

Tourism & Recreation Values of the Daintree and Fraser Island.

Prepared for the Australian Tropical Research Foundation
(AUSTROP)

March 2002



Kleinhardt-FGI
Corporate Advisors

Table of Contents

	Page
EXECUTIVE SUMMARY.....	4
1.0 INTRODUCTION	6
1.1 SCOPE & PURPOSE OF THE STUDY	6
1.2 TOURISM AND RECREATION DEFINITION	6
1.3 TOTAL ECONOMIC VALUE FRAMEWORK.....	6
1.3.1 <i>Financial Values: Use Values</i>	7
1.3.2 <i>Economic Value – Use & Non-Use Values</i>	8
1.4 INFORMATION SOURCES	9
1.5 DEFINED STUDY AREAS	10
1.5.1 <i>The Daintree</i>	10
1.5.2 <i>Fraser Island</i>	12
1.6 NATIONAL & STATE PERSPECTIVE'S.....	13
1.6.1 <i>National Perspective</i>	14
1.6.2 <i>Queensland Perspective</i>	14
2.0 THE DAINTREE	16
2.1 REGIONAL PERSPECTIVE	16
2.1.1 <i>Far North Queensland Tourism Region</i>	16
2.2 TOURISM FACILITIES & ACTIVITIES IN THE DAINTREE	17
2.2.1 <i>Activities & Tours</i>	17
2.2.2 <i>Tourism Infrastructure</i>	18
2.2.3 <i>Accommodation Facilities</i>	18
2.3 VISITOR TRENDS	19
2.4 VISITOR NUMBERS.....	21
2.4.1 <i>Estimated Visitor Numbers</i>	21
2.4.2 <i>Estimated Visitor Days</i>	22
2.5 VISITOR CHARACTERISTICS.....	24
2.5.1 <i>Visitor Days by Type of Visitor</i>	24
2.5.2 <i>Visitor Days by Type of Accommodation</i>	24
2.5.3 <i>Visitors by Place of Origin</i>	25
2.6 EXPENDITURE DATA	25
2.6.1 <i>Regional Expenditure</i>	26
2.6.2 <i>Expenditure in the Daintree</i>	26
2.7 FINANCIAL VALUE	29
2.7.1 <i>Direct Financial Value of the Daintree</i>	29
2.7.2 <i>Additional Financial Value</i>	29
2.7.3 <i>Regional Multiplier Effects</i>	30
2.7.4 <i>State & National Perspective</i>	32
2.8 ECONOMIC VALUE – NON-USE VALUE	32
2.9 TOTAL ECONOMIC VALUE.....	35

3.0	FRASER ISLAND	36
3.1	REGIONAL PERSPECTIVE	36
	3.1.1 <i>Fraser Coast Tourism Region</i>	36
	3.1.2 <i>Sunshine Coast Tourism Region</i>	37
3.2	TOURISM FACILITIES & ACTIVITIES ON FRASER ISLAND.....	37
	3.2.1 <i>Activities & Tours</i>	37
	3.2.2 <i>Tourism Infrastructure</i>	38
	3.2.3 <i>Accommodation Facilities</i>	39
	3.2.4 <i>Permits</i>	40
3.3	VISITOR TRENDS	40
3.4	VISITOR NUMBERS.....	42
	3.4.1 <i>Estimated Visitor Numbers</i>	42
	3.4.2 <i>Estimated Visitor Days</i>	43
3.5	VISITORS CHARACTERISTICS	44
	3.5.1 <i>Visitor Days by Type of Visitor</i>	44
	3.5.2 <i>Visitor Days by Type of Accommodation</i>	45
	3.5.3 <i>Visitors by Place of Origin</i>	45
3.6	EXPENDITURE DATA	46
	3.6.1 <i>Regional Expenditure</i>	46
	3.6.2 <i>Expenditure on Fraser Island</i>	47
3.7	FINANCIAL VALUE	49
	3.7.1 <i>Direct Financial Value of Fraser Island</i>	49
	3.7.2 <i>Additional Financial Value</i>	49
	3.7.3 <i>Regional Multiplier Effects</i>	50
	3.7.4 <i>State & National Perspective</i>	51
3.8	ECONOMIC VALUE – USE VALUE.....	52
3.9	TOTAL ECONOMIC VALUE.....	53
	REFERENCES.....	55
	ABBREVIATIONS & GLOSSARY.....	57

Executive Summary

This report provides an estimate of the *Total Economic Value* of the Daintree and Fraser Island including:

- the direct financial value attributable to tourism and recreation in each region;
- the additional financial value generated in adjacent regions from visiting the two areas;
- the indirect multiplier effects throughout the regional economy; and
- the economic values that each area holds.

The findings of this report are largely based on previously established studies, in addition to visitor survey statistics compiled for the Douglas Shire and Fraser Coast regions. Extrapolations and assumptions have been made to calculate the direct expenditure specifically in the Daintree and on Fraser Island, as well as to calculate the impact of tourism and recreation on the regional economy.

The Daintree study region includes the portion of the Daintree National Park north of the Daintree River to Cape Tribulation, while the study area of south-east Queensland encompasses the whole of Fraser Island.

An estimated 796,000 visitors and 1.7 million visitor days are spent in the two regions in total. This comprises 436,000 visitors and 802,000 visitor days spent in the Daintree region and 360,000 visitors and 876,000 visitor days spent on Fraser Island.

The Daintree

The Daintree receives approximately 306,000 day-visitors per annum, representing 70% of all visitors. The remaining 130,000 visitors (30%) are overnight visitors staying approximately 497,000 visitor days or 3.8 days on average.

An estimated 95% of all overnight visitors to the Daintree stay in commercial accommodation, spending 472,000 visitor days in the area. Campers spend approximately 19,000 visitor days in the area per annum.

Additionally, 70% of visitors enter the Daintree as Free and Independent Travellers (FIT's), while 30% of visitors are passengers of Commercial Tour Operators (CTO's). It is also estimated that visitation to the Daintree is split fairly evenly between international and domestic visitors, although the majority of domestic visitors are from interstate.

We have found that the Direct Financial Value from tourism and recreation in the Daintree region presently totals \$141.7 million per annum. We have also calculated that the Additional Financial Value from spending elsewhere within the Far North Queensland region in the process of visiting the Daintree is in the vicinity of \$91 million.

Regional multiplier effects are likely to be in the order of \$162.9 million, creating a Total Direct and Indirect Financial Value from tourism and recreation within the Daintree of \$395.6 million.

Upward of 3,489 jobs are generated in the Far North Queensland region from tourism and recreation in the Daintree.

The Economic Value (consumers' surplus) associated with protection of the area in 1999 was estimated to be approximately \$4.4 million. The Total Economic Value of tourism and recreation in the Daintree is therefore stated to be in the order of \$400 million.

It is noted that this valuation is not inconsistent with previous assessments (notably the updated Daintree Planning Package in 1998) representing an increase of only 20%.

Fraser Island

The majority of visitors to Fraser Island are overnight visitors, with approximately 223,000 visitors (62%) staying 736,000 visitor days or 3.3 days on average. An additional 137,000 visitors are day visitors. In total visitors spend an estimated 873,000 visitor days on the Island.

Visitors to Fraser Island are split evenly between FIT's (49%) and visitors of CTO's (51%). Slightly more overnight visitors to the Island are camper's (53%) spending 390,000 visitor days compared to those visitors spending 346,000 visitor days in commercial rooms.

It is estimate that some 40% of visitors to Fraser Island are international visitors with the majority of the remainder being intrastate visitors from elsewhere in south-east Queensland.

The Direct Financial Value of tourism and recreation on Fraser Island was found to be \$116.7 million. Additional Financial Value generated within the Fraser and Sunshine Coast regions in the process of visiting the Island is estimated to be \$39.3 million.

Regional multiplier effects have been calculated in the order of \$109.22 million, creating a Total Direct and Indirect Financial Value from tourism and recreation on Fraser Island of \$265.25 million

Up to 2,880 jobs are generated in the Fraser Coast and Sunshine Coast regions from tourism and recreation on Fraser Island.

The consumers' surplus associated with visiting Fraser Island was calculated to be between \$15.70 to \$32.63 per visit in 1990. Indicative Economic Value associated with the Islands use as a tourism and recreation destination, at current visitation levels is between \$5.6 and \$11.7 million.

The Total Economic Value of Fraser Island, incorporating its Economic Value and Direct and Indirect Financial Value from tourism and recreation, is therefore estimated to be in the order of \$277 million.

1.0 Introduction

1.1 Scope & Purpose of the Study

This study aims to provide a high level review of the Total Economic Values of two well known World Heritage listed Queensland icons; the Daintree (north of the Daintree River) and Fraser Island located in south east Queensland.

The calculation of the Total Economic Values of the two areas is based on the combination of Financial Values and Economic Values. For the purposes of this study the values are those generated exclusively from tourism and recreation and exclusive of all other revenues.

Financial Values include the direct revenue generated from visitor expenditures within each region plus the additional visitor expenditure in nearby areas (spent in the process of visiting each region). Financial Values also include the indirect revenue generated throughout the regional economy.

Economic Values provide a measure of the additional willingness to pay of visitors above their actual expenditure, measured by the consumers' surplus.

1.2 Tourism and Recreation Definition

Tourism and recreation is defined as any activity undertaken in leisure time (Kinhill Economics 1998).

Tourism and recreation is categorised as visitor use from international, intrastate or interstate visitors, overnight visitors, visitors of Commercial Tour Operators (CTO's) and Free and Independent Travellers (FIT's) on a journey of at least 40km from home undertaken for leisure.

1.3 Total Economic Value Framework

The Total Economic Framework is depicted and described below:

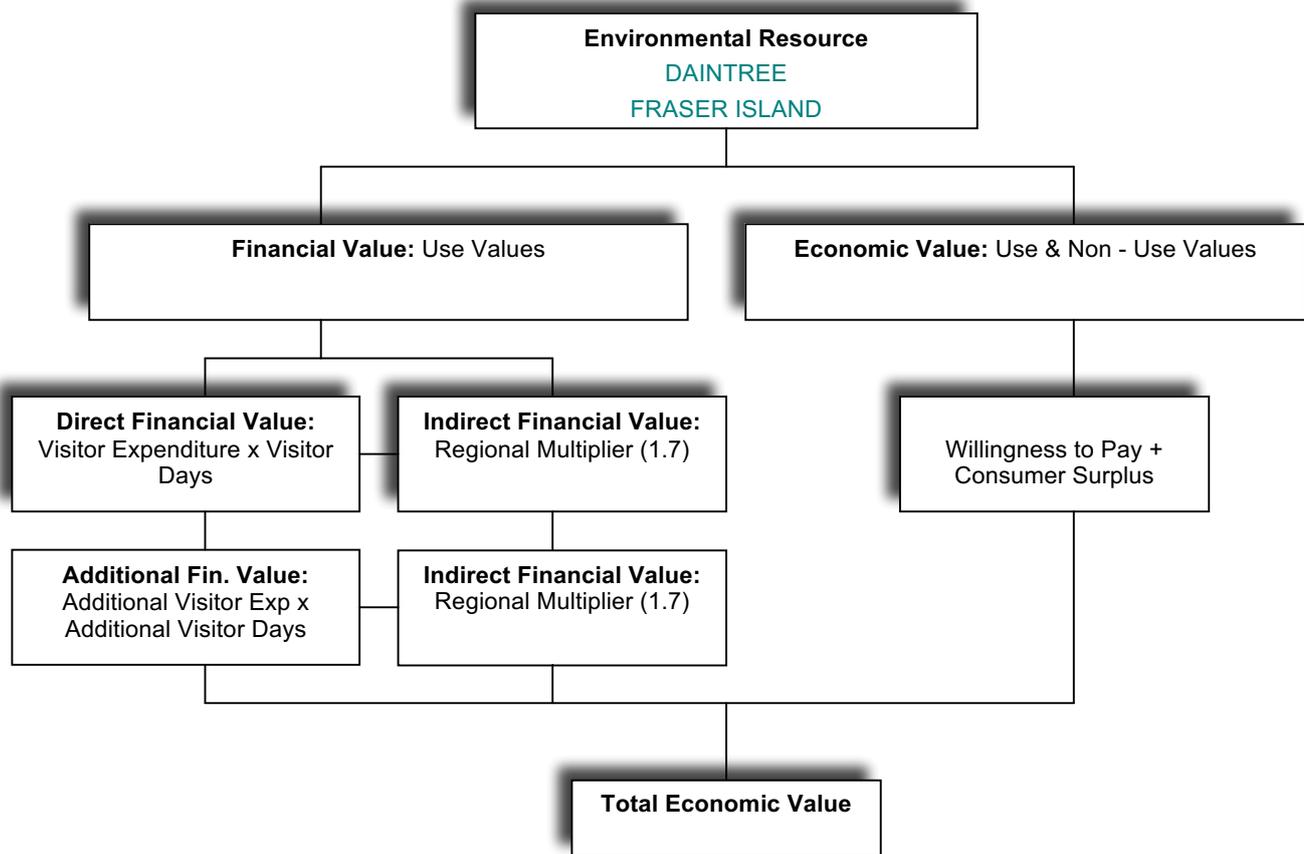


Figure 1: Total Economic Valuation Framework

1.3.1 Financial Values: Use Values

Financial Values (use values) are determined by measuring the expenditure by visitors on a tourism good or service in each of the study areas.

In the most simplistic case, visitor expenditure is equated to revenue obtained by the tourism producer for providing the product or service.

Therefore, by obtaining visitor expenditure data from visitor surveys in the two regions we can derive a proxy of the revenues generated from tourism and recreation. We have termed this revenue the Direct Financial Value from tourism and recreation.

We also seek to determine the additional revenue created in adjacent regions to each of the protected areas, assuming this is revenue attributed to visiting each region. We have termed this revenue the Additional Financial Value of each region.

The next step in the framework is to identify the impact on the regional economy from the direct and additional revenue generated from tourism and recreation.

We have done this by assuming an indirect use multiplier at the regional level. We have termed this impact as the Indirect Financial Value from tourism and recreation in the two regions.

A true multiplier is formulated with thorough input and output analysis of a particular region taking into account the repatriation of outflow's leaking back into the region.

Due to budgetary limitations of this study it has been necessary to adopt a predetermined multiplier established in previous studies of similar regions and apply these to the Daintree and Fraser Island.

Such multipliers vary depending on the size and complexity of a region and will only present an order of magnitude estimation of the associated values of tourism and recreation to the regional economy.

1.3.2 Economic Value – Use & Non-Use Values

The Total Economic Value of the two regions is determined by adding the tangible tourism and recreation use values of the areas (Direct and Indirect Financial Values) with their Economic Value. Economic Value can be either tangible (use values) or intangible and implicit (non-use values).

In economics such values are determined via an analysis of consumers' surplus. The consumers' surplus is measured by determining the difference between what a visitor is willing to pay for not being without the natural asset (or its protection) and the actual amount spent on (or within) the defined region. It represents the area A in Figure 2.

Several attempts have been undertaken in the field of environmental economics to derive these values using valuation techniques that include the Contingent Valuation Method and Travel Cost Study.

A Contingent Valuation survey approach has been undertaken in the Daintree, which provides non-use economic figures and an estimate of consumers' surplus.

On Fraser Island we utilise the findings of a Travel Cost Study previously established by Hundloe et al (1990). This study determines the economic use figures to estimate consumers' surplus.

The graph below depicts the concept of consumer surplus, based on a downward sloping demand curve and an upward sloping supply curve.

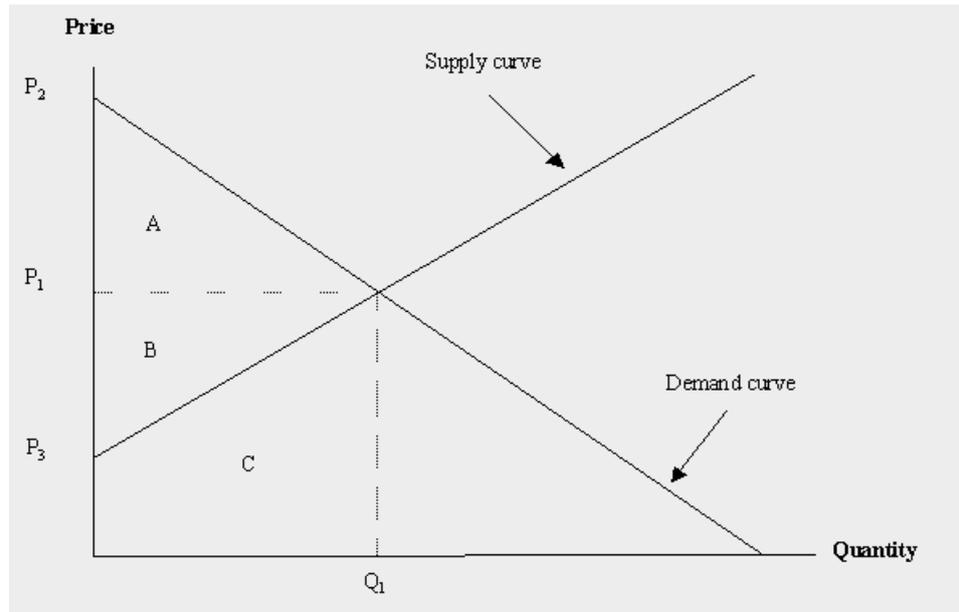


Figure 2: Consumers' Surplus Methodology

The actual price being paid for the good or service is P_1 and the quantity being supplied is Q_1 . This means that total expenditure is equal to the area B+C.

Area B in isolation is referred to as the producer surplus, being defined as the price actually being received by the producer for the good less the minimum price that the supplier is willing to sell at.

The consumer surplus, being the difference between the price being paid and the maximum price that the consumer is willing to pay is area A. Total utility, in this case is equal to the area A+B+C, which can be referred to as an economic measure, while the area B+C is a purely financial measure (as it only reflects actual expenditure).

Finally, total surplus is area A+B. For the purpose of this study we assume B (producers surplus) is included in our financial expenditure calculations outlined in this report, and only make reference to A as an additional Economic Value.

1.4 Information Sources

Most of this report was compiled from available published information. Additional phone surveys of tourist information centres and tourism operators was undertaken for completeness in some areas. Accordingly, the valuation of tourism and recreation has been prepared exclusively from this intelligence.

We have taken a high level approach, which is usual for this type of study. We have also made reference to other study regions where tourism and recreation values have been derived and use this information as a basis for estimated comparisons.

Much of the published information for the Daintree and Fraser Island regions is quite dated, however, we found these sources to be valuable in extrapolating estimates and reinforcing our assumptions.

Due to budgetary constraints, it was not possible to design and implement extensive and specific visitor surveys in the two regions. However, we have used the Douglas Shire Tourism Visitor Survey (TVS) and Tourism Queensland Standard Visitor Survey of the Fraser Coast (SVS) to provide the majority of supporting data that is used in this report.

1.5 Defined Study Areas

1.5.1 The Daintree

The Daintree consists of the coastal region north of the Daintree River extending some 40km to Cape Tribulation.

The area is surrounded by the 17,000ha Daintree River to Cape Tribulation “Daintree National Park”, which is also protected as part of the Wet Tropics World Heritage Area listed in 1988.

The northern section of the Great Barrier Reef World Heritage Area is also adjacent to the Daintree.

The study area has been developed for the purpose of this report and so does not neatly match with statistical divisions or defined areas for the purpose of gathering tourism statistics.

The Daintree is situated within the 2,455 km² Douglas Shire in North Queensland, which comprised an estimated population of 10,801 people at June 2000 (OESR 2001).

In the coastal region, the Daintree National Park is split in several regions by freehold / leaseholds developments. A major subdivision at Forest Creek Road and Cow Bay was established in 1978.

Approximately 350 dwellings exist in the Daintree. The 1996 census indicated that 450 residents lived in the region, although this was estimated to have reached 550 residents in 2000 (Daintree Futures Study 2000).

A 21-vehicle ferry provides transport across the Daintree River about 8km from where the river flows into the sea. The ferry carried 711 vehicles^a per day on average in 2000.

^a This includes all categories of vehicles as indicated within the Ferry Register, ie cars / utilities, buses, trailers, rigid trucks, semi trailers and other machinery.

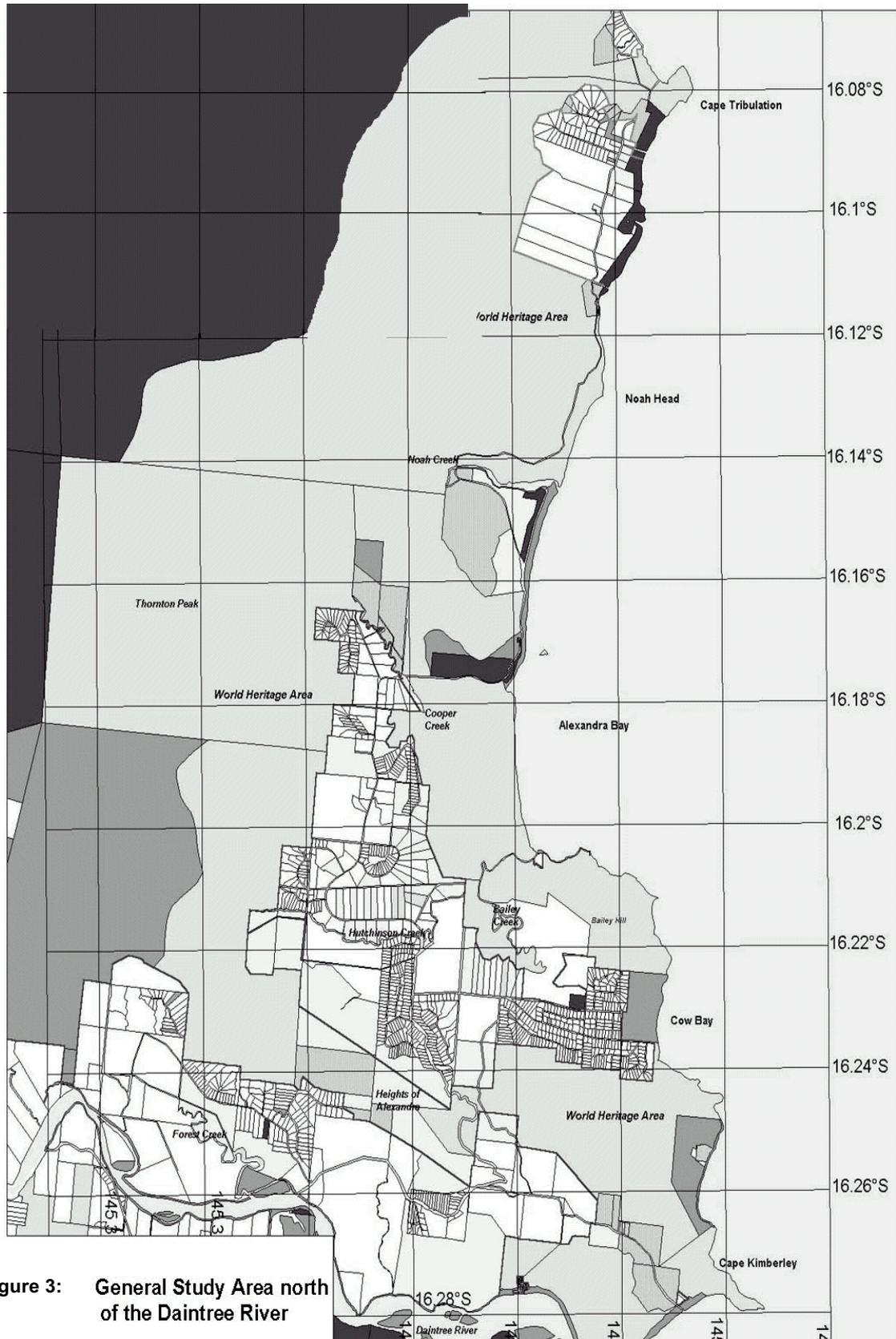


Figure 3: General Study Area north of the Daintree River
 Source: GHD Cairns

Residential sites within this region are mainly situated at Forest Creek Road, Cow Bay, Diwan, Cooper Creek and Cape Tribulation.

Main tourist sites and facilities are located at, Cape Kimberley, Cow Bay, Cooper Creek, Thornton Beach and Cape Tribulation.

The main access road from the Ferry to Cape Tribulation has recently been sealed in its entirety allowing safer access for two wheel drive vehicles.

The Wet Tropics Management Authority is responsible for the management of the Wet Tropics World Heritage Area. The Environmental Protection Agency - Queensland Parks and Wildlife Services (EPA – QPWS) is responsible for managing the protected Daintree National Park.

1.5.2 Fraser Island

Fraser Island is the largest sand Island in the world at 125km long and over 167,000 hectares in area. It was World Heritage listed in 1992.

It is located within the Fraser Coast – South Burnett region, situated adjacent to Hervey Bay and Maryborough in southern Queensland.

Northern Fraser Island is included as part of Hervey Bay city, while southern Fraser Island is included in the city of Maryborough. Fraser Island itself does not neatly match with statistical divisions or defined areas for the purpose of gathering tourism or population statistics.

Approximately 95% of Fraser Island is National Park. Areas that are excluded from this status is a 300 hectare freehold area at Moon Point, the Sandy Cape Lighthouse Reserve, Orchid Beach, Happy Valley and Eurong townships, Kingfisher Bay Resort, Cathedral Beach Camping Area, Dilli Village, and some other smaller areas of human settlement.

Tourism on Fraser Island does not simply impact the Fraser Coast region, but also other major centres, including the Cooloola Coast and Noosa Shire regions that engage in tours to Fraser Island. Tours also come from as far as Brisbane.

Approximately 200 residents inhabit the Island. Access to the Island is predominantly via ferry transport from Hervey Bay as well as Inskip Point north of Rainbow Beach. The main ferry drop off points are located at Moon Point, Kingfisher Bay, Wanggoolba Creek and Hook Point. Independent boat transport to the Island is also quite substantial.

The Island is managed as the Fraser Island Recreation Area, including most of the land on the Island to low water mark, except the townships, some leases and privately owned land.

The EPA – QPWS is responsible for managing Fraser Island.

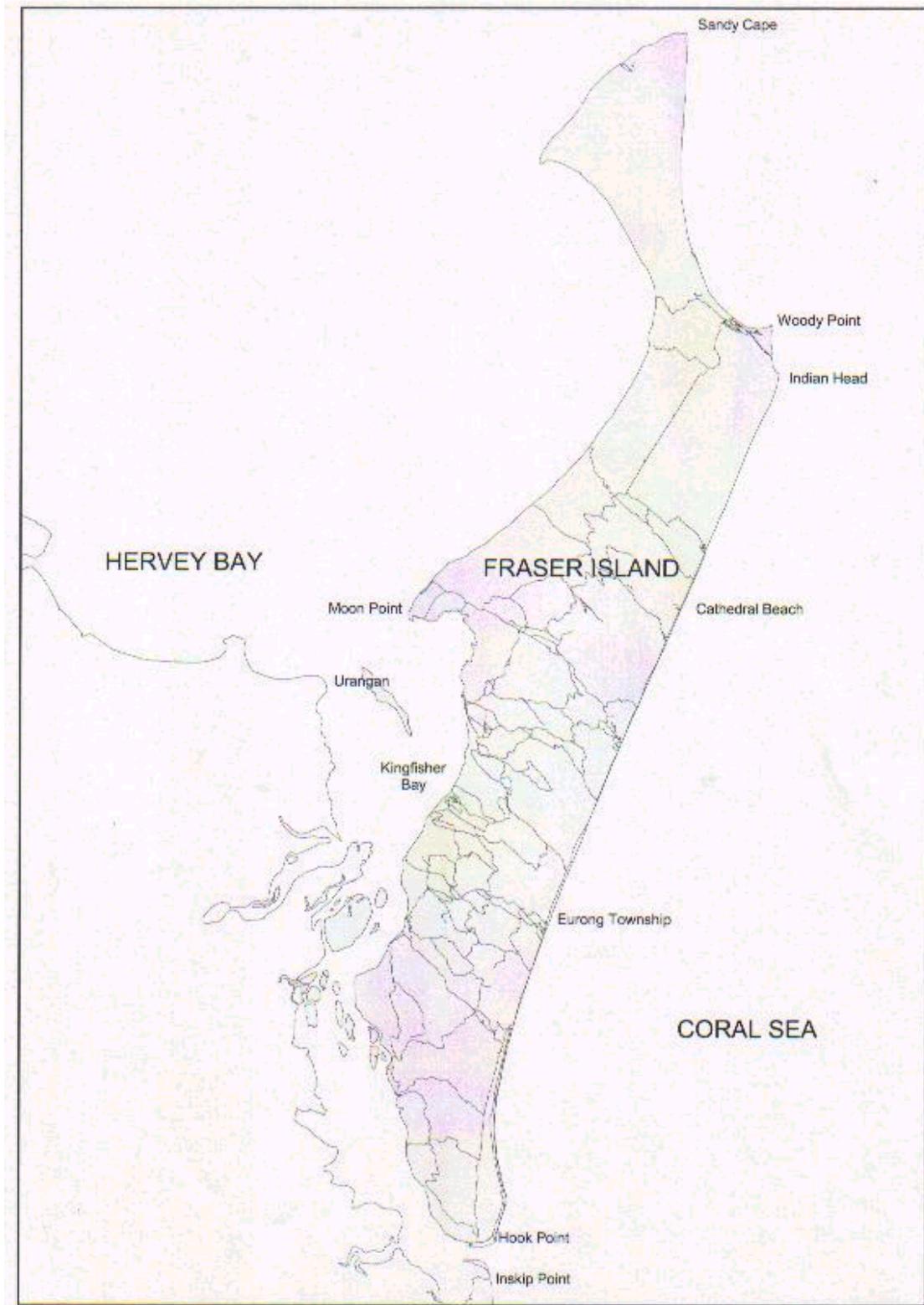


Figure 4: Fraser Island Map
Source: GHD Brisbane

1.6 National & State Perspective's

The following national and state tourism statistics provides comparable information to the regional areas under study. We include these in the study to keep our findings in each of the regions in perspective with state and national levels.

1.6.1 National Perspective

The Australian Tourism Commission indicates that approximately 4.9 million *international visitors* arrived in Australia in the year ending November 2001. The majority of visitors were from north-east and south-east Asia (25%) and Europe (24%). In the year ending June 2000 international visitors stayed an average 26 days and spent \$9.37 billion while here.

The length of stay and spending patterns by international visitors in Australia for the year ending June 2000 is shown below:

Region	Average Length of Stay (days)	Average Expenditure per night in Australia (\$)	Average expenditure per person in Australia (\$)	TOTAL expenditure in Australia (\$b)
Europe	38	69	2,585	2.83
Nth America	27	88	2,359	1.15
Japan	13	114	1,424	0.94
Asia	30	94	2,822	3.14
NZ	15	79	1,168	0.82
World	26	83	2,167	9.37

Source: Bureau of Tourism Research - International Visitors Survey (IVS)

Approximately 72.9 million *domestic visitors* travelled within Australia for the purposes of holidaying, visiting friends or relatives, business and other reasons during 1999.

Domestic visitors over 15 years of age spent 294.3 million nights away from home. The National Visitor Survey for 1998-99 also indicates that 160.3 million daytrips were taken.

1.6.2 Queensland Perspective

A total of 18.3 million visitors arrived in Queensland in the year ending December 1999. These visitors were made up of 16.3 million *domestic visitors* staying 78 million visitor nights or 4.8 nights on average.

It also included 1.95 million *international visitors* staying 24.9 million visitor nights or 12.8 nights on average.

Tourism Queensland (2001) has indicated that visitor expenditure in Queensland is summarised as follows:

-
- Visitor expenditure in Queensland increased from \$3.2 billion in 1985 to \$11.7 billion in 1999.
 - The distribution of visitor expenditure in Queensland over the period was dominated by the four "billion dollar" regions of the Gold Coast (\$2.9 billion), Brisbane (\$2.6 billion), Tropical North Queensland (\$1.9 billion) and the Sunshine Coast (\$1.3 billion). These regions accounted for 74% of all visitor expenditure in Queensland in 1999.
 - Domestic visitors to Queensland regions represented \$9.4 billion or 80% of the total Queensland overnight visitor expenditure in 1999.
 - Some 81% of international visitor expenditure in the State in 1999 was concentrated on the Gold Coast (\$692 million), Tropical North Queensland (\$676 million) and Brisbane (\$552 million).

2.0 *The Daintree*

2.1 Regional Perspective

The Daintree region is situated within the Far North Queensland tourism region. It is approximately 110km by road from Cairns, and approximately 40km north of the regional centres of Mossman and Port Douglas.

The majority of visitors to the Daintree are international visitors and domestic visitors from interstate. A small percentage of visitors come from elsewhere in Queensland. All arrive via self-drive vehicles or as passengers on coaches or with Commercial Tour Operators (CTO's). Almost all (99%) of visitors cross the Daintree River to enter the Daintree.

The Douglas Shire TVS (2000) points out that approximately 54% of Free and Independent Travellers (FIT's) to the Daintree stay the previous night within the Douglas Shire. About 44% stayed in Port Douglas, Mossman or Craiglie, while a further 8% stayed in Daintree Village or Wonga.

Among the 46% of FIT's that stayed the previous night outside the Douglas Shire, 40% came from Cairns and the northern beaches, while only 6% came from further away.

2.1.1 Far North Queensland Tourism Region

The Far North Queensland area had 2.2 million visitors staying 13.5 million visitor nights in the year ending December 2000.

Domestic Visitors

The *National Visitor Survey* conducted by the *Bureau of Tourism Research* for the year ending December 2000 indicates that approximately 1.4 million domestic overnight visitors came to the Far North Queensland region spending 8.0 million nights at an average length of stay of 5.6 days.

The majority of domestic visitors came from elsewhere in Queensland (60%) with the remainder from interstate (40%).

International Visitors

The total number of international visitors to the Far North Queensland region in the year ending December 2000 was 776,893 visitors. This number represented 39% of the total number of international visitors to Queensland over the period.

International visitors spent approximately 5.5 million visitor nights in the region, representing an average length of stay of 7.1 days.

The Far North Queensland region ranks second in Queensland with regard to the amount of international visitation. The majority of visitors came from the UK / Europe (51%), Japan (20%), North America (17%) and Asia (10%).

2.2 Tourism Facilities & Activities in the Daintree

2.2.1 Activities & Tours

There are numerous local tours that are undertaken in the Daintree region. These range from horse riding, river cruises, bushwalking and four-wheel drive tours and adventures. For the purpose of this report such tours are grouped into local “rainforest tours”. Other local tours include fishing tours as well as reef diving and snorkelling tours.

The vast majority of CTO’s in the area offer coach and four-wheel drive safari style tours that arrive from outside the area. These operators are required to pay a commercial access fee to the Environmental Protection Agency – Queensland Parks and Wildlife Service (EPA – QPWS) per passenger to access National Park sites.

Most activities centre on the unique 135 million-year-old rainforest experience and the Daintree-Cape Tribulation Coast where the Wet Tropics and Great Barrier Reef World Heritage Areas exist side by side.

Within the 1997 Douglas Shire Council Tourism Strategy, 45 coach and safari tour operators, and 10 vehicle hire operators were indicated to access attractions within the Douglas Shire.

Driml (1994) indicated a range of commercial operators located within the Wet Tropics World Heritage Area. Those that were specifically located north of the Daintree River were as follows:

Tour Description	Number of tours offered daily	Number of tours offered regularly	Number of companies
Cape Tribulation day tours	30	4	28
Cape Tribulation overnight	5	1	4
Cape York via Cape Trib.	1	34	14
Daintree area Day Tour	7	4	11
Total	43	43	57

Source: Driml (1994)

The EPA – QPWS has indicated that there are currently 47 commercial permits specifically issued for tour operators to access attractions within the Daintree.

This shows a decline and consolidation of the number of tour operators in the region since the early 1990's, although there has been a significant increase in the number of buses operated by these companies.

2.2.2 Tourism Infrastructure

Access to the Daintree is via the Daintree River Ferry that operates from 6:00 am to midnight on a daily basis with visitor traffic peaking predominantly from April to September each year. The cost of a return ticket is \$16.00 per car / utility and varies for buses and other vehicles. Concessions are offered to Douglas Shire residents and their visitors.

Sealing of the Cape Tribulation Road linking the Ferry to Cape Tribulation has recently been completed. The number of self-drive visitors accessing the area has therefore progressively increased with this development. Approximately 40% of total visitors to the Daintree (55% of FIT's) access the area with hire car or four wheel drive.

QPWS day use visitor facilities are available to FIT's and passengers of CTO's at the Alexandra Lookout, Jindalba, Cow Bay, Mardja Botanical Walk, Thornton Beach and Cape Tribulation. Facilities vary from site to site but generally include interpretation structures, walking tracks, picnic areas, toilets and car parks.

The EPA – QPWS is currently investigating the construction of several new walking tracks in the area.

The Daintree Rainforest Environmental Centre is situated at Cow Bay, and there is a Wet Tropics Environment Centre (Bat House) located at Cape Tribulation.

Retail facilities are located at Cow Bay, Diwan (Rainforest Camp) and Cape Tribulation. Fuel is available at Cow Bay and Diwan. An airfield is situated at Cow Bay.

Other retail outlets are associated with the various resorts in the area, although cater mainly to in-house guests.

2.2.3 Accommodation Facilities

There are approximately 20 visitor accommodation establishments located in the Daintree including eight Bed & Breakfasts (B&B's).

The Daintree Futures Study (2000) indicates 1,278 beds are located within the area, specifically, 501 beds are located along the axis from Forest Creek to Thornton Beach with 615 additional beds available in Cape Tribulation area.

A further 1,165 beds are currently approved for accommodation expansions at existing establishments (Daintree Futures Study 2000).

Adjacent to the Daintree, a further seven accommodation establishments are positioned in the Daintree Village area, with another four at Wonga Beach.

A total of 58 establishments and 8,822 beds are available in the Douglas Shire, as indicated in the Douglas Shire Tourism Strategy (1997).

This report also indicates 176 camping sites are located north of the Daintree River comprising 23% of the total camping sites available in the shire. Of these, commercial camping is provided at Cape Kimberley and Rainforest Camp. Limited camping is available at Cape Tribulation.

The EPA – QPWS also operates self-regulated camping sites at Noah Beach. Campers other than those using commercial campsites must purchase a camping permit for each person. The standard National Park fee is \$3.85 per visitor per night, or \$15.40 per family per night.

The Douglas Shire Tourism Visitor Survey (Douglas Shire TVS 2000) indicates that the average cost of accommodation north of the Daintree River per person per night is \$54.00.

2.3 Visitor Trends

The CSIRO undertook the Douglas Shire TVS in six periods, each consisting of one week in July, September and November 1999, May and July 2000 and July 2001. Seven questionnaires were developed in association with tourism industry representatives and a database was developed which gathered and collated more than 12,000 responses.

The study area covered the Douglas Shire including Port Douglas and Mossman, however, site specific information was also gathered for Cape Tribulation, among others. In 2000 FIT data was also specifically gathered for the area north of the Daintree River.

The age of visitors to Cape Tribulation in 2001 as indicated by the survey is shown below:

- Less than 25 years 14%
- 25 – 34 years 20%
- 35 – 44 years 16%
- 45 – 54 years 26%
- 55 – 64 years 17%
- 65+ years 7%

Some 50% of all visitors to Cape Tribulation were under 44 years of age in 2001. Approximately 34% were under 34 years of age. In fact, Cape Tribulation is well renowned as a destination for “backpackers”.

Three backpacker-type accommodation establishments are located at Cape Tribulation, with one located at Cow Bay and several tour operators specialise in bringing this particular market to the area.

The survey also indicates that the percentage of visitors staying in four to five star accommodation has decreased in Cape Tribulation since 1999, while the number of visitors staying in three to four star and budget accommodation has increased from 1999 to 2001.

More international visitors (53%) travelled to Cape Tribulation than interstate visitors (41%). Only 6% of visitors to Cape Tribulation were from elsewhere in Queensland.

The Douglas Shire TVS (2000) survey of FIT’s indicated that visitors travelled to the Daintree Rainforest, north of the Daintree River specifically for the following reasons:

- Scenery / views 89%
- Rainforest 87%
- Cape Tribulation 80%
- Fact that this is a World Heritage Area 49%
- Wildlife 30%
- Getting away from people 27%
- Remoteness / isolation 20%
- 4WD experience 8%
- On the way to Cooktown / Cape York 8%
- Other 14%

Additional, the Douglas Shire TVS (2001) survey indicated the following visitor trends for the Douglas Shire overall:

- The amount of visitors booking accommodation through the Internet increased by 8% from July 1999 to July 2001.
- The average room cost increased steadily over the three-year period from \$116 in July 1999 to \$147 in July 2001. All other expenditure patterns remained fairly consistent over the three-year period.
- The mean spending on shopping in the region fell from \$32 in July 1999 to \$26 in July 2001.
- In 1999, 13% of visitors thought there was too much accommodation in the region, increasing to 20% in 2000 and 21% in 2001.

- Also in 1999, 37% of visitors thought there was a need for more walking tracks, increasing to 40% in 2001.
- Finally, more tour visitors north of the Daintree River were willing to pay more toward rainforest protection than tour-visitors to Mossman Gorge.

2.4 Visitor Numbers

In this section we estimate the number of visitors to the Daintree region for the purpose of tourism and recreation. We then calculate the total number of “visitor days” in the area taking into account the length of stay of overnight visitors. The measure of visitor days will form the basis of Financial Value calculations detailed in section 2.7.

No data collection system is presently in place to measure the number of visitors to the Daintree. However, the Douglas Shire Council has regularly kept records of one way vehicular movements on the Daintree River Ferry crossing the Daintree River.

Our methodology therefore involves estimating passenger numbers carried across the Daintree River.

2.4.1 Estimated Visitor Numbers

The number of one way vehicle movements across the Daintree River lodged on the Daintree River Ferry Register from January 1997 to December 2000 is shown below:

Number of One-Way Vehicular Movements – Daintree River					
Year	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Total
1997	40,367	57,175	74,093	71,958	243,593
1998	37,067	64,489	84,612	68,296	254,296
1999	49,143	64,954	94,193	69,348	277,638
2000	42,541	63,895	95,369	57,684	259,489

Source: Douglas Shire Council, 2001

We have assumed a vehicle / visitor number multiplier of 1.68, indicating that each vehicle registered as crossing the Daintree River contains within it an average 1.68 visitors who will engage in tourism and recreation in the Daintree. This is based on the following assumptions:

- A number of register items have been factored out such as trailers and earth-working machinery including graders, scrapers, backhoes, loaders, in addition to trucks and trailers counted as normal fee carrying items for council purposes.

- Cars of Douglas Shire residents and their visitors (determined by concession vouchers) comprised 30% of vehicular traffic in 2000. We have assumed that only one third (10%) of these residents do not engage in recreation or tourism pursuits, north of the Daintree River.
- Cars comprise approximately 50% of vehicular traffic across the ferry. It is assumed on average each car has 2.5 occupants.
- Bicycles, pedestrians and motorbikes in the majority of cases will only be carrying one passenger.
- Buses comprise 4% of the vehicular traffic. The number of passengers carried on buses have been determined as follows:
 - counting the minimum number of allowable passengers defined by their council classification, which include 6-8 seater, 9-10 seater, 11-15 seater, 16-20 seater, 21-25 seater, and 26+ seater buses (we assume 30 seats).
 - applying an average monthly capacity of 35% allowing for seasonal fluctuations (based on actual visitor numbers on commercial tours supplied by the EPA - QPWS).

Multiplying the total vehicular count for the years 1997 to 2000 by the vehicle / visitor multiplier of 1.68 we derive an estimate of visitor numbers to the Daintree over the last four years:

Year	Estimated number of visitors
1997	409,236
1998	427,217
1999	466,432
2000	436,144

Our visitor estimate for 2000 is also in line with the estimate of 426,369 visitors as detailed in the Daintree Futures Study (2000).

2.4.2 Estimated Visitor Days

An allowance must be made for the number of days visitors spend in the Daintree region per visit, as overnight visitors would spend more than one day in the region.

Calculation of visitor days provides the foundation with which to determine the Financial Value of the Daintree region from tourism and recreation use.

An indication of the total number of day-trippers and overnight visitors to the Daintree could not be determined from the Douglas Shire TVS.

However, we have made an assumption that 70% of visitors to the Daintree are in fact day-trippers and 30% are overnight visitors. We have based our decision on the following evidence:

- Cummings (1991) reported that nearly 77% of vehicular traffic across the ferry in 1991 comprised day-trippers, indicating there were 172,400 day-trippers and 50,700 overnight visitors.
- GHD (1998) outlined that in 1996 / 97 some 358,000 visitors crossed the Daintree River, consisting of 258,200 day-visitors (72%) and 99,800 overnight visitors (28%).
- The Daintree Futures Study (2000) estimates, (using the average annual growth rate from 1991 to 1996 / 97) that 299,138 day-trippers (70%) and 127,231 overnight visitors (30%) visited the Daintree in 1999.

These results point out that the estimated number of overnight visitors has been increasing at a faster rate than the estimated number of day-trippers over recent years. This is reflected in the large increase in construction of accommodation particularly in Cape Tribulation since 1991.

The Douglas Shire TVS (2000) identified that the Average Length of Stay (ALS) for overnight visitors north of the Daintree River was approximately 3.8 days in 2000. This includes an average 2.5 days in primary accommodation and a further 1.3 days in other accommodation in the area.

The Daintree ALS is significantly lower than that of the Port Douglas region, from which the majority of survey responses were taken in 2001. The survey indicated that the whole Douglas Shire has an average length of stay of 7.2 days in primary accommodation.

The number of visitor days spent in the Daintree region, using 2000 visitor estimates, is therefore estimated to be approximately **802,500 visitor days** as detailed below:

Type of Visitor	Estimated % of total visitors	Visitor Numbers	Visitor Days
Day-tripper	70%	305,300	305,300
Overnight visitor @3.8 days	30%	130,844	497,207
Total	100%	436,144	802,507

This estimation should be considered as a close approximation only because it is dependent on an estimation of the number of day-trippers and overnight visitors to the region.

2.5 Visitor Characteristics

2.5.1 Visitor Days by Type of Visitor

The Douglas Shire TVS shows that a larger number of visitors on commercial tours visited Cape Tribulation in 2000 compared to the number of FIT's.

However, the EPA - QPWS estimates the number of passengers on commercial tours into the Daintree study region was 130,000 in the 2000 / 01 financial year. This represents only 30% of all visitors to the region.

An estimation of the number of visitor days in the Daintree by type of visitor is therefore given below:

Type of Visitor	Estimated % of total visitors	Visitor Numbers	Visitor Days
FIT	70%	305,300	561,750
Commercial Tour	30%	130,843	240,750
Total	100%	436,144	802,500

Interestingly, the survey results depict a large proportion of FIT's do not filter through to Cape Tribulation, indicating areas such as Cape Kimberley and Cow Bay may be as far as visitors go to experience the Cape Tribulation - Daintree Coast.

2.5.2 Visitor Days by Type of Accommodation

Approximately 50% of domestic visitors to the Far North Queensland region stay in commercial accommodation (TTNQ 2001).

This percentage is substantially higher in the Daintree, which has 20 commercial establishments of various types including resorts, backpacker lodges and B & B's from budget to two to three star, and four to five star classes.

The Douglas Shire TVS (2001) details that 95% of overnight visitors stayed in commercial type accommodation at Cape Tribulation. Some 5% stayed in "other" types of accommodation.

Assuming this figure for the whole of the Daintree, the number of visitor days (nights) split between commercial and "other" accommodation follows:

Type of Accommodation	Estimated % of total visitors	Overnight Visitor Numbers	Visitor Nights
Commercial	95%	124,302	472,347
Other	5%	6,542	24,860
Total	100%	130,844	497,207

The majority of “other” type accommodation visitors in the Daintree are campers. Self-registration campers recorded at Noah Beach in 1999 stayed 6,000 visitor nights. We estimate current camping visitors are in the order of 5,000 per annum staying some 19,000 visitor-nights.

2.5.3 Visitors by Place of Origin

Roughly 53% of all visitors to Cape Tribulation are international visitors, while 41% are domestic interstate visitors and a further 6% are Queensland visitors (Douglas Shire TVS - 2001).

For comparative purposes, the National Visitor Survey (2000) indicates that the whole Far North Queensland region attracts a smaller number of international (35%) and interstate visitors (25%) than the Daintree (as a proportion of total visitors).

Again, using the Cape Tribulation statistics as the basis of calculation for the whole Daintree region, the annual number of visitors by origin is estimated below:

Origin of Visitor	Estimated % of total visitors	Estimated Visitor Numbers
International	53%	231,157
Interstate	41%	178,819
Intrastate	6%	26,168
Total	100%	436,144

2.6 Expenditure Data

The most relevant measure of Financial Value for the Daintree is the gross expenditures by visitors upon tourism and recreation goods and services in the area.

In this section we firstly review the average daily spend of visitors within the context of the Far North Queensland region and the state, and then estimate visitor expenditure within the Daintree.

2.6.1 Regional Expenditure

Visitor expenditure in the Far North Queensland region over the last 15 years has been third highest in the state behind the Gold Coast and Brisbane tourism areas.

As a percentage of total state spending, visitor expenditure has increased from 11% in 1985 to 16% in 1999, increasing from \$341 million to \$1,856 million.

Visitor spend has increased considerably in all categories, although at a greater rate amongst international visitors, as show below:

Visitor expenditure	1985	%	1999	%
International	\$33 million	10%	\$676 million	36%
Interstate	\$207 million	61%	\$742 million	40%
Intrastate	\$101 million	29%	\$439 million	24%
Total	\$341 million	100%	\$1,856 million	100

Source: Office of Economic and Statistical Research, May 2001

Visitors spent a total of \$1.856 billion in the Far North Queensland region over 13.5 million visitor nights. Utilising this data, the 1999 average spend per visitor day to the Far North region was therefore \$137.54.

We use this figure to calculate the additional financial value of tourism and recreation in the Daintree, outlined in section 2.7.2.

Calculating the average total spend for the state using the same method, we find that the average Queensland visitor expenditure per person per night in 1999 was \$119.22. This therefore indicates that visitor spending within the Far North Queensland region was much higher than the state average in 1999.

2.6.2 Expenditure in the Daintree

The Douglas Shire TVS (2000) provides estimates on the mean spend per visitor per night on accommodation, food and beverages, car hire, tours and shopping north of the Daintree River. We have also conducted an additional phone surveys of tour operators frequenting the region.

We are therefore able to derive the average spend per visitor day within the Daintree region in terms of the following visitor categories:

Visitor Category	Mean Spend / Day	Estimated % of Visitors	Expenditure per Visitor Day
Visitors on Commercial Tours	\$123.00	100%	\$123.00
Free & Independent Travellers			
- food and beverage (day)	\$24.00	100%	
- car or 4WD hire	\$81.00	55%	
- fuel	\$30.00	100%	
- shopping & incidentals	\$13.00	66%	\$107.00
Overnight Visitors in Commercial Accommodation			
- room cost	\$54.00	70%	
- evening food & beverage	\$25.00	70%	\$55.00
Camping Visitors	\$30.00	100%	\$30.00
Local Tours			
- rainforest tours	\$32.00	36%	
- fishing tours	\$45.00	4%	\$51.50*
- diving / snorkelling tours	\$91.00	42%	(*Per Visitor)
Daintree Ferry		100%	\$3.70

Sources: (1) Douglas Shire Tourism Visitor Survey 1999 – 2000, (2) Cairns and Port Douglas Tourist Information Centres (3) Douglas Shire Council

The above expenditure data is based on the following key assumptions:

Visitors on Commercial Tours

The expenditure associated with CTO's that access the attractions within the Daintree is estimated to be \$123.00 per visitor day, covering tour, overnight accommodation and food and beverage costs. This is derived from a sample survey of current tour operators leaving from Cairns and Port Douglas (February 2002).

The sample covers a range of small to large four wheel drive and bus tours, as well as motorbike, bicycle and other off-track tour operators offering day and overnight safari style tours in the region.

Free & Independent Travellers

FIT's expenditure of \$107.00 per visitor day is based on the Douglas Shire TVS (2000) covering food and beverage, hire vehicle and shopping costs. Approximately 55% of FIT's hire cars or four-wheel drive vehicles, comprising 80% of international visitors and 60% of domestic visitors surveyed.

Expenditure on fuel (\$30 per visitor day) is based on costs of 79 cents per litre and assuming an average usage of 12 litres per 100 kilometres. An allocation for visitors arriving from Cairns and Port Douglas is also made.

Visitors in Commercial Accommodation

The expenditure associated with visitors in commercial accommodation (\$54.00) is based on the average room cost per visitor day as indicated in the Douglas Shire TVS (2000). We have also estimated that an additional \$25 per person per night is spent on evening food and beverage.

We assume that 30% of overnight visitors in commercial accommodation are associated with commercial tours and that this cost is included in the “visitors on commercial tours” category above. The additional overnight spend per visitor day is therefore \$55.00.

Camping Visitors

The average spend of \$30.00 per visitor day for campers in the Daintree is based on an estimate by Kinhill Economics (1998) for campers in south-east Queensland National Parks. This spend includes additional costs that are not included in the FIT category above, such as site fees, EPA-QPWS permits, and an allocation for equipment expenses.

Local Tours

The expenditure by all visitors on local tours (\$51.50) is based on the Douglas Shire TVS (2000). This covers local rainforest tours, fishing tours and trips to the reef to either dive or snorkel. The mean price per day of all tours is also assumed to cover day tours, half-day tours, evening tours and extended tours. This is expressed as a cost per visitor.

Daintree Ferry

The expenditure on ferry transfers across the Daintree River is estimated to be in the order of \$3 million per annum, based on 2000 vehicle statistics and prices provided by the Douglas Shire Council, shown below:

Visitor Category	Ferry Fee per Vehicle – Return* (\$)	Estimated Total Revenue (\$)
Car / utility	\$14 -16	\$1,740,000
Tour buses	\$18 - \$72	\$1,000,000
Other buses & passengers, bicycles & motorbikes	\$2 - \$11	\$71,000
Trailers, rigid trucks, semi trailers and other equipment	\$6 - \$33	\$146,000
Total		2,960,000

Source: Douglas Shire Council

* Fees increased from 1 July 2000

This equates to expenditure of \$6.79 per visitor or \$3.70 per visitor day.

2.7 Financial Value

2.7.1 Direct Financial Value of the Daintree

The Direct Financial Value for the Daintree is estimated from the gross expenditure associated with visiting it.

Combining the above expenditure data and the estimated number of visitor days per visitor category to the region, the annual total direct expenditure in the Daintree is estimated to be in the order of **\$141.7 million**.

A break down of expenditure per visitor category is shown below:

	Ref	Factor	\$
Commercial Tour Passengers:			
Spend per visitor day		123.00	
Total visitor days	2.5.1	<u>240,750</u>	29,612,250
Free & Independent Travellers:			
Spend per visitor day		107.00	
Total visitor days	2.5.1	<u>561,750</u>	60,107,250
Plus additional expenditure:			
<i>Commercial Accommodation:</i>			
Additional spend per visitor night		55.00	
Total visitor nights	2.5.2	<u>472,347</u>	25,979,085
<i>Campers:</i>			
Additional spend per visitor night		30.00	
Total visitor nights	2.6.2	<u>19,000</u>	570,000
<i>Local Tours:</i>			
Additional spend per visitor		51.50	
Annual number of visitors	2.6.1	<u>436,144</u>	22,461,416
<i>Ferry Transfers:</i>	2.6.2		<u>2,960,000</u>
Total Direct Use Value			<u><u>141,690,001</u></u>

This estimate represents approximately 7% of the total visitor expenditure in the Far North Queensland region (\$1.85 billion in 1999).

At 802,000 estimated visitor days to the Daintree region the average spend per person to the area is approximately \$176.00 per visitor day.

2.7.2 Additional Financial Value

Although we are primarily concerned with expenditure on tourism and recreation within the Daintree region, we must make some allocation of the expenditure by tourists in adjacent regions that is directly attributable to visiting the Daintree. Other authors including Driml (1997) and Cummings (1992) also address this.

The Douglas Shire TVS (2000) indicates visitors north of the Daintree River spent a further two nights on average in commercial accommodation elsewhere within North Queensland.

In the calculation of additional financial value attributed to Daintree tourism and recreation we make the following assumptions:

- that an extra two days (and two nights) is spent in commercial accommodation within Far North Queensland;
- importantly, additional expenditure is not just on accommodation but includes total visitor expenditure within the two day period;
- additional expenditure per extra day is based on the 1999 average visitor spend within the Far North Queensland region of \$137.50 per visitor night.
- The extra two nights applies to 90% of international visitors and 60% of domestic visitors (based on visitor estimates to commercial accommodation in the Far North Queensland region in 2000 - TTNQ).

Estimated additional time spent in Far North Queensland is therefore approximately **662,000 visitor days** shown below:

Type of Visitor	Estimated % staying in other com accom.	Visitor Numbers	Additional Visitor Days @ avg 2 days
International	90%	208,041	416,082
Domestic	60%	122,992	245,984
Total	-	331,033	662,066

At an average spend per visitor per day of \$137.50 an **Additional Financial Value of \$91.03 million** would be generated in the process of visiting the Daintree region.

2.7.3 Regional Multiplier Effects

Visitor expenditures within the Daintree creates new incomes and outputs in the region which in turn produce further expenditures and incomes within the regional economy.

A multiplier is used to estimate the regional economic impacts resulting from direct expenditure associated with tourism and recreation trips to a site or destination.

The size of a multiplier reflects the impact of various rounds of re-spending of tourism dollars before these dollars leak entirely from the region. It is dependent on the size and complexity of a region and in

general is reduced the smaller and less economically diversified the region is.

After much consideration we have adopted an established multiplier developed by Driml (1997) of 1.7 which was used to estimate the flow on effects of visitor expenditure in the Wet Tropics World Heritage Area on the Cairns and Townsville regions.

We have previously estimated that the value of direct spending to the local economy is \$141.69 million. The indirect flow on effects to the rest of the regional economy using the multiplier of 1.7 would be an additional \$99.18 million.

With additional expenditure of \$91.03 million spent elsewhere in North Queensland in the process of visiting the Daintree, the additional flow on effects to the regional economy would be an additional \$63.72 million.

The total direct and indirect output effects of tourism and recreation in the Daintree on the regional economy is therefore **\$395.6 million**, shown below:

Expenditure Category	Direct Financial Value (million)	Multiplier Value	Indirect Financial Value (million)	Total Financial Value (million)
Daintree region	\$141.69	1.7	\$99.18	\$240.87
Additional two nights in FNQ region	\$91.03	1.7	\$63.72	\$154.75
Total	\$232.72	1.7	\$162.9	\$395.62

Employment

We can further consider the regional employment that is created from tourism and recreation expenditure in the Daintree. Expenditure in the region by both visitors and government agencies on tourism maintenance would contribute directly and indirectly to employment within the region.

From a review of various sources including Cummings (1992) and Gillespie Economics (1997) we have assumed that the number of direct and indirect jobs created from Daintree tourism is approximately four to eight jobs per 1,000 visitors.

With some 436,144 visitors to the area, we can indicate that potentially up to 3,489 jobs are created within the Far North Queensland region from tourism and recreation in the Daintree.

2.7.4 State & National Perspective

On a specific regional level, economic multipliers are based on input-output analysis used to measure the dissemination of demand throughout the regional economy among many different industry sectors, from the impact of expenditure on tourism and recreation.

The economic contribution of Daintree tourism to the state and national economies is quite a complex exercise and one that could not be easily determined within the scope of this study.

Madden et al (2000) indicates that while input-output models may be suitable for long-run analysis of small regions they are not suitable for the analysis of nations or very large regions and that General Equilibrium Modelling is a better measure.

There has only been a handful of such studies undertaken in Australia to measure the effects of tourism in regions on the state and / or national economies. One such study was undertaken by Knapman et al (1990) that analysed the regional economic impacts of Kakadu tourism on sectors of the Northern Territory economy. These included real gross NT product, employment, real disposable income, real consumption, real investment and government revenue.

It is beyond the scope of this study to establish such a comparable model. Raw data required for the Daintree region to be used as the basis for this type of model is extensive and was not collected as part of this study.

We have already estimated the likely regional economic impact of Daintree tourism and recreation, and can only estimate that the likely magnitude of such impacts to the state and national economies would exceed the regional value when taking account of state and national transactions.

2.8 Economic Value – Non-Use value

There are obviously many other values that the Daintree holds apart from its worth as a tourism and recreation destination.

Contingent valuation measure both use and non-use values, however it is one of the only ways to assign dollar values to non-use values of the environment. Such values do not involve market purchases and may not involve direct visitor participation.

These values are also known as “passive use” values. They include everything from the basic life support functions associated with the health of the ecosystem and its extensive bio-diversity, to spiritual replenishment and simple enjoyment of the visual amenity or wilderness experience.

It also covers the Daintree’s potential as a testing ground for technologies (severe environment), bio-medical and pharmacology research, and carbon sequestration. The Daintree also holds great iconic value worldwide and many of its natural icons (ie, licuala palm leaves) are used in regional marketing efforts.

Additionally, non-use values also extend to appreciating the option to visit the Daintree in the future, or the right to bequest those options to future generations. It also includes the value people place on simply knowing that its protected rainforests exist.

It is clear that people are willing to pay for non-use, or passive use environmental benefits. However, these benefits are likely to be implicitly treated as zero unless their dollar value is estimated.

The economic valuation methodology used to measure a visitor’s “willingness to pay” is the Contingent Valuation Survey. Since people do not reveal their willingness to pay for non-use values through their purchases or by their behaviour, this survey estimates value by asking visitors questions.

The Douglas Shire TVS (2001) conducted a Contingent Valuation Survey as part of its three-year visitor survey process (1999 – 2001). The CSIRO surveyed independent visitors at the Daintree Ferry and asked what amount they were willing to pay over and above the ferry price per vehicle to enter the Daintree.

The difference is a measure of the economic benefit the region holds to individuals, and is described as the consumer surplus. This is graphically represented by the area under the demand curve for a good, above its market price (cost of the ferry crossing).

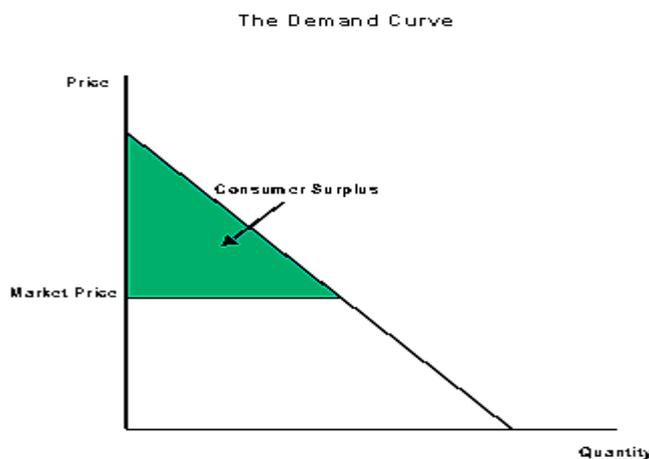


Figure 5: Consumer Surplus
Source: Ecosystem Valuation Web-site

The Daintree Futures Study (2000) undertook an in-depth analysis of the 1999 survey results, and estimated the consumer surplus per self-drive vehicle to the Daintree. The Daintree Futures Study interpreted the results to indicate use values, that is the value people put on the experience they expected to get from visiting the area.

Nevertheless, the survey provides non-market valuation of FIT access to the area north of the Daintree River, which we can also interpret to indicate non-use values, or the value visitors put on the protection of the Daintree.

The results of the 1999 survey indicated the willingness to pay for specified one way ferry tickets. This was tabled in the Daintree Futures Study as follows:

Price for a one-way ferry ticket (\$)	Proportion of visitors willing to pay this price or more (%)
100	4
70	8
50	19
40	25
30	36
25	43
20	54
15	67
10	85

Source: Daintree Futures Study (2000)

The table indicates that at higher costs of ferry access per vehicle less visitors are willing to pay for access at that price. At the time of the survey the ferry price was \$7 per one way trip. The difference between \$7 and the indicated one way prices above enabled the researchers to construct of a hypothetical demand curve and estimate a consumer surplus of \$40 per tourist self-drive vehicle (return trip).

There were approximately 110,000 full paying car ferry crossings in 1998 / 99 indicating the associated consumers' surplus covering all FIT's was approximately \$4.4 million. This value represents an Economic Value to the Daintree associated with FIT's only and does not take into account other visitors.

In conclusion The Contingent Valuation Method constructs a hypothetical market to elicit respondents' willingness to pay so it is therefore sensitive to numerous sources of bias in survey design and implementation.

Many authors in Australia have also estimated the consumers' surplus associated with various National Parks and state forest with a high degree of disparity between regions.

Additionally, we understand that the problems associated with developing dollar estimates of economic value on the basis of how people respond to hypothetical questions about hypothetical market situations are debated constantly in economics literature.

However, it is important to note that the above value is useful to illustrate that the non-market values of visits to the Daintree can be quite considerable when stated in monetary terms.

2.9 Total Economic Value

Total Economic Value therefore sums the direct financial expenditures to participate in nature related activities in the Daintree and the willingness to pay over and above these expenditures for the enjoyment (or protection) of these activities.

It is a greater measure of how important the Daintree is to visitors. Thus, Total Economic Value is the sum of all the relevant use and non-use values for the Daintree.

On the basis of all the foregoing we calculate the present Total Economic Value from leisure tourism to the Daintree at approximately \$400 million per annum summarised as follows:

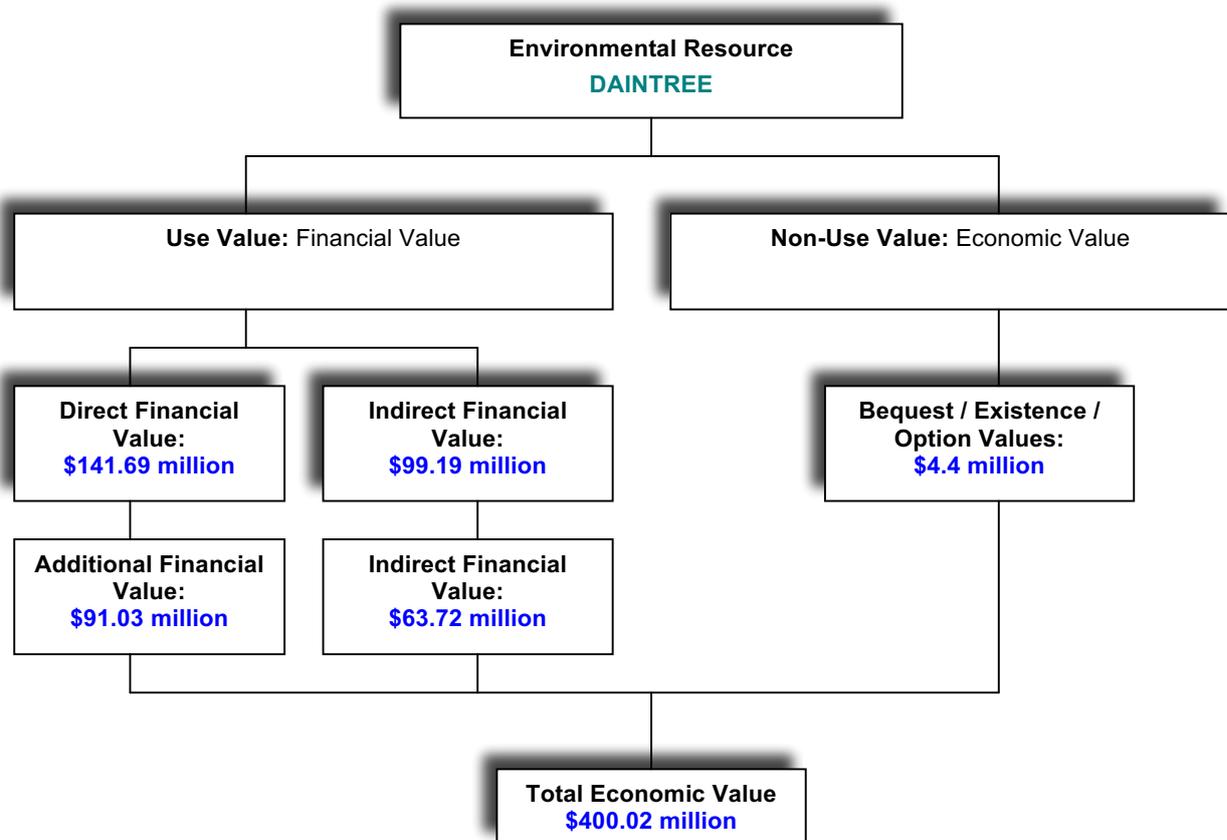


Figure 6: Total Economic Value – The Daintree

3.0 Fraser Island

3.1 Regional Perspective

Fraser Island is situated within the Fraser Coast (Hervey Bay / Maryborough) tourism region.

Hervey Bay is the principal region of departure for day visitors to the Island, however, a large proportion of day visitors also depart from Rainbow Beach located on the Cooloola Coast within the Cooloola Shire.

A smaller percentage of visitors to Fraser Island also depart from Noosa within the Noosa Shire. Noosa and Cooloola Shire's are both located within the Sunshine Coast tourism region.

The Department of Environment (1998) states that for day visitors alone, 64% of passengers arrived from Hervey Bay, indicating that a further 36% of passengers arrived from the Rainbow Beach and Noosa regions.

It is estimated that Noosa is the stepping off point for approximately 20% of day-trippers to Fraser Island.

Rainbow Beach is the most southern access point to Fraser Island for travellers from Brisbane as well as elsewhere in southeast Queensland and interstate. It is estimated that approximately 60% of Free and Independent Travellers (FIT's) to Fraser Island depart from Rainbow Beach and use the vehicular ferry access from Inskip Point.

3.1.1 Fraser Coast Tourism Region

The Fraser Coast area had approximately 1.2 million visitors staying some 4.7 million visitor nights in the year ending December 2000.

Domestic Visitors

The *National Visitor Survey* conducted by the *Bureau of Tourism Research* for the year ending December 2000 indicates that a total number of 1.1 million domestic visitors arrived in the Fraser Coast region.

Domestic visitors spent a total number of 3.9 million visitor nights at an average length of stay of 3.8 days. About 85% of visitors came from within Queensland (41% from Brisbane) and the remaining 15% came from interstate.

International Visitors

The total number of international visitors to the Fraser Coast region in 2000 was 189,378. This figure represented 10% of the total number of international visitors to Queensland over the year.

The number of visitor nights spent in the region by international visitors in 2000 was 802,000 nights, or 4.2 days on average.

Some 30% of all international visitors to the Fraser Coast came from the United Kingdom, 11% came from Germany, 8% from the United States, and 4% came from New Zealand and Canada.

3.1.2 Sunshine Coast Tourism Region

The Sunshine Coast area had approximately 2.6 million visitors staying some 12 million visitor nights in the year ending December 1999.

Domestic visitation to the Sunshine Coast as indicated by the *National Visitor Survey* is summarised as follows:

- 2.4 million domestic visitors arrived in the year ending December 1999.
- Domestic visitors spent a total number of 10.4 million visitor nights at an average length of stay of 4.3 days.
- The majority of visitors were intrastate visitors accounting for some 1.7 million visitors. Approximately 700,000 were interstate visitors.
- The main purpose of travel to the region was for holiday and leisure (64%), to visit friends and relatives (28%) and for business (7%).

International visitation to the Sunshine Coast is described below:

- In 1999, approximately 199,000 international visitors came to the Sunshine Coast region, spending 1.6 million visitor nights at an average length of stay of 8.3 nights.
- The greatest number of international visitors came from New Zealand, the UK, USA and Germany for the main purpose of holiday and leisure (76%) and to visit friends and relatives (16%).

3.2 Tourism Facilities & Activities on Fraser Island

3.2.1 Activities & Tours

There are approximately 22 tour operators that frequent Fraser Island. They offer different length tours largely revolving around day trips, accommodated and camping safaris (based on appreciating the Island's natural values) and four-wheel drive adventures.

The tours that are operated from the three main Island resorts located at Kingfisher Bay, Happy Valley and Eurong account for over half of the volume of passengers on all tours.

These operators also provide extended tours associated with whale watching during the whale season in Hervey Bay in spring.

The number and type of tours that depart from Hervey Bay, Rainbow Beach and Noosa are shown below:

Tour Departure	Number of day tours	Number of 2 day tours	Number of 3+ day tours	Number of companies
Hervey Bay	4	3	12	15
Rainbow Beach	1	2	0	1
Noosa.	5	1	1	6
Total	10	6	13	22

Additionally two air charter companies offer charter flights to Fraser Island. One further company offers day tours from Brisbane.

Tour operators on Fraser Island can also operate under a Temporary Tour Operators Licence, where one trip per month is allowed. It is estimated that the number of passengers on these particular tours is less than 5% of total tour passengers. The Environmental Protection Agency – Queensland Parks & Wildlife Service (EPA – QPWS) estimate that there are only seven to 10 applicants for these permits each year.

Tours on Fraser Island take advantage of the its many natural wonders, including World Heritage rainforest, creeks and various lakes. Popular activities include swimming, surfing, yachting and beach fishing.

The Island has a great amount of bio-diversity of interest to visitors as it is home to over 360 species of birds along with a variety of mammals, wallabies, snakes, possums, turtles and flying foxes.

3.2.2 Tourism Infrastructure

Fraser Island has three major resorts located at North White Cliffs (Kingfisher), Eurong and Happy Valley, as well as smaller resorts located at Cathedral Beach and Dilli Village.

The Island also has facilities for campers, four-wheel drive travellers and bushwalkers, including some dozen walking tracks situated throughout the Island.

Information Centres are located at Central Station, Eurong National Parks and Wildlife Office, Waddy Point and Dundubara. The resorts and stores on the island also provide visitor information.

General stores are located at Cathedral Beach Camping Park, Orchid Beach, Eurong Beach Resort, Happy Valley Resort and Kingfisher Bay Resort and Village. Fuel is available at Eurong Beach Resort, Happy Valley Resort, Kingfisher Bay Resort and Village, Orchid Beach and Cathedral Beach Camping Park.

Three ferries operate from Inskip Point approximately 12 kilometres north of Rainbow Beach. Vehicles and passengers are dropped off at Hook Point. The introduction of a competitor ferry on the route has currently reduced the cost of crossings to \$25 (February 2002).

Barges also leave for Fraser Island several times per day from Hervey Bay to three different location including Wanggoolba Creek, Kingfisher Bay Resort and Moon Point. Travelling times range from 20 minutes to 45 minutes. Cost of travel is currently \$82 per vehicle (and driver) and \$5.50 per passenger (February 2002).

The largest resort on the Island also transfers a large number of their passengers via fast catamaran.

3.2.3 Accommodation Facilities

We estimate there is close to 600 commercial rooms available on Fraser Island, including resort and hotel rooms, units and apartments as well as a significant number of private rental houses. It is estimated that such accommodation provides approximately 3,000 beds on the Island. This does not take into account staff accommodation.

Approximately 1,000 visitor beds are estimated to be available at Orchid Beach, Waddy Point and Indian Head.

The remaining visitor beds are located within the Islands main resorts at Eurong Beach, Happy Valley, and Kingfisher Bay, in addition to rental accommodation at Cathedral Beach, Dilli Village, The Oaks, Yidney Rocks and Poyungan Valley.

There are also eight main camping areas on Fraser Island, the EPA – QPWS manages six, and two are operated privately. Beach camping is permitted along sections of the east and west coasts, although a permit is still required.

The number of visitors staying overnight on Fraser Island is spread fairly evenly between camp-sites (53%) and commercial rooms (47%).

The Office of Economic & Statistical Research (OESR) undertook a survey of tourist accommodation in the Hervey Bay / Maryborough region in March 2001 that covered licensed hotels, motels, guest houses with facilities, and serviced apartments with 15 or more rooms / units.

The survey found that the average room rate in the region was \$76 and the average cost of accommodation per person per night was approximately \$40.

A sample telephone survey of accommodation on Fraser Island revealed the average cost of accommodation on the Island is substantially higher than the Fraser Coast average at \$69 per person per night.

3.2.4 Permits

All vehicles travelling to Fraser Island (other than those on official work) need to obtain an official permit issued by the EPA-QPWS. The current cost of this permit is approximately \$30.00 if prepaid, and \$40.00 after arrival on the Island.

Campers other than those using commercial camp-sites also must arrange for a camping permit for each person. The standard National Park fee is \$3.85 per visitor per night, or \$15.40 per family per night.

Commercial Tour Operators (CTO's) are also required to pay commercial operator permits as well as \$5.00 per passenger to the EPA-QPWS. We assume this is passed on to visitors in the price of the tours.

Fees raised by permits yield in excess of \$3.4 million annually for the EPA-QPWS (2000/01), which also include multi-visit permits and film and photography permits. All of this money is currently spent managing the Fraser Island Recreation Area.

The Commonwealth Government also provides some additional funding for specific projects to protect the World Heritage values associated with the Island.

3.3 Visitor Trends

Tourism Queensland implemented a Standard Visitor Survey (Fraser Coast SVS) in the Fraser Coast region covering Hervey Bay, Maryborough, Kingaroy and Murgon. Some 292 surveys were conducted in the Fraser Coast region in 13 different locations between December 2000 and May 2001.

The survey found that the majority of visitors to the Fraser Coast were adult couples (37%), family groups with children (22%) and people travelling alone (17%). The most common size of travel party was two people (46%). The average spend was approximately \$125 per day for total visitors.

The area received a high return rate of visitors, with some 30% having visited between one and three times before in the last three years.

The survey also found the most common source markets were:

- Queenslanders outside the south-east corner (21%);
- Brisbane (20%);
- British Isles (11%); and
- New South Wales outside of Sydney (11%).

The average length of stay was 10 nights in the area. Some 22% spent one to two nights, while 27% spent between seven and 14 nights in the region.

Key reasons that domestic visitors gave for visiting the Fraser Coast region included:

- Visiting friends and family (30%);
- Visiting Fraser Island (15%);
- Familiarity and liking the area (14%); and
- On recommendation (8%).

The most popular styles of accommodation used in the Fraser Coast area by all visitors were:

- staying with friends or relatives (20%);
- caravans in a caravan park (18%);
- camping in parks (14%);
- motels (14%); and
- youth / backpacker hostels (12%).

International visitors used more youth or backpacker hostels (47%), while domestic visitors tended to stay with friends and relatives (25%), in caravan parks (22%) and motels (15%).

The Fraser Coast SVS indicated that the main reason for visiting the region for 15% of all domestic visitors and 55% of all international visitors was to visit Fraser Island (undertaken or intended). In total, approximately 45% of all visitors surveyed said their main activity in the region was visiting Fraser Island.

Anecdotal advice from Fraser Island operators has indicated that international “backpackers” mainly visit Fraser Island for three-day packages, largely from Hervey Bay but increasingly from Noosa. It is estimated that the number of independent backpackers hiring four-wheel drive vehicles now constitutes about 20% of all visitors to Fraser Island.

Those on camping packages usually travel in groups of eight to 10 people in a four-wheel drive “Troop Carrier”. Three day backpacker packages are also offered by the Islands three main resorts, which are becoming increasingly popular and in some cases are attracting the older clientele.

Figures from the EPA-QPWS suggest that the growth of visitors to Fraser Island on commercial tours has outstripped the growth of FIT’s.

Further anecdotal advice also suggests there has also been a slight change in the composition of campers. The numbers of backpacker’s are growing to nearly equal the numbers of traditional Australian family groups, as many former domestic campers now opt to rent houses and units.

3.4 Visitor Numbers

3.4.1 Estimated Visitor Numbers

A base estimation of the number of visitors to Fraser Island was obtained from visitor statistics compiled by the EPA-QPWS.

These statistics give an indication of the number of service vehicle permits issued and an estimation of the number of FIT’s accessing the Island per annum.

They also show the number of visitors carried by CTO’s and the number of camping permits issued per annum (as well as the associated number of campers visiting the Island).

Approximately 331,652 visitors travelled to Fraser Island in the 2000 / 2001 financial year. The gradual increase in visitor numbers over the period of July 1996 to June 2001 is evident in the following table, increasing by 18.9% over the period:

Fraser Island Visitor Statistics	96-97	97-98	98-99	99-00	00-01
Service Vehicle Permits	34,476	36,566	41,138	39,084	40,509
Estimated FIT’s	130,163	138,574	135,763	135,667	150,765
Camping Permits	23,231	24,120	25,792	23,576	23,268
Estimated Campers	93,615	94,310	106,019	100,582	111,862
CTO Passengers	148,726	152,830	161,858	178,384	180,887
Total Visitor Numbers	278,889	291,404	297,621	314,051	331,652

It is important to note that this is not a complete picture of the total number of visitors to Fraser Island, as the figures do not show the number of visitors utilising 12-month vehicle permits.

It is also unclear as to the number of visitors using exemption permits / labels. These labels cover property owners and their guests, residents and immediate family members.

Whilst we can assume that the majority of residents travelling under exemption labels are not engaging in tourism and recreation themselves, a high proportion of their guests and family would be.

Furthermore, FIT figures derived by the EPA-QPWS may be susceptible to human error as they rely on the visual counting of visitors occupying four-wheel drive vehicles.

We estimate there is also a certain number of visitors to the Island that would not be captured from the EPA-QPWS visitor statistics, in particular:

- visitors on private boat such as those organised by the three resorts;
- independent boat visitors;
- potential multiple visitors on single permits;
- visitors arriving on air charter; and
- visitor's failing to purchase camping permits.

It could be argued that the potential multiple visitors on a single permit would be relatively small when accounting for the normally high cost of ferry access to the Island. Additionally, the EPA-QPWS have published they receive a relatively high level of compliance from visitors purchasing camping permits.

Never the less we believe a substantial portion of undetected visitors come from resort visitors and estimate this would be in the vicinity of an additional 15,000 visitors per annum.

This would increase the annual number of visitors to the Island to approximately 347,000.

Allowing for all other potentially "uncounted" visitors to the Island, in particular, independent boat traffic visitation, the total number of visitors would not be far off some 360,000 visitors per annum. This represents a further 13,000 uncounted visitors, providing for a 3.6% margin for error and equating to an average of 36 visitors per day.

3.4.2 Estimated Visitor Days

We must make an allowance for the number of days visitors spend on Fraser Island per visit, as overnight visitors would spend more than one day on the Island. Calculation of visitor days provides the foundation to determine the Direct Financial Value of Fraser Island with regards to tourism and recreation use.

Based on the Department of Environment Report (1998) we estimate that approximately 70% of passengers carried by CTO's are day-trippers. We also assume that approximately 5% of FIT's are day-trippers.

The "uncounted" visitors are also classified as FIT's for the purpose of this section.

It is evident from the EPA-QPWS statistics that the average length of stay of campers is approximately 3.3 days. A sample survey of commercial accommodation on the Island has also indicated that the average length of stay of their guests is approximately 3.2 to 3.3 days.

We have therefore estimated that the average length of stay of visitors to Fraser Island is 3.3 days.

The total annual number of visitor days spent on Fraser Island, using these estimates is therefore calculated at approximately **873,000 visitor days**, shown below:

Type of Visitor	Estimated % of total visitors	Visitor Numbers	Visitor Days
Day-tripper	38%	136,800	136,800
Overnight visitor @3.3 days	62%	223,200	736,560
Total	100%	360,000	873,360

This should be considered as a close approximation only because it is dependent on an estimation of the number of day-trippers and overnight visitors to the region, as well as assuming an average length of stay for all types of visitors to the region, irrespective of origin.

Interestingly, Kinhill Economics (1998) estimates that total visitor days to Fraser Island was 764,000 in 1997. Our estimate of 873,000 visitor days aligns closely with this figure when accounting for the increase in visitor numbers since 1997.

3.5 Visitors Characteristics

3.5.1 Visitor Days by Type of Visitor

The EPA-QPWS statistics indicate that a larger number of visitors were carried by CTO's on Fraser Island compared to the number of FIT's in the year ending 30 June 2001.

However, we have also estimated that Fraser Island receives an additional portion of visitors not recorded within these statistics. For the purposes of this study we have classified these as additional FIT's.

Taking these additional visitors into account the split of CTO passengers and FIT's to Fraser Island is given below:

Type of Visitor	Estimated % of total visitors	Visitor Days
FIT's	49%	428,000
CTO's	51%	448,000
Total	100%	876,000

3.5.2 Visitor Days by Type of Accommodation

We are presented with a good indication from available statistics that approximately 111,862 visitors camped in the 2000 / 01 financial year.

We have assumed that the vast majority of uncounted visitors to Fraser Island would have stayed in commercial accommodation. However, we have also factored in those visitors potentially staying at commercial camp-sites and therefore not detected by the EPA-QPWS.

The visitor days attributed to the two accommodation segments is therefore estimated below:

Type of Accommodation	Estimated % of Overnight Visitors	Overnight Visitor Numbers	Visitor Days
Camping	53%	118,000	390,000
Commercial Room	47%	105,000	346,000
Total	100%	223,000	736,000

3.5.3 Visitors by Place of Origin

The Bureau of Tourism Research for the year ending June 2000 indicates that the mix of visitors to the Fraser Coast is heavily weighted towards domestic visitation. Some 85% of visitors were domestic (85% from intrastate) and 15% were international visitors.

The International Visitor Survey indicated the number of international visitors to Fraser Island in 1996 was 116,000.

We have calculated that international visitors currently represent at least 41% of total visitation to the Island and therefore visitation has increased to approximately 147,000 (see below). The domestic visitor mix to Fraser Island is also estimated below:

Origin of Visitor	Estimated % of total visitors	Estimated Visitor Numbers
International	41%	147,600
Domestic -Interstate	17%	61,200
Domestic -Intrastate	42%	151,200
Total	100%	360,000

3.6 Expenditure Data

The most relevant measure of financial value for Fraser Island is the gross expenditures by visitors upon tourism and recreation in the area.

In this section we firstly review the average daily spend of visitors within the context of the Fraser Coast and Sunshine Coast as well as the state. We then estimate visitor expenditure upon Fraser Island.

3.6.1 Regional Expenditure

Visitor expenditure in the Fraser Coast region in 1999 represented 3% of the total visitor expenditure in Queensland in that year. Visitor expenditure increased from \$110 million in 1985 to \$366 million in 1999 shown below:

Visitor expenditure	1985	%	1999	%
International	\$2 million	2%	\$55 million	16%
Interstate	\$56 million	51%	\$82 million	23%
Intrastate	\$52 million	47%	\$222 million	61%
Total	\$110 million	100%	\$366 million	100%

Source: Office of Economic and Statistical Research - May 2001

Visitors to the Fraser Coast region in 1999 spent \$366 million over 4.4 million visitor nights. This equates to an average spend per person per night of \$82.23 for the whole of the Fraser Coast region.

Similarly the average spend per person per day in the Sunshine Coast region in 1999 was \$105.08. This is based on total annual visitor expenditure of \$1.2 billion from 12 million visitor nights in the region (OESR 2001).

We use these figures to calculate the Additional Financial Value of tourism and recreation on Fraser Island, outlined in section 3.7.2.

Calculating the average total spend for the whole of Queensland using the same method, we find expenditure per person per night in 1999 was \$119.22 (OESR 2001).

3.6.2 Expenditure on Fraser Island

It was not possible to gauge the average daily spend by visitors on Fraser Island specifically. However, we have utilised the findings of the Fraser Coast SVS undertaken in 2001 as well as undertaken sample telephone surveys of accommodation establishments, tour operators and hire car companies accessing Fraser Island.

By using these figures we are able to derive an average expenditure per visitor day by visitor category on Fraser Island as follows:

Visitor Category	Mean Spend / Day	Estimated % of Visitors	Expenditure per Visitor Day
Visitors on Commercial Tours	\$83.00	100%	\$83.00
Free & Independent Travellers			
- food and beverage	\$42.00	100%	
- car or 4WD hire	\$138.00	27%	
- fuel	\$23.00	27%	
- vehicle permits	\$35.00	27%	
- other expenses	\$23.00	65%	\$110.00
Visitors in Commercial Accommodation			
- room cost	\$69.00	75%	\$52.00
Camping Visitors	\$30.00	75%	\$22.50
Marine Transfers	-	100%	\$13.28

The above expenditure data is based on the following key assumptions:

Visitors on Commercial Tours

The expenditure associated with CTO's that visit Fraser Island is estimated to be \$83.00 per visitor day. This is derived from a sample survey of current tour prices of operators leaving from Hervey Bay, Rainbow Beach and Noosa (February 2002).

The sample covers a range of one, two and three-day safari style tours. We also assume the EPA-QPWS fee per passenger is included in the price of all tours.

Free & Independent Travellers

FIT's expenditure of \$110.00 per visitor day is based on the food and beverage costs and other expenses as indicated in the Fraser Coast SVS (2001).

The costs associated with hire vehicles and fuel was determined through a telephone sample survey of car hire companies operating in Hervey Bay. According to service vehicle permit records in 2000 / 01, approximately 27% of FIT's hire four wheel drive vehicles (indicating one vehicle carries about four FIT's on average).

We also assume that the cost of EPA-QPWS vehicle permits is approximately \$35 on average accounting for the premium of permits bought on the Island, compared to the mainland.

Visitors in Commercial Accommodation

This is the additional expenditure associated with FIT's staying in commercial accommodation. Our room cost estimate of \$69.00 per visitor day was determined via a sample survey of accommodation establishments on Fraser Island, in addition to the assumption that 2 people on average occupy each room.

Furthermore, we assume that 25% of overnight visitors in commercial accommodation are associated with commercial tours and that this cost is included in the "visitors on commercial tours" category above. The additional overnight spend per visitor is therefore \$52.00.

Camping Visitors

We also assume an additional spend for campers on Fraser Island above the costs included in the FIT category above. This is \$30.00 per visitor day, based on an estimate by Kinhill Economics (1998) for campers in south-east Queensland National Parks.

Expenditure includes the additional cost of site fees, EPA-QPWS permits, incidental expenses and an allocation for equipment expenses. Car hire, vehicle permits, food and beverage and fuel costs are determined in the FIT category above.

We also make the assumption that 25% of campers are associated with commercial tours and that this cost is included in the "visitors on commercial tours" category above. The additional spend by FIT's that camp overnight is therefore \$22.50.

Marine Transfers

The expenditure on marine transfers to Fraser Island is currently estimated to be in the order of \$5.7 million. This includes the cost of transporting vehicle and person to the Island via barge services, in addition to the cost of transferring passengers via fast catamaran. This equates to \$13.28 per FIT visitor day.

3.7 Financial Value

3.7.1 Direct Financial Value of Fraser Island

The Direct Financial Value for Fraser Island is estimated from the gross expenditure associated with visiting it.

Total direct expenditure on Fraser Island is estimated to be in the order of **\$116.7 million**, excluding travel costs to the region.

A break down of expenditure per visitor category is shown below:

	Ref	Factor	\$
Commercial Tour Passengers:			
Spend per visitor day		83.00	
Total visitor days	3.5.1	<u>448,000</u>	37,184,000
Free & Independent Travellers:			
Spend per visitor day		110.00	
Total visitor days	3.5.1	<u>428,000</u>	47,080,000
Plus additional expenditure:			
<i>Commercial Accommodation:</i>			
Additional spend per visitor night		52.00	
Total visitor nights	3.5.2	<u>346,000</u>	17,992,000
<i>Campers:</i>			
Additional spend per visitor night		22.50	
Total visitor nights	3.5.2	390,000	8,775,000
<i>Marine Transfers:</i>	3.6.2		5,700,000
Total Direct Financial Value			<u>116,731,000</u>

This estimate represents approximately 32% of the total visitor expenditure in the Fraser Coast region (\$366 million in 1999).

At 873,000 estimated visitor days to Fraser Island the average spend calculated from the Total Direct Financial Value is \$134.00 per visitor day. This is substantially higher than the average spend for the whole Fraser Coast region.

3.7.2 Additional Financial Value

It can also be argued that for some visitors the whole of their trip to the Fraser Coast and Sunshine Coast regions could be attributable to the existence of Fraser Island.

Additional financial value attributed to Fraser Island tourism is based on the following assumptions:

- that an extra two days (and two nights) is spent in commercial accommodation within the Fraser Coast and Sunshine Coast regions;
- extra time spent in adjacent regions is spent by 85% of international visitors and 45% of domestic Fraser Island visitors.

Estimated additional time spent within the Fraser & Sunshine Coast's is therefore approximately **442,000 visitor days**, shown below:

Type of Visitor	Estimated % staying in other com accom.	Estimated Visitor Numbers	Additional Visitor Days @ avg 2 days
International	85%	125,460	250,920
Domestic	45%	95,580	191,160
Total	-	221,040	442,080

We have previously indicated that these additional visitor days are split between the Fraser Coast and the Sunshine Coast regions, particularly amongst the areas of Hervey Bay, Rainbow Beach and Noosa. We therefore assume that:

- approximately 70% of additional visitor days are spent in Hervey Bay and 30% between the Cooloola Coast and Noosa regions.
- additional expenditure includes total visitor expenditure within the two day period.
- additional expenditure per extra night within the Fraser Coast region is \$82.23 and \$105.08 per visitor night within the Sunshine Coast (based on the 1999 OESR average visitor spend per night).

As a close approximation, an **Additional Financial Value of \$39.3 million** would be generated in the adjacent Fraser Coast and Sunshine Coast regions in the process of visiting Fraser Island.

Some \$25.4 million would be attributed to the Fraser Coast region and \$13.9 million would be spent within the Sunshine Coast region.

3.7.3 Regional Multiplier Effects

Visitor expenditures on Fraser Island creates new incomes and outputs in the region which in turn produce further expenditures and incomes within the regional economy.

An economic multiplier is used to estimate the regional economic impacts from expenditure within a tourism site or destination.

For Fraser Island we have closely examined and considered existing regional multipliers and assumed a multiplier of 1.7 previously established by Driml (1997).

We have previously indicated that the Direct Financial Value of tourism and recreation on Fraser Island is \$116.73 million. The indirect use multiplier indicates that the flow on effects throughout the regional economy would be in the order of \$81.71 million.

The additional expenditure generated elsewhere in the Fraser Coast and Sunshine Coast regions in the process of visiting Fraser Island is \$39.3 million. The indirect flow on effects to the regional economy associated with this additional expenditure would be in the vicinity of \$27.51 million.

The total direct and indirect regional effects of tourism and recreation on Fraser Island is therefore approximately **\$265 million**, detailed below:

Expenditure Category	Direct Financial Value (million)	Multiplier Value	Indirect Financial Value (million)	Total Financial Value (million)
Fraser Island	\$116.73	1.7	\$81.71	\$198.44
Additional two nights in Fraser / Sunshine Coasts	\$39.3	1.7	\$27.51	\$66.81
Total	\$156.03	1.7	\$109.22	\$265.25

Employment:

A similar multiplier process can be used to estimate the impact of Fraser Island tourism and recreation on employment. Expenditure on Fraser Island by both visitors and government agencies would contribute directly and indirectly to employment within the region.

From a review of various sources including Cummings (1992) and Gillespie Economics (1997) we have assumed that the number of direct and indirect jobs created from Fraser Island tourism is approximately four to eight jobs per 1,000 visitors.

With an estimated 360,000 visitors to the Island, we can estimate that potentially up to 2,880 jobs are created on Fraser Island as well as nearby regions associated with Fraser Island tourism and recreation.

3.7.4 State & National Perspective

The economic worth of Fraser Island to the Queensland and national economies would differ to the impact estimated on the regional economy, because ideally, additional transactions would be undertaken at the state and national levels.

Madden et al (2000) has indicated the ideal approach to determining such impacts would be an analysis using General Equilibrium Modelling.

One such study was undertaken by Knapman et al (1990) which analysed the regional economic impacts of Kakadu tourism on sectors of the Northern Territory economy.

This is quite a detailed and extensive study and a process, which was not undertaken as part of our study for Fraser Island.

We have already estimated the likely regional economic impact of Fraser Island tourism and recreation, and can only estimate that the likely magnitude of such impacts to the state and national economies would exceed the regional value when taking account of state and national transactions.

3.8 Economic Value – Use Value

The Travel Cost Method is an economic valuation technique used to estimate economic “use values” associated with ecosystems or sites that are used for tourism and recreation.

In 1990 a Travel Cost Method study was undertaken by Hundloe et al to estimate the recreation values for Fraser Island before it became World Heritage listed.

The Travel Cost method places a measure on the time and travel cost expenses that visitors incur to visit a site, and therefore represents the price of having access to the site. People’s willingness to pay is estimated on the number of trips to the site at varying costs of travel.

The Hundloe Travel Cost Study took into account private and commercial visitors, and reported private visitors paying a visitor fee of \$10 per private vehicle at the time of the research.

The research determined the maximum amount visitors were willing to pay over and above the fee they actually paid to visit the area at the time of the study.

The difference can be inferred as a measure of the economic benefit Fraser Island holds to individuals, and is described as the consumer surplus. This is graphically represented by the area under the demand curve for a good, above its market price (barge & vehicle access).

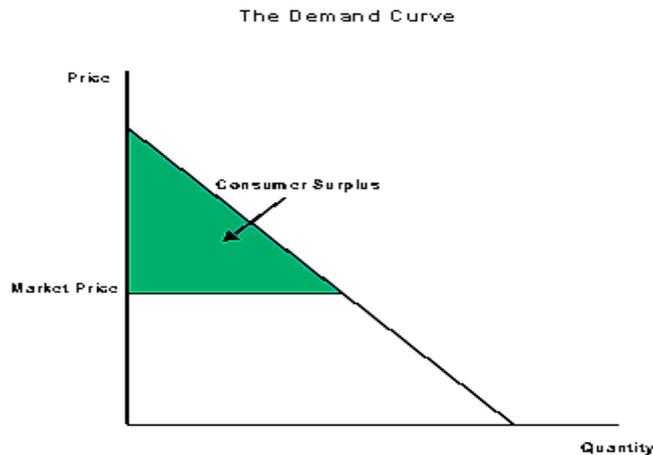


Figure 7: Consumers' Surplus
Source: Ecosystem Valuation Web-site

The study reached the conclusion of a consumer surplus above visitor fees to the Island of between \$3 million and \$6.2 million. This was based on the estimated number of 190,000 visitors at the time, represented by 100,000 private and 90,000 commercial visitors. The mean consumer surplus expressed per visitor was between \$15.70 and \$32.63.

The travel cost method is relatively uncontroversial, because it is modelled on standard economic techniques for measuring value, and it uses information on actual behaviour rather than verbal responses to hypothetical scenarios. It is based on the simple and well-founded assumption that travel costs reflect recreational value.

Obviously the study is quite dated. The cost of access has increased substantially, however it could also be argued that the value visitors' place on visiting the region would have also increased after Fraser Island was World Heritage listed. Additionally the cost of travel to the region would have increased.

Taking this into account, we can apply Hundloe's estimate of consumer surplus to broadly estimate an economic value to Fraser Island is potentially in the order of \$5.6 million to \$11.7 million.

It is important to treat these results as a close approximation only as we have not taken into account current prices. However, the estimation is useful to illustrate the economic values of visitation to Fraser Island and the considerable cost of access that is not considered in our Financial Value calculations.

3.9 Total Economic Value

Total Economic Value is measured by the sum of direct financial expenditures to participate in nature related activities and the willingness to pay over and above these expenditures measured through economic values.

On the basis of all the foregoing we calculate the present Total Economic Value from leisure tourism to Fraser Island at \$277 million per annum, summarised as follows:

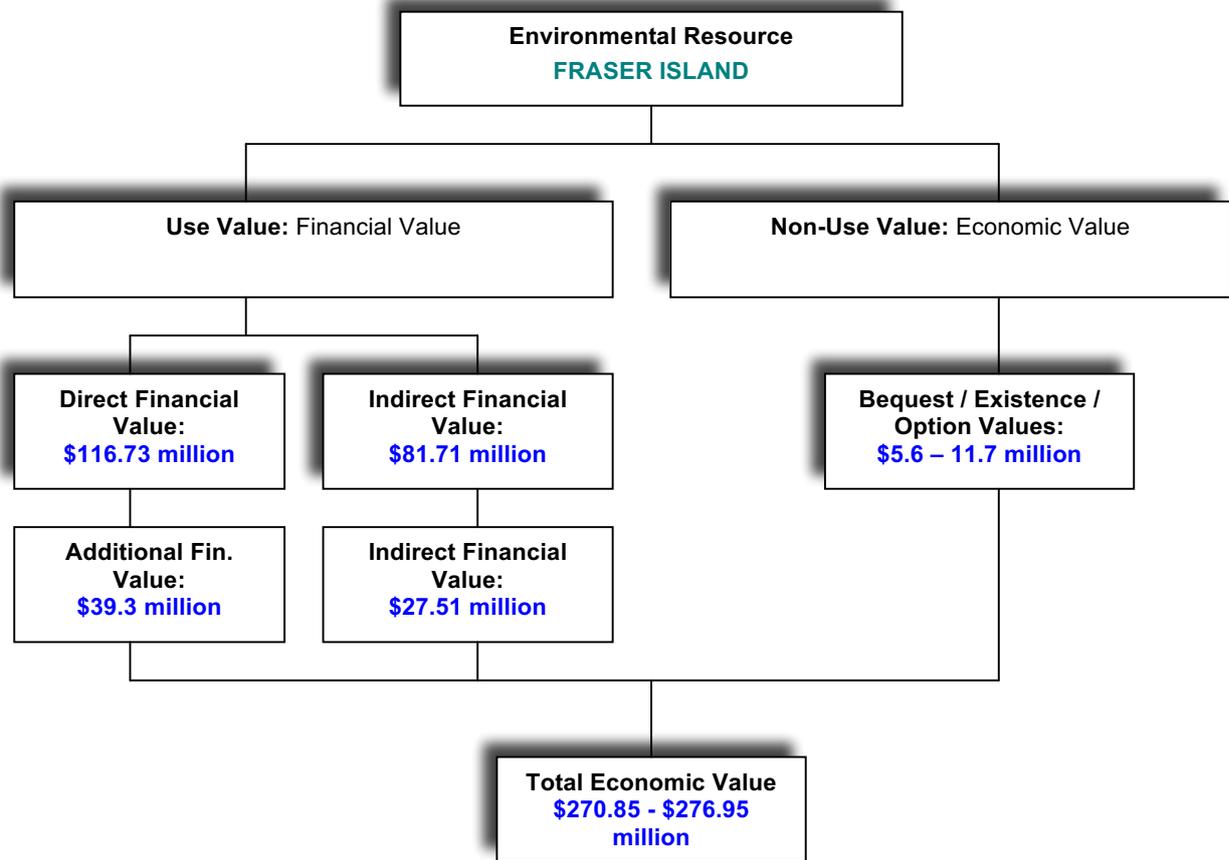


Figure 8: Total Economic Value – Fraser Island

References

Australian Bureau of Statistics (2001), *AusStats: Domestic Tourism; International Inbound Tourism – Characteristics; International Inbound Tourism – Expenditure; Tourist Accommodation; Australian Tourism Satellite Account Sept 2000*, ABS, Brisbane.

Brannock Humphreys (1994), *Daintree Planning Package*, Report for Douglas Shire Council.

Cairns and Far North Environment Centre (2000), *Issues of Concern - Submission to the Daintree Futures Study*, CFNEC.

Cummings, W.S., Economic Research Services, (1992), *Economic Contribution of Tourism to the Daintree / Cape Tribulation Area*, Report to the Wet Tropics Management Authority, Cairns.

Cummings, W.S., Economic Research Services (1997), *Tourism Development in the Daintree Cape tribulation Area*, Report by W.S., Economic Research Services, Cairns.

Cummings Economics (2001), *Drivers of Economic Growth – The Long Term Development of “Base Industries” in Tropical (Far) North Queensland*, Cairns.

Department of Environment (1998) *Managing visitors and commercial operators for ecological sustainability – Final report of the review of tourism activities in the Great Sandy Region*, Queensland Government.

Douglas Shire Council (1998), *Douglas Shire Tourism Strategy*, GHD, Cairns.

Douglas Shire Council, *Ferry Statistics 1997 – 2001*, DSC, Mossman.

Driml, S. (1997), *Towards Sustainable Tourism in the Wet Tropics World Heritage Area – Information Paper*, Wet Tropics Management Authority (WTMA), Cairns.

Driml, S. (1994), *Protection for Profit – Economic & Financial Values of the Great Barrier Reef World Heritage Area and Other Protected Areas*, Research Publication N0 35 Great Barrier Reef Marine Park Authority.

“Ecosystem Valuation” King, D., Mazzotta, M., <http://www.ecosystemvaluation.org>

Environmental Protection Agency Queensland Parks and Wildlife Agency (2002), *Review of the Recreation Areas Management Act, Regulation and By-law*, Discussion Paper, Queensland Government.

FNQ Management Services (1998), *Daintree Region Tourism Development SWOT Analysis*, Cairns.

GHD (1998) *Proposed Daintree Powerline Preliminary Environmental Impact Assessment Study*, Report to FNQEB, Cairns.

Gillespie Economics (1997), *Economic Value of Recreation and Tourism in the Forests of the Eden RFA*, Report to the NSW National Parks and Wildlife Service.

Hundloe, T., McDonald, G., Blamey, R., (1990), *Socioeconomic Analysis on Non-Extractive Natural Resource Use in the Great Sandy region*, Report to NSW EPA.

Kinhill Economics (1998), *Assessment of the Significance of Forests to the Recreation and Tourism Industries of South East Queensland*, Report to Australian Bureau of Agricultural and Resource Economics.

Knapman, B., Stanley, O., (1991), *A Travel Cost Analysis of the Recreational Value of Kakadu National Park*, Resource Assessment Commission, Canberra.

Madden, J., Thapa, P., (2000) *The Contribution of Tourism to the New South Wales Economy: A multi-regional General Equilibrium Analysis, Prepared for the ANZRSAI Conference*, Hobart.

Moonbi 93 (1998), Fraser Island Defenders Organisation (FIDO) Newsletter.

Moonbi 98 (2000), Fraser Island Defenders Organisation (FIDO) Newsletter.

Office of Economic and Statistical Research, Queensland Treasury (2001) *International & Domestic Visitor Expenditure in Queensland Regions 1985 to 1999*, OESR, Brisbane.

Office of Economic and Statistical Research, Queensland Treasury (2001) *Regional Profiles – Far North Queensland & Wide Bay – Burnett, June 2001*, OESR, Brisbane.

Task Force on Economic Benefits of Protected Areas of the World Commission on Protected Areas (WCPA) of IUCN, in collaboration with the Economics Services Unit (1998), *Economic Values of Protected Areas: Guidelines for Protected Area Managers*. IUCN, Gland, Switzerland and Cambridge, UK.

Tourism Tropical North Queensland (TTNQ), 2001, *Annual Report 2000 – 2001*, TTNQ, Cairns.

Tourism Queensland (2001), *Standard Visitor Survey in the Fraser Coast - December 2000 and May 2001*, TQ, Brisbane.

Tourism Queensland News, Issue 8, December (2001), *Tourism Research - Couples Seek Beach, Wine and Fraser Island Experience*, TQ, Brisbane.

Walker, P., Baker, B., (2001), *Douglas Shire Tourism, 1999 – 2001 Visitor Survey Statistics*, CSIRO.

Walker, P., Baker, B., Romy, G., (2000), *Douglas Shire Tourism, 1999 – 2000 Visitor Survey Statistics*, CSIRO.

Abbreviations & Glossary

ALS	Average Length of Stay
B & B	Bed & Breakfast (Accommodation)
EPA – QPWS	Environmental Protection Agency – Queensland Parks & Wildlife Service
CTO	Commercial Tour Operator
Douglas Shire TVS	Douglas Shire Tourism Visitor Survey
Fraser Coast SVS	Fraser Coast Standard Visitor Survey
FIT	Free & Independent Traveller
TEV	Total Economic Value
Consumers’ Surplus	is measured by determining the difference between what a visitor is willing to pay for not being without the natural asset (or its protection) and the actual amount spent on (or within) the defined area.
Contingent Valuation Method	the measure of additional economic values associated with a tourism destination, ie the value of knowing it exists.
Direct Financial Value	the direct expenditure by visitors on a tourism good or service in each of the study areas.
Additional Financial Value	the additional revenue created in adjacent regions to each of the protected areas, assuming this is revenue attributed to visiting each region.
Economic Value	the additional tangible (use values) or intangible and implicit (non-use values) of an area over the Direct Financial Value, determined via a measurement of consumers’ surplus.
Indirect Financial Value	the impact on the regional economy from the direct and additional revenue generated from tourism and recreation (measured by the indirect multiplier).
Indirect Multiplier	an economic model formulating the input and output transaction of a particular region from tourism spending in the region.
Non-use Value	values that are not associated with actual use, or even the option to use either area. These values are also known as “passive use” values.

Travel Cost Study	measures “use” values associated with accessing a region, ie cost of travel to get to the region.
Total Economic Value	the sum of all types of use and non-use values for a good or service, determined by adding the tangible tourism and recreation use values of the areas (Direct and Indirect Financial Values) with their additional Economic Value.
Use Value	the measure of value of the site or its recreational services derived from actual use.
Willingness to Pay	the amount a visitor is prepared to spend in a region, measured above what they actually spent.