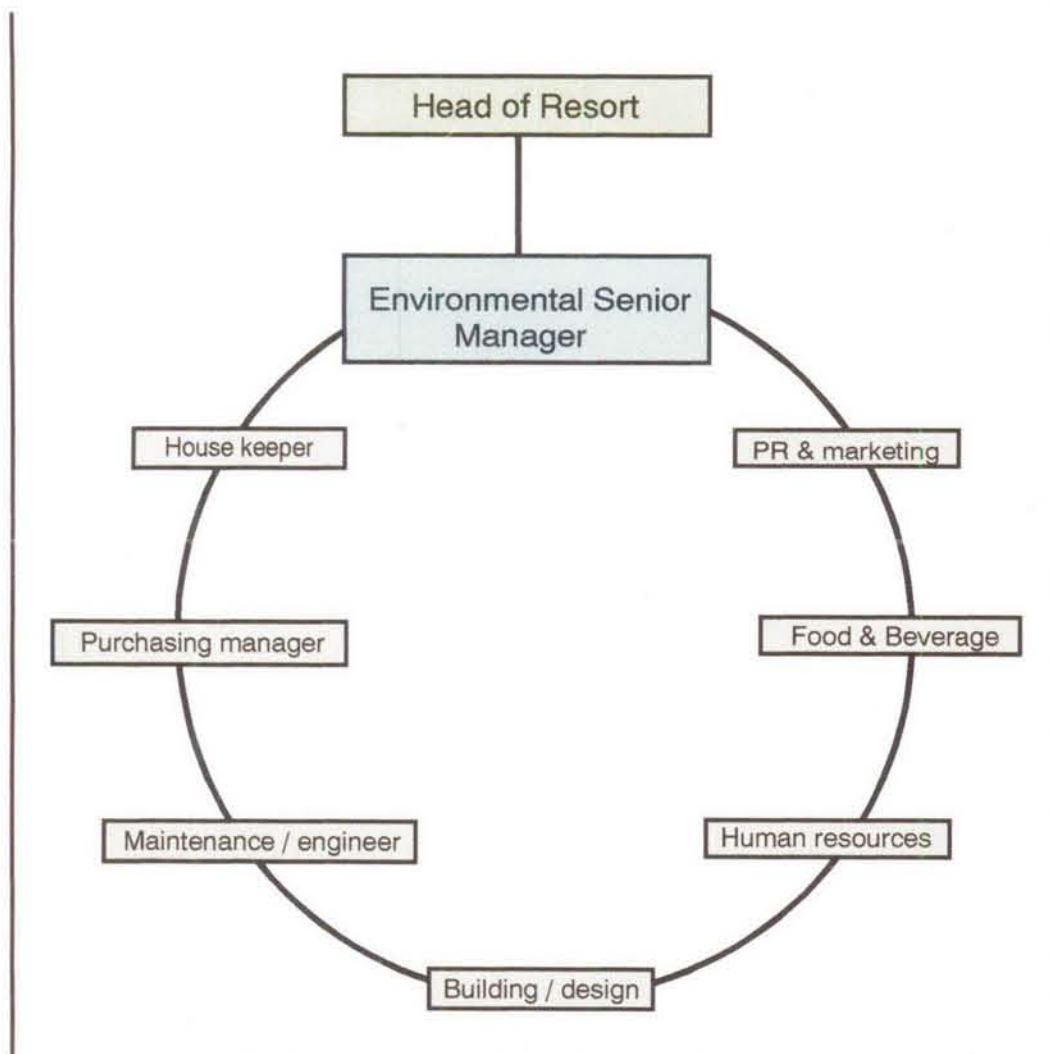
Operation of Aanuka Beach Resort incorporates many features of best practice environmental management in the tourism industry. Comprehensive programs for

recycling and management of wastes, energy and water conservation, and protection of the natural environment, are features of resort management. The success of Aanuka Beach Resort is perhaps a good indication of the marketing advantage to be gained from environmentally sensitive tourism development. Moreover, the demonstration effect of the successful appeal to tourists of a nature-based resort is being reflected in the promotion of neighbouring “green” beach resorts in the Coffs Harbour region (Pigram, 1995).

7.4.2. Organisational Structure and Responsibilities

In resort environmental management, it is essential to define carefully the organisational structure of the operation. Both management and employees need a clear idea of the divisions of authority and responsibility. Environmental management functions often cross several functional boundaries and management levels. There are many different ways to organise for environmental management. As a rule, resorts should aim to adopt an environmental management structure, which best fits existing frameworks. **Figure 7.5** depicts the major structural features of environmental management within a resort.

Figure 7.5: Resort Environmental Management Structure



Some typical environmental responsibilities for specific functions in resort management are described in **Table 7.3**.

Table 7.3: Environmental Responsibilities in a Resort

Management Function	Typical responsibility
CEO and the Board	Set corporate environmental goals and monitor progress
Human resources	Train staff to meet the environmental goals of their positions
Sales and Marketing	Seek to minimise the environmental impact of products and services
Research and Development	Introduce new products/processes with lowest environmental impact in production, in the market and in destruction
Finance	Ensure all capital expenditure requests. Select lowest environmental impacts at achievable cost
Purchasing	Ensure that materials and services are from sources with lowest environmental impact
Division Management	Set environmental goals in division with financial goals and monitor progress
Engineering	Design and adopt low waste technology
Production	Operate to minimise wastes
Maintenance	Manage operation control and monitor facilities

Source: Bragg, Knapp and McLean, 1994: 23. Modified by the Author.

In the sampled resorts, Green Island and Kingfisher Bay have appointed a senior manager who is responsible for all aspects of environmental management in the resort organisation. This manager generally organises a working group, consisting of key personnel responsible for maintenance and engineering, housekeeping, purchasing, food and beverage, building and design, training, and public relations and marketing.

In the resorts of the Coffs Harbour region, because of the smaller scale of the resorts, the general manager is responsible for all aspects of environmental management. Although the organisational structure of resorts is different, the three principal roles of the resort environmental management functions, either for general management or senior environmental management, are the same. These are:

- (1) establish an environmental policy;
- (2) measure environmental performance against policy, and
- (3) provide assurance to the board and internal and external “stakeholders”, and regulatory and public requirements.

An additional role is often to keep employees of the resort abreast of important environmental developments inside and outside the resort and provide guidance to the operational divisions.

It should be clearly understood that, although the resort general manager or senior environmental manager uses his/her authority in an oversight role, environmental personnel at division and site levels in the resort carry out most of the day-to-day and technical tasks. Therefore, reporting between the senior managers, division and site staff creates an important network.

7.4.3. Effectiveness

As discussed earlier, the EMPA is an evaluation of the environmental management performance. In this evaluation, the identification of strengths, weaknesses,

opportunities and threats relating to the whole resort organisation is considered a most important aspect.

1. Strengths

The strengths of current environmental management systems of each resort studied are outlined in **Table 7.4**.

Table 7.4: Strengths of Current Resort Environmental Management System

Resort Strengths	Green Island	Kingfisher Bay	Aanuka	Nautilus	Opal Cove	Boambee Bay
An environmental management program	√	√	√		√	
Committed senior management on environmental performance	√	√	√	√	√	√
Personnel trained and experienced in environmental issues	√	√	√			
Responsibilities clearly defined and carefully assigned	√	√	√	√	√	√
Strong pollution control process	√	√	√	√	√	√
Effective waste and energy management process	√	√	√			
Documented management procedures and compliance results	√	√	√			

The results in the Table indicate considerable differences between the resorts in Northern Queensland and Coffs Harbour, in part because Green Island Resort and Kingfisher Bay Resort are located in very sensitive environments. Some of the difficulties associated with the resort development in such environments are tough regulatory requirements, the lack of infrastructure such as power, and water, poor transportation linkages, and often highly seasonal visitors flows. The way in which

resort management deals with these issues has a significant effect on the resort environment. The strengths of environmental management in Green Island and Kingfisher Bay Resort are quite obvious. From the stage of resort design to construction and operation, the senior management have provided great control on the environmental issues which further enhanced the strengths of resort environmental management system. Aanuka Beach Resort is an exception in the resorts among Coffs Harbour, because the resort owner is an environmentally-oriented person who, associated with the general-manager, provides strong supervision of resort environmental performance. The managerial activities in Aanuka reflect many features of best practice environmental management. The strengths also are reflected in its advertising programs which feature the “greenness” of the resort and its management.

The other three resorts, Nautilus, Boambee Bay and Opal Cove, are longer established resorts and located in a relatively stable environment. The strengths of their environmental management systems are not so well defined. A common feature of environmental management in these resorts is their decentralised structure. The responsibilities for environmental management are delegated to provide a fast response to actual environmental conditions or problems while still maintaining consistency in the whole management activities.

2. Weakness

The weaknesses of the current environmental management system of each resort are outlined in **Table 7.5**.

Table 7.5: Weakness of Current Resort Environmental Management System

Resort	Green Island	Kingfisher Bay	Aanuka	Nautilus	Opal Cove	Boambee Bay
Weakness						
Breaches of regulation compliance						
Poor energy and waste management						
Uses of Hazardous materials with inadequate controls						
Lack of environmental training program				√	√	√
Lack of clarity in the responsibility of environmental management						

The Table addresses the lack of environmental training program as a major weakness of resort environmental management in Coffs Harbour. Obviously, the Green Island Resort, Kingfisher Bay Resort and Aanuka Beach Resort which have implemented environmental management programs are seen to have no outstanding weakness. The reasons for Opal Cove, Boambee Bay and Nautilus resorts not having a training program are:

- (1) senior management think all staff are aware of environmental issues, so that there is no need for the resort to develop a formal training program;
- (2) such programs may cost substantially.

Under the current situation, the lack of a training program seems not to have a significant impact on the resort's environmental management performance.

3. Opportunities

The major opportunities for the resorts to improve environmental management performance are outlined in the **Table 7.6**.

**Table 7.6: Opportunities of Improving Resort
Environmental Management Performance**

Resort Opportunities	Green Island	Kingfisher Bay	Aanuka	Nautilus	Opal Cove	Boambee Bay
The introduction of new programs, procedures or new services which will improve the resort's environmental performance	√	√	√	√	√	√
The introduction of skill training programs				√	√	√
Links to Best Practice Environmental Management				√	√	√

The results in the Table and survey show that all resorts recognise the existence of these major opportunities, even those who have already put environmental management programs in place such as Green Island, Kingfisher Bay and Aanuka, also strongly support the introduction of more environmentally friendly practices within the resort operation. However, during the survey, the question was asked, “if the introduction of these practices were voluntary, but required extra time and effort (money) on your resort to fulfil, how willing would you be to co-operate?”, only Green Island, Kingfisher Bay and Aanuka answered “very willing”, while others expressed a relatively reluctant attitude. There exists marked variation between the resorts in terms of these opportunities. This variation is also reflected in the advertising programs of the resorts.

4. Threats

The potential threats for the resorts relating to improved environmental management performance are outlined in **Table 7.7**.

Table 7.7: Potential Threats Relating to Improved Resort Environmental Management Performance

Threats	Resort	Green Island	Kingfisher Bay	Aanuka	Nautilus	Opal Cove	Boambee Bay
New legislation being introduced		√	√	√	√	√	√
Changes in tourism market circumstances							
Potential changes in the surrounding environmental conditions such as beach erosion or rises in sea level		√		√			
The effects of changes in guests' demands							
The effects of changes in supplying sources							
Community or financial institutional pressure		√					

The results indicate that all sampled resorts see the introduction of new legislation as a threat, in particular, Green Island and Kingfisher Bay Resorts, because both are located in sensitive World Heritage Areas. As legislation and regulations become tougher, compliance costs increase and are likely to continue to grow. Surprisingly, only Green Island Resort and Aanuka Beach Resort consider the potential changes in surrounding environmental conditions as a threat, and both resorts have a long term strategy to deal with this problem. Another interesting result is that no resort sees the changes in tourism market circumstances as a threat to improvement of environmental

performance. This suggests that all sampled resorts have strong confidence in the future tourism market.

Because of Green Island's sensitive environment, the resort also was aware of the threat of liability from financial institutional pressure on environmental issues, which could cause significant losses in terms of financial returns and the resort's reputation.

7.5. Legislation and Regulations

There are four legislative contexts and a number of regulations which may affect the environmental management performance of resort operations. There were referred to in Chapter 4. The **Table 7.8** outlines the most relevant legislation for the sampled resorts.

Table 7.8: The most relevant legislation for the sampled resorts

[illegible]

In Chapter 4, the regulatory system and its importance for tourism environmental management in Australia were discussed. In the context of the sampled resorts, Green Island Resort and Fraser Island on which Kingfisher Bay Resort is located are both covered by the World Heritage List. As discussed in Chapter 4, the Commonwealth Government can use its external affairs power, such as World Heritage Act 1983, to enable it to take control over environmental matters. The Great Barrier Reef Marine Park Authority, a Federal Government Agency, is in charge of all aspects of Green Island environmental issues. It has proven to be a highly successful, efficient and effective agency in performing its role in the protection and management of the Great Barrier Reef Park. The Authority has been working jointly with the Queensland Department of Environment and Heritage and various local government authorities and the tourism industry to develop a strategic management plan. This plan is being progressively implemented on a co-operative basis. Monitoring of tourism impact on the reef and associated installation and operation of facilities is being carried out through the Authority. In addition, the Great Barrier Reef Marine Park Authority, together with the tourism industry, has developed an education program for tourism staff known as the Reef User Manual. This manual, which will be continually updated, contains information on environmental management of the Great Barrier reef, commonly asked questions, marine biology, interpretation, resource lists, contact lists and reporting forms which are directly relevant to the Green Island Resort.

The environmental management of Kingfisher Bay Resort is mainly regulated by the Queensland Department of Environment and Heritage. In order to establish and

manage the planning and implementation of the environmental program, the Resort appointed a full-time Director of Environmental Management in 1991. The appointee was a senior manager within the Department of Environment and Heritage and had considerable experience in protected area planning, natural resource management and nature-based recreation management, and is very familiar with the government regulations. This appointment provided the resort not only with the means of establishing a credible and comprehensive environmental program, but the means of establishing an important liaison role with government authorities, particularly the Department of Environment and Heritage.

Overall, the environmental management performance of Green Island Resort and Kingfisher Bay Resort are strongly influenced by both Commonwealth legislation and Queensland State Legislation. In addition, both resorts were subject to Environmental Assessment procedures and Environmental Impact Statements were prepared as part of the rezoning application with the Cairns City Council and Maryborough City Council respectively.

The resorts in Coffs Harbour are different from the two resorts in Queensland. Comparatively, these resorts are located in a relatively insensitive environment. Their environmental management performance is influenced only by New South Wales State legislation, in particular, the Local Government Act 1993. Under this legislation, the Coffs Harbour City Council is required to obtain the approval of the Public Works Department for the discharge of waste into the sewer.

In addition, the Pollution Control Act 1970 administered by the Environment Protection Authority is the principal means in New South Wales for regulating the discharge of pollutants directly to the environment and the resorts' management is subject to this legislation.

All four resorts received a permit from the Coffs Harbour City Council for the discharge of waste into the sewer under an agreement with the Council which also set out the conditions. The survey showed that all four resorts did not breach the conditions.

It should be stressed that although, under the legislation, the Council has the right to enter the resorts and inspect the waste discharge system to check whether the conditions are met, it rarely does so. The main reasons are discussed by Ding and Pigram (1995). These include: (1) lack of resources, (2) lack of appropriate mechanism, and (3) tourism is considered a clean industry.

The four resorts were not required by regulatory authorities to undertake any kind of environmental impact assessment procedures because they are listed as non-designated developments under the New South Wales Environmental Planning and Assessment Act, 1977.

7.6. Key Environmental Issues and Areas

In Chapter 6, the key environmental issues and areas which affect the resorts' environmental management performance have been identified. The following section will analyse and determine the performance status of each resort by issue and area.

7.6.1. Pollution Control

The type of pollution the resorts generate includes sewage, noise and air.

7.6.1.1. Sewage

Sewage and wastewater is the main pollutant the surveyed resorts generated. Sewage treatment by the sampled resorts takes two forms - sewage system and tertiary. Of the sampled resorts, those in Coffs Harbour utilise the City sewage system without any treatment, whereas Green Island Resort and Kingfisher Bay Resort utilise quite sophisticated tertiary treatment.

In 1991, the Great Barrier Reef Marine Park Authority released updated Guidelines for Sewage Discharges into the Park (Great Barrier Reef Marine Park Authority, 1991). These Guidelines placed stringent restrictions on sewage discharge. In addition to approval from the Great Barrier Reef Marine Park Authority, approval of sewage discharge standards was also required by the Queensland Department of Environment and Heritage, and the National Parks and Wildlife Service and Cairns City Council. Under these Guidelines and conditions imposed by other relevant authorities as part of the development process, the Green Island Resort constructed a sophisticated tertiary treatment sewage plant designed to handle both the resort's effluent and grey water. In addition, a treated effluent outfall pipeline was built. This involved plotting a course

through areas where no coral life existed so that construction disturbance was minimised. Nitrogen and salinity levels for this outfall are set by Cairns City Council at levels which ensure that there is no effect on nearby coral growth.

The survey also showed that because of the sensitivity of the coral environment surrounding Green Island, stringent sewage quality standards were required particularly with regard to nutrient levels. The Great Barrier Reef Marine Park Authority's 1991 Guidelines recognised this requirement. The treatment plant developed for Green Island Resort provides a practical example of implementation of these Guidelines and the treated sewage standards meet all requirements.

It should be noted that not all treated water is discharged into the sea. Because of the cost of importing water from the mainland to the island and to make optimum use of the high quality sewage that is produced, treated sewage has been reused for the following:

(a) Toilet flushing

Toilet flushing accounts for 25 per cent of the water use in the resort. Reuse of the treated water provides significant savings for imported water use.

(b) Fire fighting reserve:

Treated water can be used as the source of water for fire fighting purposes.

(c) Irrigation

The use of treated water for irrigation has been limited to specific landscaped areas isolated from the island's groundwater system to ensure minimal impact on the island's water table. Considering the sensitivity of the native flora to nutrients, levels

are strictly monitored. In the event of a treatment malfunction, the irrigation system automatically shuts down.

Sludge residue from the treatment plant is pumped onto a barge approximately once every month and transported to the mainland for processing in the Cairns City Council treatment plant because land disposal of the sludge on the island may lead to infiltration of phosphorus into the groundwater and therefore to the surrounding marine environment.

In Kingfisher Bay Resort, stringent restrictions are also placed on sewage discharge. The resort has an advanced three-stage Enviroflow sewage treatment system incorporating anaerobic and aerobic digestion utilising naturally occurring bacteria. Because the vegetation of Fraser Island's western coast relies on very low nutrient levels, treated sewage is pumped out into the deep channels of the Great Sandy Strait, rather than used in irrigation. The resort also undertakes sewage outfall monitoring activities in order to detect any changes to seabed flora and fauna as a result of discharge of the treated sewage. The treatment plant is checked daily, and all monitoring results are supplied to the Queensland Department of Environment and Heritage as a condition of regulatory requirements.

In Coffs Harbour, sewage from the surveyed resorts is discharged into the City Council's sewage system. The provision and maintenance of sewage system are the responsibility of the Council. The Council, acting on advice from the Environment Protection Authority and Public Works Department, seeks to provide a safe and

environmentally acceptable system for the collection, treatment and disposal of sewage which discharges into the ocean. The Coffs Harbour treatment works uses both trickling filter and intermittent extended aeration. The quality and quantity of treated sewage before discharge meet the requirements of regulatory authorities. Furthermore, the sewerage system accommodates the peak loadings which occur during the tourist season.

It is the owner/generator's responsibility to ensure that both the quality and quantity of the sewage discharged to the sewerage system are in accordance with the Council's requirements. In 1994, Coffs Harbour City Council carried out a sewage monitoring program to monitor the conditions of discharge. The authorised officers of the Council collected more than 200 samples from domestic and industrial sewage at the point of connection to the sewerage system, although none of these samples was collected from the sampled resorts. This situation, on the one hand, shows the resorts to be considered non-water pollution source. On the other hand, the resorts are seen also not to breach the permit or agreements on sewage discharge. The disposal of residue waste such as grease, oils and sludge is carried out in accordance with the Council's and Environment Protection Authority's requirements.

It can be concluded that the sewage discharge in all sampled resorts is well under control. The resorts at all times maintain all facilities for sewage discharge, such as pipes, equipment and apparatus used for conveyance, measurement, sampling and treatment, in good repair and in a clean and efficient state, and in proper working condition. Therefore, the resorts comply with all requirements for sewage discharge.

7.6.1.2 Noise

“Noise is any kind of sound that people consider undesirable disturbing, bothering, annoying, and which can have a number of detrimental effects, including damage to health”

(International Hotel’s Environment Initiative, 1993: 113).

Quiet is the condition in which people generally feel well and in which they can relax, recover, rest or concentrate. Since the main objective of any resort is to provide the best environment possible for its guests, a reasonably low sound level throughout the guest areas is extremely important. Equally important is the desired degree of privacy provided by a low level of sound transmission between adjoining rooms. Noise control can also improve employees’ general well-being and productivity (International Hotels Environment Initiative, 1993).

The following noise sources have been identified which would affect the environmental management performance of the resorts;

- Traffic: vehicles
- Equipment and systems: air-conditioning, refrigerator, laundry and kitchen, etc.
- Entertainment: disco hall, night club, function areas, etc.
- Resort’s operations: engineering, gardening, housekeeping, etc.
- Rooms and neighbouring space: communication, activities, functions, etc.
- Construction: renovation projects

Noise is not the main environmental problem the resorts are facing and there are very few complaints on noise. Even so, the resorts still take various measures to avoid or reduce noise. For example, the resorts have determined maximum acceptable sound levels within guest rooms for telephone calls, television and music and set these accordingly. Maximum sound levels for music entertainment in public areas are also scheduled and frequently checked, as are the smooth operation of elevators and roller. All doors are continuously kept closed as appropriate, and wherever possible, time clocks installed for noisy refrigerator or ice machines on guest rooms floors (off at night, etc).

Green Island Resort and Kingfisher Bay Resort have their own power station and sewage treatment plant which have been designed to minimise noise emission, and constructed and housed in a heavily insulated buildings. Exhaust outlets are fitted, with the entire building sound-proofed.

There are very few complaints about noise in the resorts which reflects the success of noise control measures.

7.6.1.3. Air pollution

Air pollution, in relation to this research, includes two aspects: indoor air quality and air emissions.

1. Indoor air quality

Indoor air contaminants can cause a variety of illnesses, and poor indoor air quality can commonly lead to discomfort, decreased occupant productivity and deteriorating

health (International Hotels Environmental Initiative, 1993). There are many potential sources of indoor air pollutants in resorts, including combustion products, chemical vapours, building materials, dusts and smoking products.

One of objectives of resort environmental management is to safeguard the health and welfare of both guests and employees at the resorts, by adopting air quality objectives and standards, establishing procedures for dealing with specific indoor air quality problems, and carrying out routine maintenance procedures. In order to achieve these objectives, most resorts have adopted three basic approaches which are:

- to eliminate or reduce the pollutant sources, perhaps adjusting the type of use in which the pollutant is generated;
- to filter or purify the indoor air; and
- to ventilate or dilute pollutants.

Although there are no generally applicable indoor air quality standards for resorts, several of those studied have adopted the local standards which focus on occupational safety and health. The resorts also have undertaken one or more of the following procedures to improve indoor air quality and enhance and promote their environmental reputation:

- review the rate and type of complaints from guests and staff and how they are being handled;
- monitor or evaluate compliance with established operation and maintenance procedures; and

- conduct surveys or interviews with a sample of guests and staff to seek their opinions on indoor air quality.

In this research, all sampled resorts demonstrated concern to preserve good indoor air quality and adopt effective pollution control procedures.

2. Air emissions

The main sources of air emission are CFCs, emissions from burning fossils, emissions from the evaporation of hydrocarbons, emissions from accidents, odours, vapours and mists, bacteriological pollutants, miscellaneous gases, and particulates of the resort operations (International Hotels Environment Initiative, 1993). Reduction or elimination of air emissions can generate many benefits for a resort's operation, such as providing a healthier environment for guests and employees, contributing to the protection of the environment, reducing expenses by cutting fuel costs and prolonging equipment life.

The resorts studied, have implemented different programs on air emissions according to their particular operational and environmental characteristics. For example, all sampled resorts have reduced energy consumption through better insulation, heat recovery, energy-efficient lighting, efficient equipment and use of other modern technologies. The resorts have also made efforts to use gas wherever possible, instead of fuel oil to eliminate emissions. The Green Island Resort uses waste heat from its heavily insulated powerhouse to preheat water used in the resort's hot water system. The resort has also constructed a refrigerated room to house a compactor used to

process food waste. In this way, odour was reduced. The Kingfisher Bay Resort was designed without air-conditioning. Natural convection currents are utilised to save an estimated 50,000 KW/H of energy each year, consequently reducing air emissions (Charters, 1995).

All sampled resorts are examining the possibility of either replacing the current Freon air-conditioning and refrigerating system with modern systems that can handle new refrigerants, or reformatting the current systems to accommodate the same in order to eliminate Freon which generates CFCs.

Overall, all sampled resorts' air emissions do not exceed the standards set by regulatory authorities, and air emission is not an environmental problem in resort operation.

7.6.2. Energy Consumption

Energy consumption is perhaps the area in which resorts can make the greatest contribution to environmental protection. By the very nature of their operation, resorts are major users of energy. They operate continually over a twenty -four hour day, usually 365 days of the year. Heating hot water, air-conditioning, light and restaurant services are taken for granted by guests, regardless of the time of day or night, and the resorts operation naturally has to respond to the guests' needs. The waste, as a result, can be and is considerable. It is estimated that resort' waste accounts for up to 40 per cent of total energy (International Hotels Environment Initiative, 1993). The efforts made by resorts to reduce energy consumption have mainly been motivated by

economic reasons. Because the location, size, age, history, equipment and systems are different, the measures taken by resorts are different, but the primary common goal is to improve energy efficiency. Most resorts focused on the following two areas:

- (1). Operational efficiency: operation and maintenance of the resort's equipment and system in an energy-efficient manner.
- (2). Building, equipment and system efficiency: less energy consumption and clean, renewable and cheaper energy use.

The resorts have realised that energy conservation and elimination of waste can be achieved by sound management practices, staff awareness programs and modern technology. Among them, simple staff action is seen as a priority, for example, switching off unwanted lights, delaying turning on equipment until it is needed and turning it off when no longer required. However, only half of the sampled resorts (Green Island Resort, Kingfisher Bay Resort and Aanuka Beach Resort) have some idea on how much the resort pays for its energy consumption. The responsibility for implementation of energy conservation and the required action rests with the General Managers, although in Green Island Resort and Kingfisher Bay Resort, the chief engineers carry out all routine works and investigations, especially maintenance of the equipment, and monitoring and recording of consumption data. The general managers, as well as chief engineers are also responsible for the evaluation of the resort's operating procedures and alternatives for energy efficient technologies. In Kingfisher Bay Resort, the Director of Environmental Management is also involved in these responsibilities.

All sampled resorts have adopted some kinds of energy conservation which include electricity keys and low energy lighting, and timers used to shut off power to light and equipment when not in use. Only Kingfisher Bay Resort has implemented a monitoring program to evaluate the effectiveness of these initiatives. The results show normal lighting only consumes 15 per cent of power consumption and saves 95,000 kw/hrs of power per year. By utilising a sealed sewage system it was possible to locate the treatment plant near the resort complex, thus eliminating the need to pump waste over a significant sand dune for treatment and then back again for disposal. This strategic decision saves an additional 15,000 kw/h of power each year.

Surprisingly, none of sampled resorts use shade as a method of cooling and solar as a method of heating.

Energy management is an ongoing process which will constantly bring improved results as knowledge grows, as operational procedures are constantly reviewed in the light of energy use, and as applicable technology advances are implemented.

7.6.3. Recycling

As resorts continue to generate waste, recycling, as a core element of waste management, has become more significant in environmental management practice. Recycling can achieve many goals, such as reducing waste and disposal costs, and saving resources, energy and money. The recycling process generally begins with separation of the different kinds of waste at source, followed by collecting, sorting, reprocessing or reusing. The common recyclables and resulting products in resorts are

aluminium, fine papers, food and organic materials, glasses, plastic and metal cans.

Recycling programs are easily established but fairly complex to run successfully.

In Green Island Resort and Kingfisher Bay Resort, all wastes are separated into recyclable and non-recyclable materials and then compacted and removed to the mainland for disposal. Newspapers, fine papers, cardboards, cans and bottles are all recycled. In Green Island Resort, vegetable waste and food scraps generated from within the resort are placed in large composting bins for later use on the resort's gardens.

In the resorts in the Coffs Harbour region, the ability to recycle is largely dependent on the recycling facilities available through the City Council or private contractors. Unfortunately, currently, apart from paper, the majority of other wastes generated within the resorts are disposed by landfill. The City Council does not have the means to collect or sort recyclables, although it has proposed recycling facilities in the landfill depots. The exception is Aanuka Resort, where all staff are encouraged to recycle, reduce and reuse the waste. All cardboard, paper, cans and bottles are separated from the waste stream, sorted and collected by a recycling agent. The resort, therefore, has eliminated some of its landfill and waste removal costs. The resort also puts green notices in bedrooms and asks guests to help recycle waste and save energy and water.

7.6.4. Landscaping

Creating a pleasant environment has always been a prerequisite of the resorts. Grounds, gardens and buildings can make a lasting impression on the guests. They add colour, interest and impact for the guests, and provide food and shelter for the wildlife in the area. Of course, they can also be extremely costly to maintain.

At Green Island Resort, the architectural design statement for the development called for all buildings to be kept to a human scale, both in height and bulk, so that they blended with the heavily forested surroundings. The building mass has been broken up into separate elements to reduce its visual impact. The general features of design style for the development include:

- wide verandahs;
- large roof or overhangs;
- louvered openings;
- pedestrian roof awnings; and
- above-ground construction.

All the resort's public buildings which represent the majority of buildings on the site are raised above the ground on pre-cut concrete piles to withstand possible tidal inundation. This also allows for the majority of the surface of the resort's land to remain undisturbed. Most of the resort's structure does not have gutters, and In addition nearly all buildings in the accommodation zone and the public day-visitor facilities are connected by suspended boardwalks. These design features allow rainwater to fall on the ground and so replenish moisture levels required to support the

resort's vegetation and the island aquifer. The boardwalks are also effective in limiting damage stemming from the trampling of vegetation.

Materials used in construction of the resort were chosen for their strength as well as their capacity to blend into the surrounding environment. For example, masonry, with an applied sand-colour textured finish, was used for the resort's walls. Timber use was limited to Australian timbers, specifically spotted gum, Tasmanian oak and silky oak.

The landscape strategy employed on the Green Island Resort makes use of a broad range of local plants. To develop an inventory of these plants on the resort, a survey was conducted with the assistance of the Queensland Department of Environment and Heritage. At the same time, exotic and diseased or dead trees were removed, chipped and stored for later use on the resort's gardens. Limited use was made of exotic plants, and where they were used, strict constraints applied including:

- selection of species that had no capacity to naturalise themselves on the Island; and
- containing exotic plants to isolated cells (i.e. planter boxes).

To protect the island's flora from contamination by foreign pests, bacteria or weeds, plant stock sourced on the mainland was subject to a range of measures including:

- sterilisation of soil mix;
- isolation of plant stock in nurseries to avoid contamination by other plants;
- introduction of a regular regime of inspections prior to taking delivery of plant stock;
- manual removal of all signs of weed growth;

- removal of loose, possibly contaminated soil, through washing down bags and pots prior to transport to the island; and
- utilisation of stock of known origin only.

The process of revegetating the resort site resulted in some 6000 native plants (of 60 different native species) being planted to supplement and broaden the range of vegetation already growing in the area.

While fertiliser was used to establish new plants, amounts were strictly limited and its use has since been phased out. No pesticides are used on the resort's gardens as gardeners have been successful in establishing a natural predatory cycle.

In Kingfisher Bay Resort on Fraser Island, prior to any construction, a comprehensive survey plan was undertaken to identify and mark each major tree on the site. Roads and buildings were then planned around these major trees to the greatest extent possible. All buildings were limited to two levels, and are below the treeline, and all exterior colours and finishes blend with the natural bush colours. These buildings were subsequently awarded the 1994 Australian Architectural Award in the non-residential category. Local materials are used to the greatest extent possible. The final project resulted in using greater than 90 per cent Australian goods and services. This resulted in some innovative design solutions which have found their way into commercial application. One example was a range of well-mounted and free-standing lighting fittings fabricated from ripple iron by a small Brisbane company.

The landscape treatment of the site used all native species from the actual site and surrounding island environments. While this involved immature plants being used in the planting program it will provide a mirror of the surrounding native vegetation within a few years. A large nursery was constructed on site to care for the 15,000 plants required for the resort. Literally hundreds of thousands of plants were transplanted for the resort. The Queensland Forest Service was contracted to raise 60,000 plants from seed and cutting stock taken from the Island, and the nursery continues to provide stocks of native shrubs and trees.

In order to prevent the introduction of mainland soil diseases, all landfill was obtained from the resort site and all aggregate and gravel was imported from approved, disease-free sources. All vegetative material removed from the site of buildings was mulched and used in landscape treatment, and all building waste was removed from the island as it was generated.

During construction, environmental impacts were kept to the minimum area possible. This was achieved through establishing contractor regulations over tree clearing and disturbance and regularly monitoring activities. Fines of up to \$1000 could be levied for unauthorised removal of trees (Charters, 1995).

Aanuka Beach Resort is a relatively small, secluded resort created in a natural rainforest setting with direct access to a safe surfing beach. It has won awards for the best resort in Australia and best resort design, which features a setting reminiscent of a island in the South Pacific. The emphasis is on the attractions of native fauna and

flora in a sub-tropical environment. The developer states that just six trees had to be removed to create the resort, but 20,000 trees have since been planted on the site. Furthermore, construction companies were required to agree to bond of A\$3000 for any tree seriously damaged during development of the resort. Construction materials, architectural design and landscaping are in keeping with the inherent appeal of the site and no expense has been spared in fitting out the resort for the comfort of guests. A large outdoor rock pool has been created with waterfalls, a cave with jacuzzi, and a swim-up bar. The 48 suites are designed in bure style, low rise units in harmony with the natural environment, and offering complete seclusion and privacy. Open space, low density, environmental sensitivity and a casual social setting set the tone of the resort (Pigram, 1995).

The success of landscaping in the Green Island Resort, Kingfisher Bay Resort and Aanuka Beach Resort can be judged by the abundance of wildflowers and of native wildlife nesting and feeding in the bush around the resorts.

7.6.5. Kitchen and Food Services

Kitchens in the resorts use the most energy, produce the most pollution and can create the greatest savings to both the environment and the resorts' budget. Kitchens and food services facilities are traditionally among the least energy-efficient operations in resorts. Although no specified written programs existed in environmental management, all sampled resorts, to some degree, have undertaken some of the following actions in the kitchens and food services to improve the resorts' environmental performance:

- using the cheapest energy sources for cooking and dishwashing, for example, gas is much cheaper than electricity;
- turning equipment and lights off when not in use;
- installing flow restrictor valves on faucets to reduce water flow;
- eliminating or reducing food waste;
- refusing to accept needless packaging;
- reducing water heating wherever possible;
- recycling all jars, bottles, jugs, tins, etc.;
- whenever possible, using reusable flatware and dishes;
- replacing paper napkins for table coverings with linen;
- using only phosphate-free automatic dishwashing detergents; and
- using non-toxic cleaners wherever possible.

By undertaking the above actions, the kitchens and food services facilities in the resorts generate the following benefits:

- kitchens become a much more pleasant work place;
- resorts enjoy savings in energy consumed, waste sent for disposal, and hot water used; and
- equipment operates much more efficiently.

7.6.6. Offices

Office equipment in the resorts use significant amounts of electricity. Papers used in resorts' offices and advertising materials comprise more than 30 per cent of the paper in the resorts. Although no specific scheme in environmental management is in place

for resort offices, some kind of actions have been voluntarily undertaken by resort management in Green Island Resort, Kingfisher Bay Resort and Aanuka Beach Resort, Examples include:

- wherever possible, selecting energy-efficient office equipment, such as computers, printers, faxes and photocopiers that have relatively low energy consumption and low energy “sleep modes” which reduce power consumption when the equipment has not been used for a specified period of time;
- using the double-sided copying capability of photocopiers and printers to cut paper consumption;
- whenever possible, buying and using recycled paper, in particular printing advertising materials on recycled paper;
- operating office equipment efficiently;
- using electronic data storage and transmission to minimise paper consumption; and
- re-using envelopes.

7.6.7. Products Purchasing

Resorts, unlike other industry, are not considered to be primary sources of pollution. However, to provide the services required by guests and staffs, they have to purchase and use many products and commodities that could be causing harm to the environment (Forte, 1995). Therefore, it is only in the last few years that the environmental impact of a product has had much bearing on the management decision to buy it. Product purchasing decisions can make a great contribution to the improvement of environmental performance. Purchasing responsibly is a significant way in which resorts can improve their environmental management performance. In

addition to moral and ethical reasons, it is also cost-efficient to purchase responsibly and to minimise waste.

Virtually anything that is bought will have some consequence to the environment. Only until very recently, the impact upon the environment has not been a primary consideration among the decisions to purchase a particular product. As a result, it is impossible to list all beneficial or damaging products, and among the sampled resorts, there is no one resort that has a formal purchasing policy in environmental management. However, some kinds of general principles are considered for each purchasing decision by some resorts. For example, Green Island Resort, Kingfisher Bay Resort and Aanuka Beach Resort have applied some of the following principles when making a purchasing decision:

- buying in bulk to reduce cost and packaging waste;
- rejecting packages and containers that cannot be returned, reused or recycled;
- buying the lightest, quality items affordable and having them repaired and serviced when necessary;
- buying locally items to reduce transportation cost;
- opting for products that are natural, organic, chemical-free and synthetics-free; and
- buying recycled items whenever and wherever available.

Although the benefits are not quite clear, the sampled resorts have considerable impetus to establish and implement formal environmentally purchasing policies in the future.

7.7. Environmental Management Performance Measurement

A key aim of Environmental Management Performance Auditing (EMPA) is to measure the resorts' environmental performance and progress against requirements and goals. These measurements can help correct shortfalls and improve environmental performance overall. The key benefit is the education of both resort management and guests about the importance of environmental concerns. In order to measure the resorts' environmental management performance, six environmental indices were utilised covering the areas of environmental management program implementation, pollution, energy use, recycling, rubbish disposal, and environmental marketing and interpretation and landscaping.

1. Environmental management program

The extent to which management programs intended to achieve environmental goals have been implemented is a key indicator of performance. Poor management systems lead to poor results. The survey results indicate that Green Island Resort, Kingfisher Bay Resort and Aanuka Beach Resort have placed greater emphasis on environmental management program than other resorts. Additionally, they also show a generally higher level of environmental content in their marketing management.

2. Pollution

All sampled resorts have focused on pollution control (beyond what is required by regulation). In particular, in the context of sewage discharge, the resorts have been proclaimed satisfactory by the regulatory authorities.

3. Energy use

Although all sampled resorts have implemented some kinds of energy efficiency initiatives, surprisingly, no resort uses shade as a method of cooling, and solar hot water is not used by the resorts. This is surprising in the light of the remoteness of Green Island Resort and Kingfisher Bay Resort, where energy efficiency is an important issue. Therefore, overall, all sampled resorts are not as efficient as one might expect in the context of energy efficiency.

4. Recycling

All sampled resorts undertake recycling and the items recycled most frequently include cans, paper, bottles, cardboard, and water. It should be re-emphasised that the recycling of waste water either through a sewage treatment plant or onto gardens is an effective means of conserving water resources and environment. Only Green Island Resort recycled its water.

5. Rubbish disposal

There exists variations between the island resorts (Green Island and Kingfisher Bay Resort) and mainland beach resorts (Coffs Harbour). The Green Island Resort and Kingfisher Bay Resort returned their rubbish to the mainland and undertake recycling. The rubbish of resorts in Coffs Harbour is collected by the City Council and dumped in landfill because of the inability of local authorities to separate waste for recycling. Therefore, the provision of recycling facilities is a major consideration which must be addressed for the resorts in Coffs Harbour to improve their recycling practices in the context of rubbish disposal.

6. Environmental marketing and interpretation

Increasingly, environmental marketing and interpretation are becoming important components of tourists' holiday expectations (Oliver, 1991). All sampled resorts provide some forms of environmental interpretation for guests. However, the quality and range of interpretation provided vary greatly among the sampled resorts. The level of interpretation supplied ranges from informal information from staff, maps, films, slide shows, brochures, guidebooks, interpretative talks and information boards. The types of interpretation supplied most frequently are maps and brochures.

Results again indicate that Green Island Resort, Kingfisher Bay Resort and Aanuka Beach Resort place greater emphasis on environmental content in their marketing than other resorts in Coffs Harbour.

7.8. Performance Improvement Action

High environmental performance and specific environmental initiatives will continue to give a resort competitive advantage. However, integration of environmental management into all aspects of resort operation will not just be a prerequisite for environmental performance excellence, it will be a condition to do business. To achieve this objective, the resorts need to be involved actively to ensure the establishment of realistic and practical approaches to best practice environmental management.

The research indicates that resorts need to develop management systems to deal with environmental issues. Accordingly, it is essential that the resorts surveyed establish an Environmental Management Department or unit such as the one at Kingfisher Bay Resort, and the position of environmental manager be established and duties specifically assigned. Furthermore, all of the resort management and staff must be seen to be responsible for the resort's environmental performance.

Ideally, the environmental manager should have the primary role of co-ordinating the resort's environmental policy and direction. Other duties should include:

- policy development and implementation;
- co-ordinating the resorts' environmental activities in the areas of training, promotion, environmental management system development and implementation, reporting;
- performance indicators development and obtaining legal advice;
- environmental auditing and management reviews;
- monitoring environmental performance; and
- providing a focal point for outside organisations and customers on environmental management matters.

It is critical that the environmental manager be adequately resourced to protect the interests of resorts and all other involved parties.

Since the impact that regulatory agencies such as Great Barrier Reef Marine Park Authority, and Environment Protection Authority have on the resort operation is

significant, it is necessary for the resorts to have a system of regular informal meetings with relevant regulatory agencies to identify and discuss mutual environmental issues, and to seek the most effective means of handling situations where the resort's activities have environmental impacts. Such meetings should include senior professional staff from both sides.

The resorts need to develop an integrated environmental management performance audit program to ensure that their environmental objectives are fulfilled. Such a program comprises the following key components:

1. Development of an integrated environmental policy, objectives and actions

As stated previously, the sampled resorts should be proud of the demonstrated commitment to the environment that has been shown and reflected in the publications and marketing promotion materials. It is important that management and employees have the opportunity to contribute to the policy and objectives. They must be aware of the resorts' stated position on the environment and the performance improvement tasks that they perform.

2. Allocation of responsibilities

A primary task should be to review the resorts' organisational structures and to develop, document and define environmental responsibility and accountability paths. An appropriate organisational structure should consider: environmental policy, regulatory extent, existing roles and responsibilities, and individual expertise.

3. Development of an Environmental management system

The system should comprise the organisational structure, responsibilities, practices, procedures, processes and resources required to implement environmental management in the resorts. It consists of a number of elements including:

- policy and commitment;
- objectives and management plans;
- performance measurement;
- procedures;
- reports;
- records and inventories; and
- audit

4. Monitoring and review

The resorts should develop a program and system for on-going monitoring and review of environmental performance. The management and staff should be regularly reminded throughout the programs of milestones and agreed performance indicators. The monitoring also should ensure that management and staff are aware of amendments to applicable legislation and regulation.

5. Communication with staff and interest groups

All staff and interest groups need to be involved in environmental initiatives. Effective communication depends on the resorts:

- providing forums to give information and training, and
- advertising where information/assistance is available.

6. Conducting facility audits

The consumption of energy, water and materials, waste, pollution should be reviewed in detail in an audit to determine the compliance with licence, and regulatory requirements.

Other recommended actions for the improvement of environmental management performance for the resorts include:

- developing a data base for each environmental issue;
- clarifying the resorts' regulatory obligations for each environmental issue and policy regulations;
- developing and implementing a specific action plan for each environmental issue;
- reviewing the key environmental management areas and issues rankings; and
- integrating environmental training and awareness into the resorts' commercial business development.

Actions based on the use of environmental auditing should and will bring incremental improvement in the resort's environmental performance.

7.9. Conclusion

An analysis of the sampled resorts' environmental management performance can bring valuable insights into the approaches, principles and techniques of the application of an Environmental Management Performance Auditing (EMPA)

program that has proven to be successful. Although each resort is unique, the experience gained can provide useful ideas that other different types of resorts may be able to adopt to their own needs, in their pursuit of improvement of environmental management performance.

The results show that the EMPA tends to be well understood and well supported by resort management. Improving environmental management performance of resorts does not have to increase costs or reduce comfort and convenience of guests. As better environmental practices are being sought, more solutions which enable environmental, commercial and guest service goals to be met simultaneously are being found. Simple solutions may not always be available, however, choices may need to be made on the basis of which goal is seen as more important in particular environmental issues. Improving environmental performance enhances the resorts' reputation, and responsible actions of management are positive marketable commodities. Many resort managers recognise this and regard improving their reputation as a major benefit of implementing an EMPA program. However, environmentally sustainable resort operation will remain an elusive goal. It is imperative that environmental auditing is widely defused to ensure resort operations and activities are as environmentally-compatible as possible (Goodall, 1995). An Environmental Management Performance Auditing program can be used effectively to help resort management set priorities for action in the areas of energy consumption, waste reduction and recycling, training and communication. As such, it has great potential to make a valuable contribution to protection of the environment.