5.0 ECONOMIC IMPACT OF GREEN ISLAND TOURISM

5.1 Basis for Estimates

To obtain data needed for estimation of the economic impact of Green Island tourism, a survey of operators both on the island and those engaged in related production on the mainland was undertaken. This survey sought data on sales, types and amounts of expenditure and employment levels for each operation. From the results of this survey it has been possible to obtain reliable estimates of the initial effects of the relevant tourist expenditure, i.e. numbers directly employed, income generated and the extent of operators' purchases from other sectors of the economy.

Obviously, to supply the commodities purchased by the tourism sector, production in other sectors is required, and this in turn generates further employment, income and purchases from still other sectors. And so a process generating output, income and employment continues through the complete production chain. Thus, for example, the total number of persons locally employed at all stages in the production of the Green Island tourism product will be greater than just the number directly employed by the tourism operators. Estimates of these total effects were obtained with the aid of input-output (1/0) tables.

An 1/0 table is simply a matrix representation of interrelationships among the various sectors of an economy. Under certain assumptions the various effects on all sectors of a change in the demand for the output of a particular sector can be calculated by performing certain operations on that matrix.

The 1/0 tables employed here are based on the GRIT Tables produced by Jensen, Manderville and Karunaratne. The complete set of GRIT Tables is defined in a Report titled "Generation of Regional Input-Output Tables". For this study the nineteen sector Queensland and Far North[(a)] Region tables were modified by the inclusion of a separate (twentieth) sector for Green Island tourism. As well, alterations were made to other sectors in the light of updated information collected since the preparation of the GRIT tables.

In addition to the direct and indirect effects as described above, the 1/0 tables provide a means of estimating what are termed induced effects. The induced effects refer to the series of output, income and employment effects generated as a result of the spending of income earned in production.

5.2 Expenditure on Green Island

The total value of sales for all operations on the island, including sea and air transport from Cairns, for the calendar year 1979 is predicted to be $1.9 million. Labour directly employed is equivalent to 83 full-time employees and household incomes earned for the year will be $640,000.

As indicated earlier there is also what is termed an *indirect effect* of this tourist expenditure in that labour is employed (income is earned) in the production of goods and services which comprise any part of the inputs required by the Green Island operations. As well, to derive the total effect an estimate is needed of the effect of household spending out of income, i.e. the consumption *induced effect.*

Inputs of goods and services purchased by the Green Island operators were classified in accordance with the definitions of sectors used in the GRIT tables. This data was then used to form the separate (twentieth) column for the Green Island sector in the tables. To insert the Green Island row, sales had to be split between local (Cairns Region or Queensland) and exports. Estimates of the origin (usual place of residence) of Green Island visitors vary widely among the various surveys. As best estimates the proportions of visitors coming from the Cairns Region have been taken to be 10%, while for Queensland overall the figure used was 40%.

Some transactions data for the Far North Region are shown in Appendix C. Included there also are estimates of the employment and income effects in each sector for that region. Tables 5.1 and 5.2 below show estimates of the total employment and income effects derived using the adjusted I/O tables for both the Far North Region and Queensland. The likely ranges of errors in the estimates as shown in the tables are intended to reflect uncertainties arising out of the data collection, the sector classification of some items and the assumptions involved in the construction and application of the I/O tables. This error specification is not based on statistical estimates of sampling errors.

(a) Corresponds to the Far North Statistical Division.

TABLE 5.1
Far North Region: Estimated Employment and Income Generated by Green Island Sales, 1979

	EMPLOYMENT [a]	INCOME [b] ($,000)
Direct	83 (± 4)	640 (± 30)
Indirect	44 (± 4)	282 (± 26)
Direct + Indirect	127 (± 8)	922 (± 56)
Induced	37 (± 4)	231 (± 22)
Total	164 (± 12)	1153 (± 78)

(a) Full-time equivalents.
(b) Wages, salaries and supplements only, for 12 months.

TABLE 5.2
Queensland: Estimated Employment and Income Generated by Green Island Sales, 1979

	EMPLOYMENT [a]	INCOME [b] ($,000)
Direct	83 (± 4)	640 (± 30)
Indirect	49 (± 5)	375 (± 40)
Direct + Indirect	132 (± 9)	1015 (± 70)
Induced	69 (± 7)	466 (± 45)
Total	201 (± 16)	1481 (± 115)

(a), (b) See footnotes to Table 5.1

Table 5.1 shows that in addition to the 83 persons directly employed in the Green Island sector, a further 44 are employed indirectly in support industries within the Far North Region. As well, consumer spending out of resultant wages and salaries earned generates further employment for 37 persons.

To put these estimates into perspective it is useful to compare them with the total numbers in the work-force in Cairns and Far North Queensland. As at the 1976 Census the total work-force in the Cairns Statistical District was 14,155. For the Far North Statistical Division the figure was 49,426. Based on these figures Green Island directly employs only about 0.6% of the Cairns work-force, but including employment in support industries this figure rises to 0.9%. Considering the whole of the Far North Division, Green Island direct and indirect employment makes up about 0.3% of the work-force. In addition a further 0.1% are employed through household spending of wages and salaries.

5.3 Average Daily Tourist Expenditure

The analyses so far has defined the Green Island tourism sector to cover only that expenditure relating to the actual visit to the island, including the transport from Cairns. But in some circumstances it could be appropriate to attribute to Green Island tourism at least some other mainland expenditure by certain visitors.

Estimates of these other expenditures were obtained from the accommodation survey. Estimated expenditures per person per day are as follows:—

Accommodation	$10.91
Food and drink	$ 8.04
Sightseeing and tours	$10.28
Incidental items	$ 3.81

This data covers only those using commercial accommodation. For tourists staying with friends or relatives certain of the expenses would obviously be lower. In the analyses which follow the estimated 8% of tourists staying privately are assumed to spend an average of $4 per head per day on food and drink and amounts as above for sightseeing and tours and incidental items. Average length of stay for all visitors to the Region is taken as 7.6 days and is based on data obtained from the accommodation survey.

5.4 Green Island Sector Revised

Except in the case of local residents, it would seem that a visit to Green Island would involve some expenditure for accommodation and food on the mainland, since at least one overnight stay in Cairns would usually be required given the existing transport schedules. Such expenditure, and its impacts, might therefore be included within the Green Island tourism sector. But to attribute this expenditure to Green Island it would have to be assumed that similar expenditures would not have arisen if the island had not been accessible. In fact survey results suggest that such an assumption would be incorrect for many visitors. 63% of respondents reported that they would substitute some other activity in the Cairns Region if they could not get to Green Island and so might incur similar overnight expenses.

More importantly, these arguments suggest that the earlier results might give an improper picture of the economic significance of Green Island for the region's tourist industry. Obviously, for example, if the 'closure' of Green Island led to no reduction in visitors and visitor spending in the region, there would be no impact on the size of the local tourism industry. This leads to the proposition that the best measure of the economic significance of Green Island tourism would be obtained by examining the hypothetical question — What would be the immediate loss in employment and income if Green Island was 'closed'? Using this approach, the Green Island sector was redefined to cover tourist expenditure deemed to be dependent on the "appeal" of the island.

From the accommodation survey it was found that 5% of respondents claimed they would not have visited the Cairns Region if the trip to Green Island was unavailable, but this figure could be increased by up to a further 12% if it was assumed that some respondents considered "Reef" and "Green Island" as equivalent answers. For such visitors it was considered appropriate to attribute their total expenditure during their stay in Cairns to the Green Island sector. Similarly, for visitors such as those who reported that they would shorten their stay if Green Island was unavailable, that part of their mainland expenses dependent on their island visit was attributed to the island's tourism. In the subsequent calculations it was assumed that an average of one extra overnight stay on the mainland was required for such visitors.

To be consistent, expenditure by visitors who would simply have visited elsewhere in Cairns had to be excluded form the definition of tourist expenditure deemed to be dependent on the appeal of Green Island. As noted above, 63% of respondents said they would choose an alternative activity in the Cairns Region if unable to visit Green Island. In the revision of the Green Island sector it has been assumed that such tourists would have thereby incurred similar amounts of expenditure, with similar impacts, as they did for their visit to Green Island.

Based on the above considerations the estimated current value of tourist expenditure for twelve months for the revised Green Island sector is estimated to lie between $2.6 m. to $4.0 m. Table 5.3 shows estimates of the impacts of this expenditure for Far North Queensland. These were derived using I/O tables as for the previous analysis, but with the twentieth row and column (the Green Island sector) altered in accordance with the revised definition of that sector. In addition to covering possible errors as before in Tables 5.1 and 5.2, the ranges in the estimates specified here reflect uncertainties arising out of possible ambiguities with respect to survey respondents' answers regarding the importance of Green Island.

TABLE 5.3
Far North Queensland: Estimated Employment and Income Generated by Tourist Expenditure Dependent [c] on Green Island, 1979

	EMPLOYMENT [a]	INCOME [b] ($,000)
Direct	143 — 220	954 — 1359
Direct & Indirect	177 — 269	1195 — 1836
Induced	51 — 78	303 — 466
Total	288 — 347	1498 — 2302

(a) (b) See footnotes to Table 5.1.
(c) i.e. in the sense that expenditure (or similar amounts of expenditure because of substitute tourist activities) in the region would not occur if the trip to Green Island was unavailable.

Similar considerations to those employed in producing the estimated impacts for Far North Queensland could apply with respect to impacts for Queensland as a whole and for Australia. However, to do this, estimates of the extent to which tourists would be prepared to substitute other Queensland or Australian recreational experiences for part or all of their visit to the Cairns region would be needed. The survey data were insufficient to provide precise estimates for all combinations of substitute activities.

However, the responses clearly indicated that of those who might not substitute an activity in the Cairns region, a substantial proportion would substitute an experience elsewhere in Queensland. The loss to the State is therefore correspondingly lower.

Hence, the consequences in terms of employment and income in the tourist industry in Queensland as a whole and in Australia would be less than those which are estimated to apply to the Far North Region. When account is taken of the full range of substitutes both within and external to the tourist industry, it is clear that the effect on total employment and total income in Queensland as a whole and in Australia would fall far short of those estimated to apply to the tourist industry. It is also worth drawing attention to the lesser significance any such losses have with respect to the larger economies of Queensland and Australia.

In the context of consideration of impact on the Australian economy, the relationship between Green Island and expenditure by international tourists also needs to be examined. Any consequence for Far North Queensland which would result from international visitors chosing a substitute elsewhere in Australia is already accounted for in Table 5.3. However, again the survey results point to the fact that the vast majority of international visitors to the Cairns region do not see Green Island as being so important that without it they would not have visited Australia. Hence in that sense Green Island per se can be considered to have minimal significance fo international tourism in Australia.

5.5 Interpretation of Impacts

Since some labour is employed in the production of the goods and services consumed by tourists, it is appropriate to describe that employment as an impact generated by the tourist expenditure. Any data relating to such impacts is obviously useful in planning for the implementation of some particular strategy and in relation to examination of the likely social and political consequences of such a strategy.

However, it is necessary to distinguish between the notions of economic impact and economic benefit, the latter being defined as the net gain to society over and above any resource costs involved. The net benefit to society of any production is the value of the goods or services produced minus the opportunity cost of resources, including labour employed. Opportunity cost refers to the benefit that could otherwise have been obtained by employing the resources in some other activity.

At a particular time and for a particular region it may be argued that the labour concerned would not otherwise have been employed and thus has no opportunity cost attaching to it. Alternatively, more generally and in the longer term, labour would not be regarded as having no alternative use. In that case, the employment of labour in a particular activity involves some cost in terms of the alternative opportunities foregone, and this has to be taken into account in deriving the net benefit earned from the activity (production) actually undertaken.

To summarise, this in effect means that employment of labour in, for example, the tourist industry can only be regarded as a benefit, that is not a cost, in the event that other opportunities don't exist for employment of that labour. These alternative opportunities may exist in the particular region of interest or elsewhere. However, if the community attaches special value to the promotion of a particular region, in this case Far North Queensland, it could be appropriate only to consider that region's employment opportunities. Thus, if it is assumed that alternative opportunities don't exist for the development of Far North Queensland, the employment levels attributed to Green Island in Table 5.3 can be interpreted as an economic benefit.