

#### 1.7.4 Infrastructure

##### (1) Electricity

###### 1) Supply/demand of electricity

Currently, there are nine power stations in the country under the jurisdiction of the Solomon Islands Electricity Authority (SIEA.), eight of which are diesel stations and one hydro station. Power station capacity and peak consumption volume are shown in Table II.1.7.5.

Although the total power capacity of all nine power stations is 17,000kw, Honiara and Noro comprise 90 percent of the total capacity of the power stations, with the remaining power stations encompassing only 10 percent. The maximum annual consumption demand for each power station peaked in 1991 and 1992. Generally, output is roughly 30 to 60 percent of the station's total capacity, averaging 54 percent. Only the Buala power station faces a growing need to increase its facilities, since the maximum consumption demand surpasses its maximum capacity.

In contrast, the maximum consumption demand of Malu'u power station is only one third of its maximum capacity. The capacity of the mini hydro generator at Malu'u power station is small; and it is capable of producing only 0.2 percent of the total capacity nationwide.

One example of the adjustments which are required to balance the supply and demand of electricity, is in Munda where there is a need to meet the growing demand in electricity for schools, hospitals, and water supply facilities. One solution is to utilize the surplus produced by the large thermal power station in Noro; and plans are underway to install an underground cable running parallel to the road within the year.

###### 2) Electricity charges

The calculation of monthly electricity charges is generally based on the following formula (June 1993).

Basic charge/month + 2) consumption charge/month + 3) fuel adjustment cost/month = electricity cost/month

- a. Basic charge (up to 23kw): SI\$4.00/month
- b. Consumption charges (charged if consumption volume exceeds 24kw): 34.22 cents/kwh/month (homes), 42.34 cents/kwh/month (government offices, stores, manufacturing)

- c. Fuel adjustment cost (applicable for electricity produced by thermal power station): 11cents/kwh/month (for the period between April to June 1993)

Due to the fluctuating costs of diesel oil, one year is divided into four terms; and a uniform rate is decided for each term.

Although the cost of generating electricity at each power station differs, a uniform rate throughout the country is imposed and the costs are adjusted through cross subsidization. Fuel price adjustments were started in 1990 with an increase in the purchase price of oil. The fluctuating petroleum costs are reflected in the electricity rates at the beginning of each quarter.

3) Profitability of power stations

Of the nine power stations under SIEA jurisdiction, the capacity of Honiara and Noro power generators are 12,300kw and 3,000kw, respectively. Of the remaining seven power stations, two locations have a generator capacity of more than 170kw (Table II.1.7.5). Much of the expenditures of the diesel power stations are comprised of fuel cost; and the fuel consumption ratio of the larger power stations are lower than the smaller stations and their profits are higher (Table II.1.7.6).

A study of the revenue and expenditures of the Honiara and the smaller capacity regional power stations (Kirakira diesel station, Malu'u hydro-electric station) are given in Table II.1.7.7. According to this table, although the smaller regional stations are in the red, the Honiara power station is in the black. Consequently, the nationwide network of nine power stations are financially in the black. Therefore, an increase in the number and capacity of power stations can be absorbed by the revenue and expenditures of the nationwide network.

(2) Water supply and drainage

1) Water supply

- a. The nation is blessed with water resources, due to the heavy volume of rainfall throughout the country.

Annual volume of rainfall (average value) for the past 20 to 30 years

Munda	3,500mm
Auki	3,200mm
Kirakira	3,500mm
Rata	4,200mm
Honiara	2,000mm

- b. Water supply facilities are found throughout the provincial capitals. The scope of the water supply facilities and the volume of water demand of major cities are given in Table II.1.7.8.

- c. Water supply facilities exist in most of the major cities and a communal water pipe is common in the villages.
- d. In areas where water supply facilities are nonexistent, rain water tanks are prevalent. All the Fisheries Centers and Sub-centers have a rain water tank or a pump to draw up ground water or both.
- e. In the cities where tap water is available, maintenance of these facilities is poor. Due to leaking water pipes, silt accumulation in the dams, clogged filters, mechanical breakdowns of the water pump, and other problems, water distribution by water trucks, cloudy water, and water rationing are common occurrences despite abundant water resources and basic facilities (Auki and Gizo).
- f. Water charges

Water consumption in Honiara city is categorized into home and commercial use, and water charges are calculated according to the 1993 standards explained below.

- Monthly consumption volume of ordinary households

< 8,000 gallons	:	SI\$1.15/1,000 gallons
8,001-19,000 gallons	:	SI\$1.65/1000-gallons
> 19,000 gallons	:	SI\$3.00/1,000- gallons

- Monthly consumption volume in commercial use

<10,000 gallons	:	SI\$15.00(flat rate)
10,001-20,000 gallons	:	SI\$2.00/1000-gallons
> 20,000 gallons	:	SI\$3.00/1,000- gallons

- Installation of tap water for new homes are SI\$75 for 1/2-inch pipe, SI\$135 for 3/4-inch pipe and SI\$180 for 1-inch pipe.
- Installation of tap water for new commercial buildings are SI\$125.00 for 1/2-inch pipe, SI\$150 for 3/4-inch pipe and SI\$200 for 1-inch pipe.

## 2) Drainage facilities

- a. In hospitals, schools, hotels, and government facilities in Honiara and the provincial capitals where flush toilets are available, there are usually waste water treatment facilities.
- b. Public sewage disposal facilities for ordinary households do not exist.
- c. Rain water flows into sea and rivers through the gutters and open ditches along the roads and river streams. Sewage pipes are used in Honiara.

(3) Transport infrastructure

1) Airport

There are 27 domestic airports and one international airport in the Solomon Islands. The Henderson International Airport has a paved runway of 2,200 meters long, which enables the landing and takeoff of jets (B737). Western, Guadalcanal, and Malaita provinces each have airports in four different locations; and the other provinces each have airports in two different locations.

Five international airlines currently utilize Henderson International Airport (Air Nauru, Air Nugini, Air Pacific, Qantas, Solomon Island Airways). Domestic airlines, Solomon Island Airways and Western Pacific both use small planes (18, 9, and 6 passenger planes) with 120 flights available per week (average 17 flights/day) to all areas throughout the country. The names of the airports and their locations are given in Fig. II.1.7.7 and Table II.1.7.9.

2) Ports

Major navigational routes between the islands and wharves used by ships are given in Table II.1.7.10 and Fig. II.1.7.8.

3) Roads

The total length of all the roads in Solomon Islands is 1,300km, out of which the total length of the roads in Guadalcanal, Malaita, Western, and Choiseul provinces is 1,131km or 87 percent. The total length of paved roads throughout the nation is 100km which are mainly concentrated around Honiara city. A road network connecting the major infrastructures to the relevant cities exists only around Honiara, between Noro and Munda, and in north Malaita. Generally, the road network is undeveloped. With the exception of the roads in the towns, the local roads are suited only for trucks and four-wheel drive vehicles, and were mainly constructed for transporting lumber or copra. Bridges are temporary wooden constructions, usually only wide enough to accommodate one vehicle. The locations of road are shown in Fig. II.1.7.9 and the total road length of each province is given in Table II.1.7.11

(4) Tourist facilities

The capacity of tourist facilities and the estimated number of tourists are shown in Table II.1.7.12 and Fig. II.1.7.10. Although the number of tourists dropped in 1987, it has been rising since 1990. In addition, the number of days per visit/tourist is increasing. Hence the number of tourists multiplied by the number of visiting days do not show a decrease.

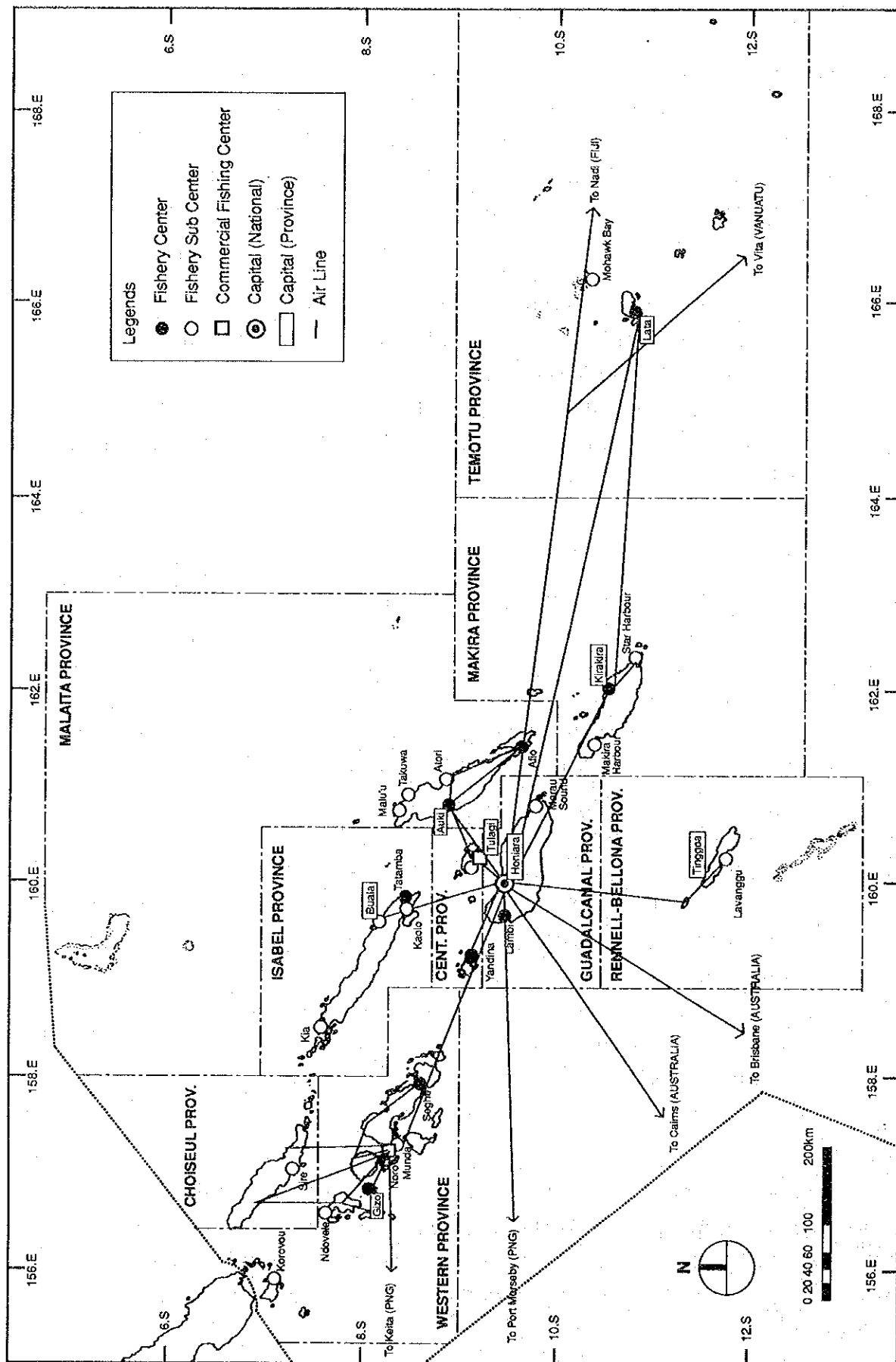


Fig. II.1.7.7 Map of Airline Network in Solomon Islands

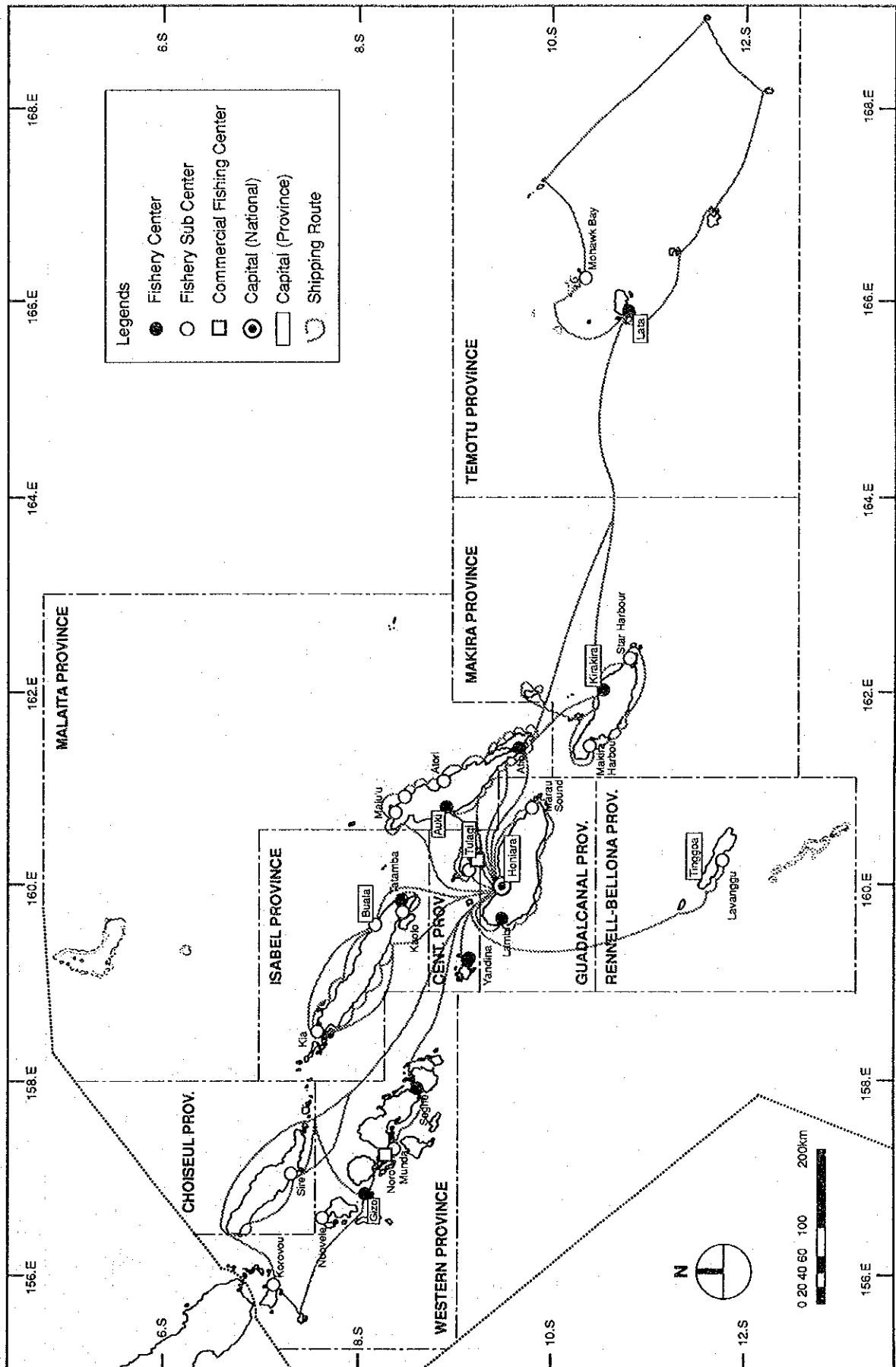


Fig. II.1.7.8 Map of Shipping Line Network in Solomon Islands

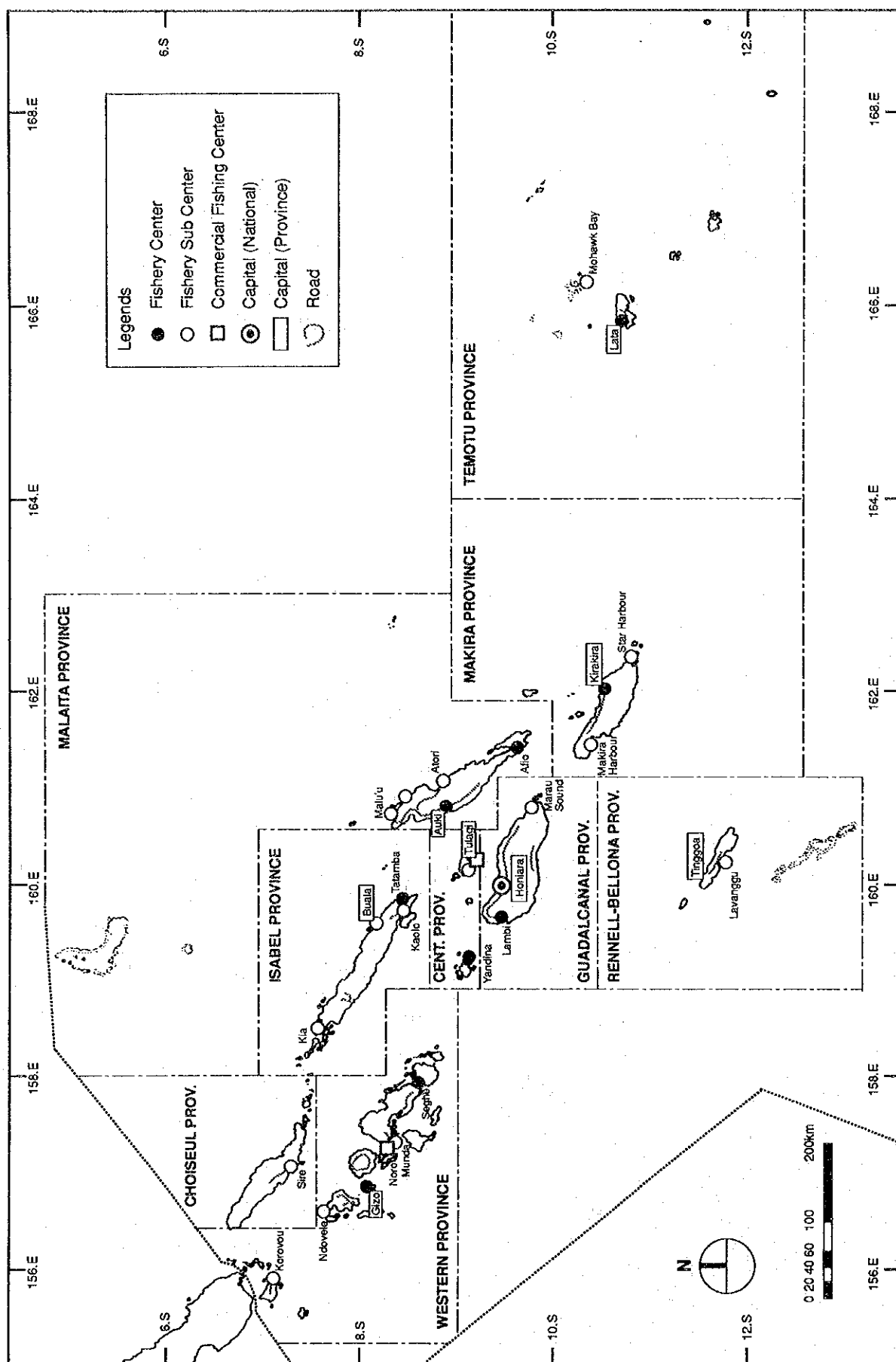


Fig. II.1.7.9 Map of Roads in Solomon Islands

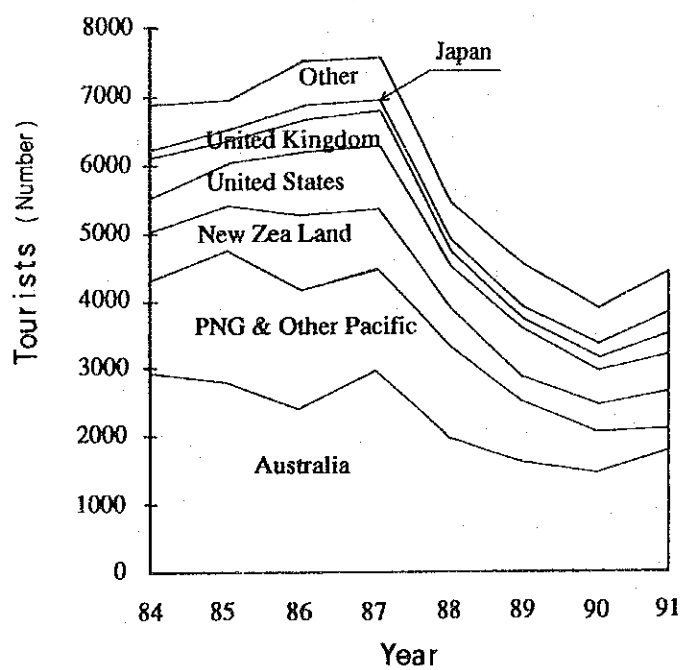
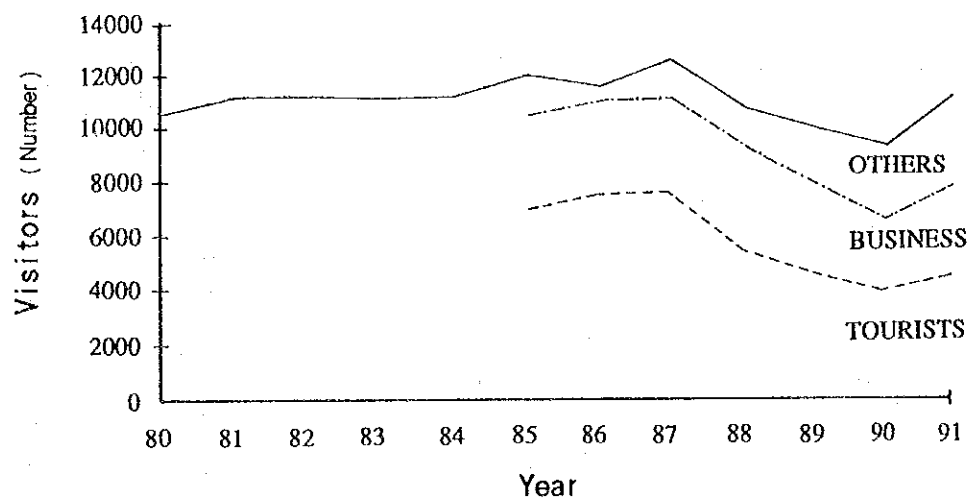


Fig. II.1.7.10 Trend of Visitors and Tourists by Category and Country



Table II.1.7.5 Capacity and Demand of Power by Station (1992)

Location		(1) Capacity (kw)	Energy Source	No. of Generator	(2) Maximum Demand (kw)	(3) Rate of Operation ((2)/(1))
Town	Province					
1. Honiara	Guadalcanal	12,280	Oil	13	7,030	0.57
2. Auki	Malaita	600	Oil	3	181	0.30
3. Buala	Isabel	60	Oil	3	60	1.00
4. Gizo	Western	600	Oil	3	245	0.41
5. Kirakira	Makira	170	Oil	3	80	0.47
6. Lata	Temotu	108	Oil	3	47	0.44
7. Malu'u	Malaita	30	Mini Hydro	1	10	0.33
8. Munda	Western	135	Oil	3	45	0.33
9. Noro	Western	3,000	Oil	3	1,410	0.47
Total		16,983			9,108	0.54

Remarks : Maximum demand of power  
 (1) 1991 : Auki, Gizo, Kirakira, Lata, Malu'u, Munda, Noro  
 (2) 1992 : Honiara, Buala  
 (3) Total demand : Aggregation of (1) and (2)

Source : SIEA System Guide, Brief Description, 1993, SIEA

Table II.1.7.6 Fuel Consumption Versus Capacity (1992)

Location		Capacity (Kw)	Fuel Consumption Per Unit Electricity Generated (l/Kwh)
Town	Province		
1. Buala	Isabel	60	0.37
2. Lata	Temotu	108	0.51
3. Munda	Western	135	0.41
4. Kirakira	Makira	170	0.38
5. Auki	Malaita	600	0.29
6. Gizo	Western	600	0.28
7. Noro	Western	3,000	0.26
9. Honiara	Guadacanal	12,280	0.28

Source : SIEA System Guide, Brief Description, 1993, SIEA

Table II.1.7.7 Revenue and Operating Cost at Kirakira, Malu'u (from Jan. to March in 1993) and Honiara (1992) power stations

Items	Kirakira			Malu'u			Honiara		
	(1) Budget	(2) Actual	(3) Achievement Ratio ((2)/(1)x100)	(1) Budget	(2) Actual	(3) Achievement Ratio ((2)/(1)x100)	(1) Budget	(2) Actual	(3) Achievement Ratio ((2)/(1)x100)
1. Energy Source	Oil (Diesel)			Mini Hydro			Oil (Diesel)		
2. Continuous Output (kw)	170			30			12,280		
3. Year of Installation	1) 2 units : 1986 2) 1 unit : 1984			1 units : 1986					
4. Total Energy sold (kwh)	60,000	53,000	88	7,000	7,000	100	-	29,416,683	-
5. Electricity Sales (SIS)									
Domestic	-	5,037	-	-	974	-	-	2,259,765	-
Government	-	11,858	-	-	1,358	-	-	1,450,522	-
Commercial	-	3,210	-	-	225	-	-	6,038,030	-
Industrial	-	32	-	-	-	-	-	1,843,360	-
Others	-	89	-	-	53	-	-	294,965	-
Minimum Charge	-	695	-	-	187	-	-	233,424	-
Service Charge	-	1,280	-	-	412	-	-	-	-
Fuel Adjustments	-	6,184	-	-	-	-	-	3,235,835	-
Total Revenue	33,153	28,385	86	3,303	3,209	97	-	15,355,901	-
6. Cost (SIS)									
Power Generation									
Costs	-	75,529	-	-	5,209	-	-	-	-
Distribution									
Costs	-	12,366	-	-	14,003	-	-	-	-
Overhead Admin	-	9,147	-	-	2,035	-	-	-	-
Total Costs	77,771	97,042	125	13,676	21,247	155	-	10,366,439	-
7. Benefit	-44,618	68,657	-	-10,373	-18,038	-	-	4,989,462	-

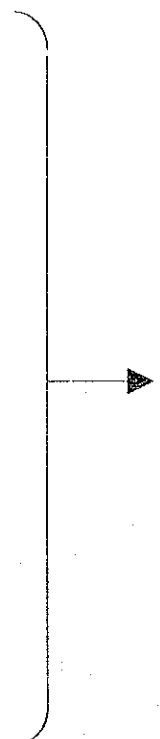
Source : (1) SIEA System Guide, Brief Description, Feb. 1993, SIEA  
(2) Data 1993, SIEA  
(3) Prefeasibility Studies of Hydro-power Projects in SI, JuI. 1986, UNIDO.

Table II.1.7.8 Urban Water Supply Capacity and Demand

Location	(1) Water Supply Capacity (m3/day)	(2) Water Supply Demand (m3/day)	(3) Rate of Capacity and Demand ((1)/(2)x100)	(4) Population (1992, Est.)	(5) Per Capita Water Demand ((2)/(4)) (l/day/person)
Towri Province					
1. Honiara (Guadacanal)	13,500	11,000	123	39,600	278
2. Tulaghi (central)	300	430	70	2,383	180
3. Gizo (Western)	460	460	100	4,356	106
Noro (Western)	900	900	100	3,714	242
Munda (Western)	150	150	100	3,174	47
4. Buafa (Isabel)	-	-	-	2,094	-
5. Auki (Malaita)	590	590	100	3,586	165
6. Kirakira (Makira)	438	360	122	3,146	114
7. Lata (Temotu)	490	377	130	1,530	246

Source : (1) United Nations Integrated Urban Water and Sewerage Assessment and Development, 1988, UN  
(2) Report on The Census of Population 1986. Report 2.B., 1989, Statistics Office MFEP

Table II.1.7.9 Airports in Solomon Islands

Location		Facility
Town	Province	
Honiara	Guadalcanal	International Airport. Runway length 2,200m with surface of concrete
Munda	Western	Runway length 1,200m with surface of concrete or coral
Auki	Malaita	 Runway length above 650m with surfaces of either coral, grass, gravel or sand.
Kirakira	Makira	
Yandina	Central	
Marau	Guadalcanal	
Buala	Isabel	
Lata	Temotu	
Rennell	Rennell	
Gizo	Western	
Seghe	Western	
Choiseul Bay	Choiseul	
Ballalae	Western	
Mono Is.	Western	
Barakoma	Western	
Ringi Cove	Western	
Parasi	Malaita	
Avuavu	Guadalcanal	
Mbanakira	Guadalcanal	
Bellona	Rennell	
Santa Ana	Makira	
Kukudu	Western	
Tagibangara	Western	
Gatokae	Western	
Kwalibesi	Malaita	
Atoibi	Malaita	
Afutara	Malaita	

Source : (1) Provincial Development Plan 1988~ 1992, 1988.

(2) Pacific Islands Transport Sector Study Volume VII, March 1993 : Solomon Islands, World Bank

Table II.1.7.10 Wharves in Solomon Islands

Location		No. of	Coastal condition	Utilization for Shipping
Town	Province	Wharf		
Gizo	Western	2		Inter-island ships
Noro	Western	3 (International wharves)		Ocean-liner, tramp steamer
Munda	Western	0		Wooden jetties for boats
Sire	Choiseul	0		Wooden jetties for boats
Buala	Isabel	1		Inter-island ships
Tulaghi	Central	0		Wooden jetties for boats
Yandina	Central	1		Inter-island ships
Honiara	Guadalcanal	2 (International wharves)		Ocean-liner, tramp steamer
		6		Inter-island ships
Marau	Guadalcanal	1		needs repair
Auki	Malaita	1		Inter-island ships
Malu'u	Malaita	0	Wide Reef	no wooden jetty
Takwa	Malaita	0	Wide Reef	gabion for boats
Afio	Malaita	1		needs repair
Kirakira	Makira	1		needs repair, expansion
Star Harbour	Makira	1		under construction
Lavanggu	Rennell	0	Reef with Rock	no wooden jetty
Lata	Temotu	1		Inter-island ships

Source : Province Development Plans 1988-1992, 1988,

Table II.1.7.11 Road of Solomon Islands by Province, 1988

Province	Road (km)	Percentage
Guadalcanal	521	40%
Malaita	350	27%
Western, Choiseul	260	20%
Makira	70	5%
Temotu	45	4%
Central, Rennell	40	3%
Isabel	15	1%
Total	1,301	100%

Source : Province Development Plans 1988-1992

Table II.1.7.12 Accommodation of Resort Hotel and Guesthouse

Location		Facilities	Rooms
Town	Province		
Honiara	Guadalcanal	14	253
Tambea Village	Guadalcanal	3	37
Gizo	Western	4	37
Munda	Western	5	24
Seghe	Western	2	12
Tahamatingi	Central	3	7
Buala	Isabel	1	6
Auki	Malaita	1	6
Reef Islands	Temotu	1	5
Total		34	387

Source : Henderson Airport Runway Upgrading Feasibility Study, Dec.1992  
Murray-North (SI) LTD.

## **1.8 Designing and Construction Conditions**

### **1.8.1 Natural Conditions**

#### **(1) General Background**

##### **1) Geographical and topographical conditions**

###### **a. Location and area**

The Solomon Islands is an isolated group of Melanesian islands lying on the east side of the Australian continent, about 800km east of New Guinea in the South Pacific, and run in a northwestern to southeasterly direction. They are a chain of islands near the 7 degree southern latitude near Shortland Islands, stretching approximately 1500km in a southwesterly direction to Santa Cruz Islands near the 12 degree southern latitude. The nation encompasses a total land area of approximately 29,800km<sup>2</sup> and consists of about 950 islands. With the exception of the six large islands of Choiseul, New Georgia, Santa Isabel, Malaita, Guadalcanal, and San Cristobal, the majority of the islands are small. The aforementioned six islands are about 140km to 200km long and 30km to 50km wide; and they comprise about one half of the nation's total land area.

###### **b. Topography**

The Melanesian islands are located on the boundary between the South Pacific and the Australian continental plate. They are a young mountainous belt of islands rising from the depths of the ocean floor whose peaks appear above the ocean surface. The Solomon Islands are a segment of the summits of this mountain range and the two chains of islands are steep and hilly formed of metamorphic and igneous rocks, excluding the atolls and elevated coral reefs.

In addition, the majority of the chain of islands on the western side contain many volcanoes or volcanic rock. Guadalcanal Island contains the nation's highest volcano, Popomanashu (about 2,400m), and there is a concentration of volcanic islands around New Georgia Island. In contrast, the chain of islands lying on the eastern side lie in an older eroded volcanic belt where the island inclines are more moderate and much of its foundation rock is exposed. Many of the larger island contain rivers which run into the ocean from steep inclines.

The nation's most famous coral reefs are the atolls in Murbora Lagoon and the elevated coral reefs of Bellona. The shrubbery grows densely on the elevated coral reefs and they are suited for human habitation.

## 2) Climate

### a. General conditions

The Solomon Islands lie in a tropical belt located on the Pacific equator; and it is an important location for observing global climactic changes. In particular, the ocean temperature near the equator is high and the volume of condensation from the ocean surface is much higher than in middle or higher latitudes. As a result, it is a major heat source which affects atmospheric movement. These transitions in ocean temperature known as El Nino, are greatly affected by southern oscillation. This phenomenon is a large see-saw movement of atmospheric pressure which occurs between the west side of the Pacific equator, mainly around Indonesia, and the east side near the offshore waters of Peru. When the atmospheric pressure is high in one area, the opposite area experiences low atmospheric pressure.

Generally, due to the warm ocean temperature on the western side of the Pacific equator, humid air around Indonesia which is brought in by the trade winds, rises and creates clouds causing heavy rainfall in the area. This is the greatest heat belt area of the tropical climactic zone. In the upper layers of the troposphere, this rising air current moves east and falls in the eastern area, creating a large circulation of air current moving from east to west.

The region around the Pacific equator is closely interrelated to the El Nino phenomenon and climactic changes. For example, when there is heavy rainfall in the coastal areas of Peru and Ecuador, Indonesia and New Guinea experience a drought. There are fewer monsoons and less rainfall in Southeast Asia and the rainy season tends to be delayed in northern Australia and the Solomon Islands.

Presently, unusually climactic changes have been the source of global concern and the effects of human destruction on the environment such as the ozone layer, carbon monoxide poisoning, etc. have been pointed out. Worldwide, global observation of vast areas have been made possible with the use of satellites. Subsequently, the destruction and havoc wreaked by cyclones in the Solomon Islands or other forms of climactic deviations will greatly affect the socio-economy where there is a high concentration of population

and where basic social facilities are being gradually built. Hence long term weather conditions over a wide area is an important factor when implementing development projects in the Solomon Islands.

b. Rainfall and temperature

The daytime temperature averages 30°C throughout the year, but humidity, wind, and rainfall differ according to each island's topographical features, size, and location.

Large islands with high mountains are comfortable in the mountain and coastal areas during the night hours due to cooling winds.

The period from the end of April to November is the most comfortable due to the southeastern trade winds blowing in from the east coast. However from December to April, the northwesterly trade winds usher in the typhoons which originate in the Coral or Solomon Sea and pass through New Hebrides moving on towards the Fiji Islands. As the typhoon is still in its initial stages when passing by the Solomon Islands, its low atmospheric pressure creates rough ocean conditions. Although it is rare for a typhoon directly hit the Solomon Islands, the cyclones Namu in 1986 and Nina in 1993 were the source of great destruction.

The rainfall volume is high, averaging 3,000mm to 4,000mm annually. In Honiara where it is relatively less, it averages 1,500mm to 2,000mm annually. During the months from May to December, it is comparatively low in each island and the volume rises from November to April (Tables II.1.8.1, II.1.8.2, II.1.8.3).

c. Winds

The trade winds blow constantly from south to southwest from November to March and southeast to east from April to October throughout the islands. The average wind velocity never surpasses 10m/second, except during the cyclone season.

Wind direction for Western (Munda), Central (Honiara, Henderson Airport), and Malaita (Auki) provinces are given in Table II.1.8.4. In particular, the wind direction in Honiara appears to be the exception among the islands of the nation. This is due to the 2,400m mountain range stretching southwest to south which shuts out the wind to east and moderates the southern wind velocity.

Although the Solomon Islands lie in the tropical climatic belt of the South Pacific, conditions vary according to the location of each island and between its inland and coastal areas. In particular, it is essential that a survey on climate and weather conditions of proposed project construction sites are carried out, due to transitions in wind direction which vary with each island.

d. Cyclones

Although the Solomon Islands are located in the tropical climate zone of the Pacific equator where cyclones evolve from the constant low atmospheric pressure, it is rare for cyclones to land in this island nation. However, due to the southern oscillation phenomenon, this ocean area is a large energy source for the atmospheric circulation; and with the movement of warm ocean water, complex changes in the direction of the cyclone take place. As the islands are scattered over a wide area, it occasionally suffers from the destructive forces of a cyclone.

Past cyclones which have hit the Solomon Islands are given in Table II.1.8.5, but cyclones which wrought the most destruction in recent years were the cyclones Namu in 1986 and Nina in 1993 (cyclone paths are given in Fig. II.1.8.1, Table II.1.8.5).

- Cyclone Namu

As shown in Fig. II.1.8.1, the path taken by cyclone Namu passed directly through Guadalcanal and Malaita islands where the population is the most concentrated and the socio-economy is the most developed. As a result, crops, homes, bridges, and other infrastructure were heavily damaged. A brief summary of this cyclone is given below.

- Cyclone Namu struck in May 1986.
- Although it was not one of the most powerful cyclones to hit this island nation, its slow velocity and powerful rains wreaked the most havoc and destruction.
- Nearly all the trees in Sikaiana were toppled and almost all coastal homes were destroyed, leaving 350 people homeless.
- Plantations in the south were heavily destroyed, trees were uprooted, and coastal villages were completely destroyed.
- Gardens and soil were washed away by overflowing rivers.
- The most heavily damaged area were the plains in the eastern area of Guadalcanal island. Continuous rain torrents caused flooding, washing away bridges, plantations, trees and shrubbery.



- The destruction was estimated to total about SI\$20 x 10<sup>6</sup>.
- The death toll surpassed 100 people and was the highest casualty ever caused by a cyclone. Nearly 95 of the deaths stemmed from the flood in Guadalcanal Island and the remaining deaths were due to falling objects.

- Cyclone Nina

The path of cyclone Nina is shown in Fig. II.1.8.1. It was a cyclone that took an unusual path moving straight eastward along the longitude from its point of origin. It hit Rennell, Bellona, Santa Cruz, and Ellis islands, exacting a heavy toll on each island. A summary of the cyclone Nina is given below.

- Cyclone Nina struck in December of 1992 to January 1993.
- Its maximum wind velocity surpassed 75 knots and its momentary maximum velocity was 100 knots. Its central atmospheric pressure was 960 hectopascal and had the potential to create strong winds and heavy waves.
- According to the report compiled by the National Disaster Council (NDC), damages from the Nina totaled about SI\$20 x 10<sup>6</sup>. Rennell and Bellona islands were particularly hard hit and nearly all of the buildings, food crops, plantations, trees, and shrubbery were destroyed.
- Strong winds destroyed cultivated fields and toppled coconut and other fruit trees. Homes, offices, and other buildings in the capital of Temotu Province were demolished. Coastal villages on low lying islands were devastated by high waves.
- Rural electricity and telephone wires were cut and atmospheric measuring instruments were destroyed.
- Torrential rains caused flooding and strong winds destroyed crops and fields in a section of Makira and Urawa islands, south Malaita, and the coastal areas of south Guadalcanal. High waves and tidal flow were a threat to coastal areas.
- The death toll was three people (two women and one child).

e. Ocean conditions

The Solomon Islands are located in the tropical climate zone near the Pacific equator and have comparatively very few differing ocean conditions. However, topographical factors of its numerous scattered islands have created unique, complex ocean conditions in some areas.

- Waves

Although continuous observation of wave conditions was not implemented, wind frequency surpassing 10m/second was rare, decreasing wave development factors. Much of the swells were less than 2.5m in height, coming in mainly from a southeastern or southwestern direction, but there was no prevailing direction.

The affect of the waves differed between coasts bordering the north or south. Due to the fact that the islands are located near the cyclone point of origin and a natural barrier has been created by the surrounding islands, coastal damage by huge waves of a well-developed cyclone is rare (i.e. 6m high).

- Tidal flow and height

The ocean current of the South Pacific equator generally flows westward throughout the year and the prevailing direction of the tidal flow is generally westward, but this may differ according to the topography of each island.

The difference in tidal height between high and low tides is 0.5m in Honiara on Guadalcanal Island and 0.3m on Rennell Island located in the extreme south of the nation.

## **1.8.2 Construction Conditions**

### **(1) Summary**

The manufacturing and construction sectors of the Solomon Islands comprised approximately 8.0 percent (SI\$14.2 million) of the domestic production increase in 1981 and 6.5 percent (SI\$15.8 million) in 1990. These sectors are relatively undeveloped in comparison to the 1991 growth rate of SI\$77.4 million of the first production sector.

Aside from the buildings in the towns, most households are one-storied light wooden structures and each household draws its water from rainwater tanks, the river, or from wells. Due to the undeveloped state of the infrastructure, there is no electricity or water tap facilities.

The many storied structures in Honiara have been designed by architects using reinforced ferro-concrete or steel frames and their specifications do not differ with buildings in regional towns.

The infrastructure of the capital of Honiara, wharves, roads, communications, electricity, etc. is markedly complete, but it remains undeveloped in all other areas of the nation. The standard is particularly low in the rural areas, with the exception of Noro District in Western Province where the infrastructure is relatively good around the factories of Solomon Taiyo.

(2) Construction conditions

All construction materials are imported from Australia and New Zealand with the exception of cut wood which is produced locally. Construction work is scarce aside from Honiara and its economic zone, and construction equipment and materials which can be supplied immediately are limited both in volume and scope. Construction equipment and material makers are concentrated in Honiara.

There are a few construction companies having offices, equipment and materials, workshops, etc. in Honiara who work out of the capital for work which is carried out in other regions.

There are also a few engineering and consultant companies in Honiara which are capable of implementing development work.

One of the major factors which must be taken into consideration when implementing construction work in the Solomon Islands is that all construction equipment and materials are concentrated in Honiara. All such equipment and materials must be transported by cargo ships or the inter-island passenger/cargo ships to other islands from Honiara.

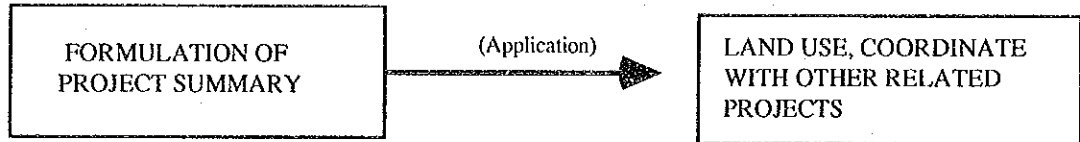
Secondly, the standard of infrastructure is low in the rural areas and electricity, water, workers and supervisors required for the work are lacking in many cases. In particular, all construction related matters, including the supply and transport of materials and equipment from Honiara for construction work on the remote islands, must be carefully planned to reflect these needs.

(3) Applications for project approval and relevant laws and ordinances

The application for project approval is processed according to the following format in the Solomon Islands.

- 1) Phase-1: Screening - The application is deliberated upon for one month and approval is effective for a six month period. Extensions may be applied for.

#### APPROVAL STAGE OF OUTLINE PLAN



(Application Acceptance Agency)

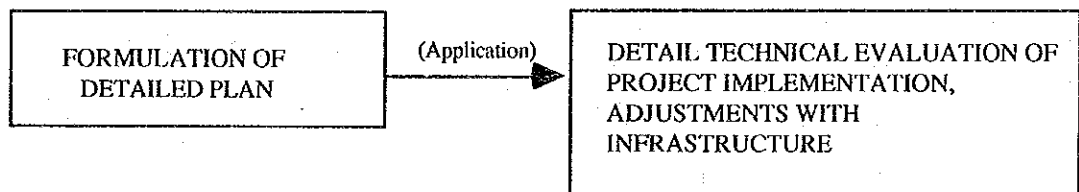
- Layout of Project Summary
- Explanation of Project Summary

- Ministry of Agri. & Land
- Respective Ministries
- Land Management Division
- SIPA, HTC

\* The application, a cover letter, and 15 copies of the project summary are to be submitted to Chairman, Town & Country Planning Board, P.O. Box 324, Honiara. A deliberation and evaluation committee will meet once a month to deliberate on project content. These deliberations will entail no cost.

- 2) Phase 2: Project deliberation/evaluation: Phase 2 will require 3 to 4 weeks of deliberation

#### APPROVAL STAGE OF DETAIL PLANNING



- Detail project layout
- Explanation of Project Summary

In order to construct buildings in Honiara Town, Building Board Approval must be obtained from HTC. In addition, the application must be submitted to the following agencies:

- Physical Planning Div. of HTC
- Commissioner of Lands

- If the electricity volume capacity is large, deliberations must be carried out with SIEA
- Development measures which require work adjacent to the road must be coordinated with relevant agencies.

- \* Building Board: 0.3% of buildin cost
- \* Planning fee: SI\$100

- 3) Although the standards for construction related technical surveys are not stringent, there are Acts and Regulations which must be adhered to in development and construction work on existing land.

a. Acts and ordinance related to development

- Town and Country Planning Act 1979
- Investment Act 1990
- Research Act 1982
- Province Environmental Policy

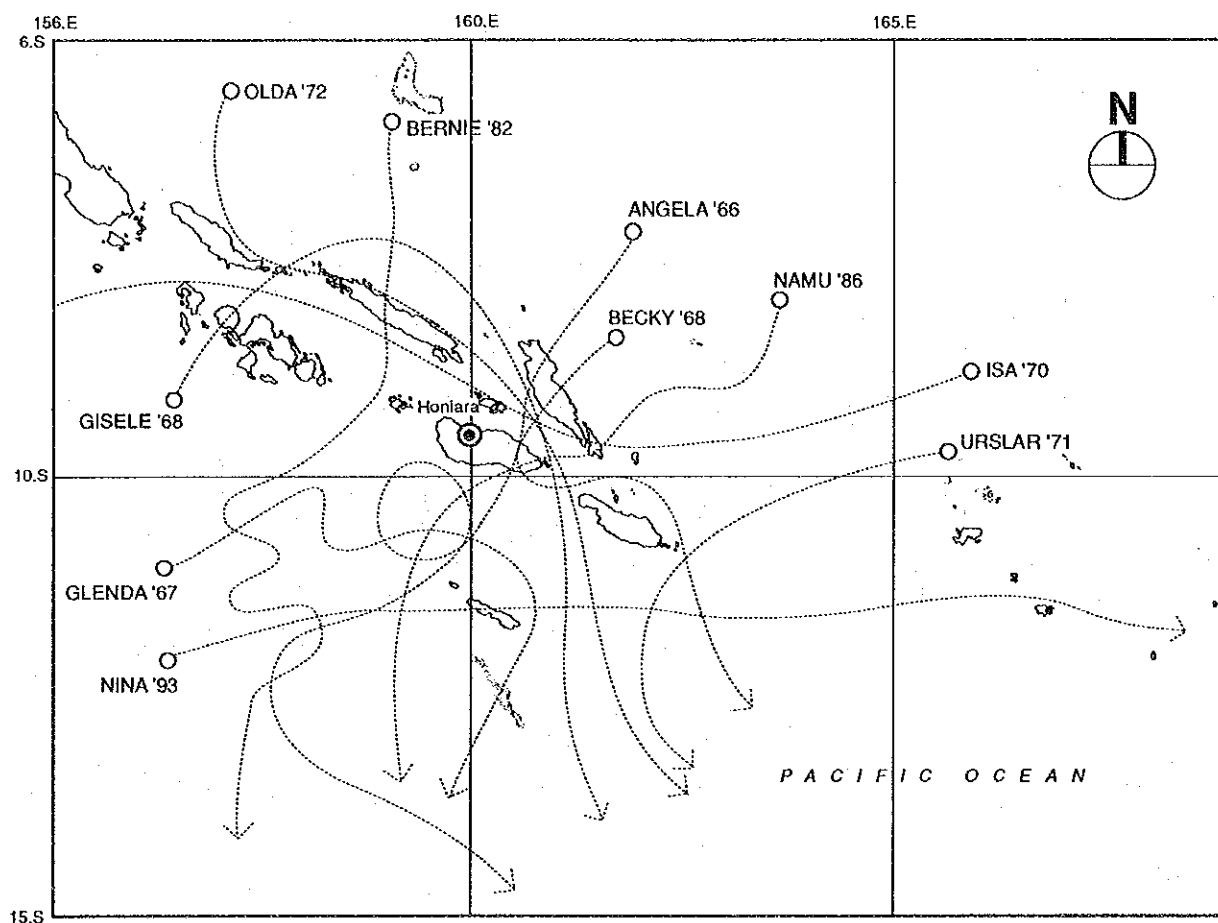
The aforementioned Acts are applied in accordance with land conditions and priority in regional development; and a survey is carried out for each case by the relevant agency.

b. Acts and ordinances related construction

- National Building Code
- Home Building Manual
- Province Building Ordinance
- Honiara Town Council, Building By-Laws 1960

A characteristic of the aforementioned codes and ordinances is that priority is placed on building technology that is able to withstand the onslaught of cyclones which have hit the nation in the past. Preventive measures pertaining to landslides, wind destruction, ocean sprays, etc. are clearly explained.

In addition, regulations concerning earthquakes, sanitary measures and fire prevention are also widely covered. However, actual surveys are adjusted according to the special characteristic of the region.



Source : Meterological Services, Solomon Islands.

Fig. II.1.8.1 Cyclone Tracks in Solomon Islands

Table II.1.8.1 Annual Rainfall Record By Selected Weather Station (1983-1992)

Unit: mm											
Section	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	
• Western Prov.											
—TARO	3415	4083	3568	3226	2808	3957	3010	3338	2501	2875	
—MUNDA	3180	2849	3252	2885	2591	3688	2766	4054	3591	3303	
• Central Prov.											
—HONIARA	1673	1996	2509	1969	1305	2631	1929	1688	1828	1361	
• Malaita Prov.											
—AUKI	3012	3231	3052	3007	1940	3269	2752	2630	3091	2486	
• Makira Prov.											
—KIRA KIRA	2558	3732	4054	3304	2049	4327	4312	3537	3399	2251	
• Santa Cruz											
—LATA	4064	5014	4985	3793	3455	5697	4232	4306	4431	3183	

Source: Solomon Islands Meteorological Station

Table II.1.8.2 Monthly Rainfall Record By Selected Weather Station (1982 and 1992)

Unit: mm															
Section	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Aver	
• Western Prov.															
—MUNDA(1992)	283	478	351	353	234	124	194	257	173	224	171	463	3303	275	
—MUNDA(1982)	267	500	297	662	266	213	651	242	67	509	87	165	3885	324	
• Central Prov.															
—HONIARA(1982)	351	179	353	352	150	41	118	271	124	89	63	156	2247	187	
—HONIARA(1992)	91	423	109	117	61	46	68	35	24	131	100	155	1361	113	
• Malaita Prov.															
—AUKI (1982)	376	248	346	432	192	57	214	317	161	222	26	174	2765	230	
—AUKI(1992)	168	496	213	226	60	29	249	199	149	115	272	310	2483	207	

Source: Solomon Islands Meteorological Station

Table II.1.8.3 Monthly Average Highest/Lowest Ambient Temperature Record (1982,1991,1992)

Unit: °C													
Section	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Av/Yr
Western Prov.													
—MUNDA(High)	31.0	31.0	30.7	30.2	30.3	29.8	28.5	28.8	29.4	29.2	30.6	31.7	30.1
—MUNDA(Low)	25.2	25.1	25.2	24.9	24.9	25.0	24.4	24.9	24.7	24.2	20.3	20.8	24.1
1982													
—MUNDA(High)	31.5	30.5	31.1	31.7	30.4	29.8	29.1	29.4	29.3	30.2	30.9	32.2	30.5
—MUNDA(Low)	24.5	24.1	24.2	24.2	24.1	23.7	23.6	23.6	23.8	23.4	23.4	23.8	23.9
1991													
• Central Prov.													
—HONIARA(High)	30.4	30.3	30.6	30.4	31.0	30.4	29.3	29.3	29.9	29.9	30.9	31.1	30.3
—HONIARA(Low)	23.6	22.9	23.1	22.9	22.7	21.9	21.2	21.6	21.3	20.6	20.9	23.1	22.2
—HONIARA(High)	31.2	30.5	31.0	31.2	31.3	31.2	30.9	31.4	31.0	31.3	30.9	31.3	31.1
—HONIARA(Low)	22.5	22.9	22.6	22.3	22.2	22.3	21.8	21.5	20.9	21.6	22.2	22.7	22.1
1992													
• Malaita Prov.													
—AUKI (High)	31.0	30.5	30.4	30.3	30.4	29.5	29.1	29.0	28.8	29.2	30.4	31.1	30.0
—AUKI (Low)	24.1	24.2	24.1	23.5	23.5	23.4	22.7	22.8	21.8	22.4	22.9	23.6	23.3
1982													
—AUKI (High)	31.0	30.4	30.8	30.5	30.0	29.9	29.6	29.6	30.0	30.3	30.8	31.6	30.4
—AUKI (Low)	24.1	24.0	24.0	23.6	23.3	23.2	22.5	22.8	22.5	22.4	23.3	23.4	23.3
1992													

Source: Solomon Islands Meteorological Service

Table II.1.8.4 Monthly Percentage Wind Frequency at Selected Main Station (1950-1985)

Unit: %

Section	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
• Western Prov. (MUNDA) 1962 - 1985												
CALM	47.9	53.6	53.0	57.8	55.8	52.9	44.2	38.4	38.9	46.8	56.2	56.5
NE	2.7	3.2	2.3	4.2	5.4	4.5	3.5	1.9	1.9	3.6	4.9	3.0
E	1.3	2.0	3.2	<b>7.4</b>	<b>13.2</b>	<b>14.8</b>	<b>17.6</b>	<b>15.0</b>	<b>12.4</b>	<b>14.7</b>	<b>6.9</b>	4.3
SE	1.8	2.5	4.2	5.3	<b>10.5</b>	<b>12.7</b>	<b>16.2</b>	<b>24.5</b>	<b>29.0</b>	<b>18.9</b>	6.5	3.9
S	2.1	21.1	11.8	2.0	1.3	4.3	4.7	3.8	2.5	2.0	2.2	2.8
SW	<b>12.9</b>	<b>11.1</b>	<b>13.3</b>	<b>7.3</b>	2.9	3.0	2.7	3.5	4.4	4.1	<b>9.8</b>	<b>12.6</b>
W	<b>13.5</b>	<b>8.7</b>	<b>8.4</b>	3.9	1.9	0.7	1.0	0.4	0.5	1.0	2.1	<b>5.3</b>
NW	5.6	6.4	4.5	2.2	1.1	0.3	0.3		0.2	0.6	2.1	2.3
N	2.3	4.5	2.9	2.9	2.8	1.2	0.8	0.4	0.7	1.5	2.0	1.8
Total	90.2	92.1	93.6	93.0	93.0	94.6	91.0	87.9	90.5	93.2	92.7	92.5
• Central Prov. (HONIARA) 1950 - 1974												
CALM	17.9	21.8	22.4	18.7	15.2	14.8	15.9	13.4	14.2	14.5	15.7	18.1
NE	4.6	0.2	4.3	<b>6.4</b>	<b>8.5</b>	<b>6.5</b>	<b>6.5</b>	<b>8.0</b>	<b>9.6</b>	<b>9.5</b>	8.2	6.7
E	1.4	0.2	0.5	2.6	3.6	3.5	4.3	4.7	3.2	3.1	1.5	0.9
SE	1.1	0.2	0.9	3.4	4.9	5.9	6.0	6.4	4.7	4.3	2.2	2.1
S	<b>15.3</b>	<b>22.1</b>	<b>15.9</b>	<b>17.6</b>	<b>18.3</b>	<b>20.5</b>	<b>21.0</b>	<b>21.7</b>	<b>19.6</b>	<b>22.8</b>	<b>21.6</b>	<b>19.5</b>
SW	6.3	<b>10.4</b>	5.3	4.8	4.4	4.1	2.8	2.3	2.4	2.0	3.0	4.5
W	3.8	2.2	2.6	1.1	0.4	0.3	0.3	0.2	0.2	0.1	0.4	1.4
NW	4.4	1.9	6.0	2.9	1.4	1.2	1.5	0.7	1.3	1.3	1.7	3.2
N	<b>7.3</b>	0.2	<b>6.3</b>	5.3	3.7	4.8	4.1	3.8	4.8	5.4	<b>7.3</b>	<b>7.6</b>
Total	62.1	59.2	64.2	62.8	60.4	61.6	62.4	61.2	60.0	63.0	61.6	64.0
• Malaita Prov. (AUKI) 1962 - 1984												
CALM	47.4	49.4	53.8	62.0	59.6	58.4	57.4	54.8	57.3	58.3	58.8	58.8
NE	3.0	2.2	2.4	1.8	1.5	1.3	1.7	1.5	1.5	1.8	1.5	1.8
E	4.6	<b>7.3</b>	5.9	6.0	6.5	6.8	7.0	6.6	<b>5.8</b>	5.6	6.2	<b>5.8</b>
SE	1.9	1.4	2.2	3.7	<b>7.4</b>	<b>7.8</b>	<b>7.0</b>	<b>7.1</b>	5.7	<b>6.4</b>	50.0	3.3
S	3.5	4.5	4.6	<b>7.6</b>	<b>11.4</b>	<b>13.9</b>	<b>15.6</b>	<b>19.7</b>	<b>19.4</b>	<b>16.9</b>	<b>11.4</b>	<b>7.3</b>
SW	3.9	5.0	5.1	<b>6.8</b>	5.7	6.0	4.6	4.8	4.8	5.5	<b>6.1</b>	5.1
W	7.0	5.2	3.4	2.0	1.9	0.6	0.5	0.4	1.0	1.0	1.9	4.4
NW	<b>17.8</b>	<b>16.7</b>	<b>13.8</b>	4.1	1.8	0.6	0.5	0.3	0.4	1.0	2.9	5.6
N	<b>8.3</b>	6.9	<b>6.3</b>	3.7	1.7	0.6	0.7	0.6	0.4	1.4	3.4	4.5
Total	97.4	98.6	97.5	97.7	97.5	96.0	95.0	95.6	96.3	97.9	97.2	96.6

Remarks: Each entry is the number of occurrences expressed as a percentage of the number of observations

Figures in Bold indicate largest frequency for that month.

Source: Solomon Islands Meteorological Service



Table II.1.8.5 Tropical Cyclones That Affect Solomon Islands

Name	Date	Est. wind speed (knots)
1. Angela	13 - 19 Nov 1966	73 kts
2. Glenda	26 Mar - 8 Apr 1967	63 "
3. Annie	10 - 16 Nov 1967	63 "
4. Gisele	03 - 09 Apr 1968	3 "
5. Isa	13 - 18 Apr 1970	34 "
6. Ursula	02 - 16 Dec 1971	100 "
7. Carlotta	05 - 21 Jan 1972	71 "
8. Emily	25 Mar - 01 Apr 1972	69 "
9. Ida	30 May - 03 Jun 1972	52 "
10. Kerry	13 - 28 Feb 1979	70 "
11. Bernie	01 - 07 Apr 1982	43 " (anemograph)"
12. Hina	12 - 17 Mar 1985	95 " est.
13. Namu	15 - 22 May 1986	63 - 100 kts (anemograph)
14. Blanch	22 - 23 May 1987	45 kts
15. Anne	09 - 14 Jan 1988	65 "
16. Lili	06 - 12 Apr 1989	75 "
17. Meena	04 - 09 May 1989	45 "
18. Tia	14 - 21 Nov 1991	72 - 93 kts (AWS)
19. Betsy	06 - 08 Jan 1992	45 - 55 kts (AWS)
20. Esau	27 Feb - 04 Mar 1992	max. wind of 80 kts close to the centre
21. Kina	26 - 28 Dec 1992	30 - 50 kts
22. Nina	30 Dec 1992 - 03 Jan 1993	75 - 100 kts

Tropical Cyclones That Affect Solomon Islands  
But Which We Do Not Have Complete Records Of:

1. Becky	10 - 15 Nov 1968
2. Colleen	31 Jan 1969
3. Esther	01 May 1969
4. Marge	1973 (date unknown)
5. Norman	1977 " "

Note: Other cyclones prior to 1966 were unknown.

Legend: kts = knots

est. = estimate

max. = maximum

Source: Solomon Islands Meteorological Service

## **1.9 Laws and Institutions Pertaining to Fisheries**

### **1.9.1 Fishery Act**

#### **(1) Fishery Act and Fishery Regulations**

The Fisheries Act and regulations pertaining to fisheries are given below.

- 1) The Fisheries Act: This act was established in 1972 and partially revised in 1977.
- 2) The Fisheries Regulation: This regulation was enacted in 1972 and partially revised in 1973, 1977, and 1981.
- 3) The Fisheries (Local Fishing Vessel) Regulations: These regulations were enacted in 1981 to regulate domestic fishing vessels.
- 4) The Fisheries (Foreign Fishing Vessels) Regulations: These regulations were enacted in 1981 to regulate foreign fishing vessels.

The Fisheries Act of 1972 was enacted in order to regulate the newly commenced commercial fisheries and processing activities of joint ventures with foreign companies. Therefore, it was applicable only within the 12 mile territorial waters of the nation. Consequently, it was revised in 1977 to cover the 200 mile exclusive economic zone (EEZ).

The Fisheries Regulations were enacted as supplementary measures of the Fisheries Act to define both domestic and foreign fishing vessels, to oversee fishing license qualifications, license fees, licenses for fish processing including qualifications and applicability, in addition to environmental protection, etc.

The major clauses of the Fisheries Act are outlined below.

- Provisions pertaining to a system of fisheries management (government fisheries officer)
- Provisions regarding licensing of domestic and foreign fishing vessels
- Provisions on fishing ban
- Provisions on fish processing regulations
- Provisions on the authority of the Fisheries Act and related regulations
- Provisions on applicable standards, penalties, etc. regarding law infringements

#### **(2) Issues stemming from Fisheries Act and Regulations**

The Fisheries Act and Fisheries Regulations were enacted to regulate large scale commercial fisheries and fish processing activities. Subsequently, the provisions found in

the text of the law and regulations were created with large scale fisheries and foreign fishing vessels in mind; and they were not enacted for the domestic subsistent or small-scale commercial fishing operations.

Subsequently, there is no provision applicable to this project on improving the distribution network; and it has been concluded that there are no restrictions which are applicable to the project.

However, in view of developing small-scale fisheries, the following are future major issues pertaining to the Fisheries Act and Regulations.

1) Licensing canoe fishing boats (with outboard engines)

The Fisheries Act has no provisions for licensing canoe fishing boats with outboard engines and this has made management in fisheries difficult.

2) Defining regulations on fishing gear used in small-scale commercial fisheries and regulate licensing

Fishing gear and fishing methods have not been defined and there are no regulations on licensing. This has made efforts to manage fisheries difficult.

3) Clearly define reef ownership rights in the Fisheries Act

There are no clear provisions on reef ownership rights in the Fisheries Act and Fisheries Regulations. However, fishing regulations on bait fish harvesting and the ban on fishing activities by foreign vessels within 500 yards of coastal fishing villages, exist. Although there are regulations recognizing traditional reef ownership rights in the Provincial Act, they do not clearly and legally define and establish reef ownership rights. With the development of small-scale commercial fisheries, this issue will become a source of dispute as well as an impediment to its development.

(3) Prospective revision of Fishery Act and Regulations

The government of the Solomon Islands acknowledged the need to resolve the aforementioned issues and requested FAO technical assistance to revise the Fishery Act and Fishery Regulations. Assistance in the Revision of Fisheries Legislation was carried out by FAO from 1986 to 1987. The contents of this revision contain sufficient measures to promote future small-scale commercial fisheries.

### 1.9.2 Fishermen Organizations and Fisheries Related Community Organizations

#### (1) Fishermen organizations

Unlike Japan, a system of laws pertaining to fishery cooperatives that regulate fishermen organizations do not exist in the Solomon Islands. However, fishermen organizations are registered under the Cooperative Societies Act, Chapter 73.

There were about 109 cooperatives that were registered under this law in 1993. Of this figure, only six organizations were fishermen cooperatives which is reflective of the undeveloped state of cooperatives devoted exclusively to fisheries (Table II.1.9.1). The type and number of organizations in existence are given below.

1) Fisheries Cooperatives	6
2) Consumer's Cooperatives	42
3) Multipurpose Cooperatives	31
4) Land Purchase Cooperatives	23

Cooperatives where the local inhabitants jointly purchase government land to carry out production, processing, marketing activities.

5) Land Development Cooperatives	7
----------------------------------	---

Cooperatives which registers customary land and where local inhabitants jointly carry out production, processing, and marketing activities (irrespective of product).

#### (2) Registered fishermen organizations (name, function, number of members,)

An outline of the Fisheries Cooperative Societies registered under the Cooperative Societies Act is given on the following page.

Name	Area	Number of Member	Activity	Remarks
Saro Association	Honiara Kukum	No Data	Fish trading	No activity
Western Province Fishermen's Co-op. Ltd.	Gizo (Western)	41 1 share SI\$50 (Individual) 4 shares SI\$200 (Group)	Fresh fish trading Fishing gear sales	ICOD assistance
Bitama Fishery Coop. Society Ltd.	Malaita	114 (22 Group) 1 share SI\$5 Min. 2 shares	Mutual use of fishing gear Fresh fish trading Fishing gear sales	
Suafabay Fishery Coop. Ltd.	Malaita	85 (13 Group) 1 share SI\$5 Min. 2 shares	Mutual use of fishing gear Fresh fish trading Fishing gear sales	
Kwarande Fishery Co-op. Society Ltd.	Malaita	47 (10 Group) 1 share SI\$5 Min. 2 shares	Mutual use of fishing gear Fresh fish trading Fishing gear sales	
Lau'alo Fishery Co-op. Society Ltd.	Malaita	127 (10 Group) 1 share SI\$5 Min. 2 shares	Mutual use of fishing gear Fresh fish trading Fishing gear sales	

Three fishermen organizations in North Malaita which are in the process of registering their cooperative are listed below.

- a. Makwnau Fishery Cooperative Society, Ltd. 139 members/21 groups
- b. Tae Fishery Cooperative Society, Ltd. 111 members/16 groups
- c. Ata's Fishery Cooperative Society, Ltd. 50 members/10 groups

(3) Activities of existing fishermen organizations

1) Saro Association

The association was established to market fresh fish harvested by Kukum fishermen. However, actual operations were terminated in 1989 due to mismanagement by the accountant. Before its termination, the organization allowed the Kukum fishermen to concentrate on fishing operations, while the organization took charge of fresh fish marketing.

2) Four cooperatives in north Malaita Province

a. Background of the cooperatives

The cooperative of Bita-ama in north Malaita was established and registered in 1993. The remaining three cooperatives are currently in the process of applying for registration.

The four cooperatives were established during the implementation period of the OFCF coastal fisheries development assistance project in north Malaita. The objectives of the OFCF in this endeavor were to introduce and develop new fishing methods and gear in this area (bottom long-line fishing, ) including transfer of live fish technology, quality control technology, fresh fish marketing, related facilities for fishing gear, providing machinery and tools, improving preservation technology, etc.

In their technology transfer activities, the OFCF has accomplished the following.

- Developed fishing grounds.

Developed No. 1 through No. 4 sea mounts in fishing grounds with bottom-dwelling fish. Developed Payao fishing grounds (four locations) and set up reefs for pelagic fish.

- Training in fishing methods

Fishing methods included hand-line fishing of bottom-dwelling fish, long-line fishing of tuna, skipjack, bottom long-line fishing, floating long fishing, floating FAD for trolling, floating drift long line, traps (crab pots).

- Marketing

Development of a fresh fish transport system via MDA by has been partially accomplished.

Technology transfer activities for 1993 are outlined below.

- Build and install navigational beacons and mooring buoys, carry out training in coastal navigation, and implement trial fishing operations using renovated FRP fishing boats.

- Cooperate in self-help operations, calculate fishery statistics, draw up maps of fishing grounds, carry out training in fishing operations.

- Provide and protect fishery related machinery.

b. Organization and activities of fishery cooperatives in north Malaita

A summary of the organization, function, operations, issues to be resolved, etc. is given below.

- Organization of the cooperatives

A committee (or a Board of Directors) has been set up to manage and operate the cooperative. Committee members are elected by the general members according to established regulations. A Chairman, Vice-chairman, Manager, Secretary, Accountant, and Mechanic are elected from among them. The duties of the committee are to draw up the annual report and to carry out the objectives of the cooperative to the best of its abilities. The members of the cooperative form the general assembly which is the highest decision making body in the organization.

- Member qualifications

Men and women over 18 years of age who belong to either a clan or sub-clan of the area stipulated in the articles of incorporation, are eligible for membership. Each member is required to purchase a minimum of two shares at the time of enrollment, at a cost of SI\$5.00 per share.

- Function of the cooperatives

As the cooperatives are still in their initial stages, their main functions are to manage the scheduling of the two out-board motor boats granted to the cooperatives and the marketing of fresh fish.

- Operation related activities

The committee members are in charge of managing and operating the donated OBM boats and other resources of the cooperatives. Management methods differ only slightly between the four cooperatives.

In particular, use of the FRP boats is of merit to cooperative members and all four cooperatives follow a uniform set of rules in their operation of the boats. One week is divided into two or three days and each cooperative take turns using the boat for that period, ensuring that all four cooperatives have equal use of the boats. Thus the two FRP boats are operated by fishermen of four cooperatives in one week.

- Fish marketing

Fish marketing activities of the cooperatives are not very actively carried out at the present time. Fish landed by the cooperatives are sold at the MDA

in Auki. Fish sold at the local market are not sold by the cooperatives, but directly by the fishermen.

- Issues confronting the cooperatives

Since the cooperatives have only recently been established with the assistance of the provincial Fisheries Office and the OFCF, they are as yet unable to operate autonomously without their cooperation. In particular, the OFCF will strive to establish a viable fresh fish marketing system before the project ends.

In order to enable the cooperatives in north Malaita to manage their own operations, the following four issues must be resolved, according to the OFCF office.

- Access roads from the production site in Malaita to the capital of Auki are limited. In addition, marketing of fresh fish from Auki to Honiara is dependent on ocean transport.

- Fishing grounds and weather

The cooperatives are distantly removed from the fishing grounds of high priced bottom-dwelling fish and during bad weather they are unable to leave on fishing operations. Subsequently, this has limited their ability to provide a stable supply of fish.

- Impartial cooperative operations

In the past, the chairman and his clan have used the OFCF donated OBM boats and machinery for their own exclusive use. There is the possibility that this type of misuse may occur intermittently; and there is concern that unfair operations may evolve from this misuse.

- Disputes within the cooperatives

The cooperatives contain different tribes within its membership and it will be difficult to completely resolve the friction between these tribes. However, cooperation has been observed among some of the following cooperatives mentioned below.

The cooperative which has been the most highly rated by the OFCF is the Bitama Fishermen's Cooperative. The major factors in its favor are its geographical proximity to the fish marketing area of Auki and Honiara, its comparatively close location to the fishing grounds, its minimal internal



disputes, and a leader who is comparatively impartial in cooperative operations.

In addition, one other cooperative has been enthusiastic in carrying out its operations under the second generation leader and his family, despite the disadvantage of the cooperative's remote geographical location. As a result, he has earned the cooperation of its other members.

- Fresh fish marketing system

Presently, the MDA is able to carry out such activities as purchasing fresh fish, shipping, and loading with the assistance of OFCF, etc. and without this help, stable shipping, loading, and marketing activities are not possible.

- Stable ice supply

A stable supply of ice to preserve the quality of fresh fish earmarked for the Auki and Honiara markets is required.

Presently, there are two ice plant facilities in Marau and Takuwa, but due to a shortage of operating personnel due to sickness, business trips, etc., it has been difficult to procure a stable supply of ice. In addition, each cooperative is unable to stock ice, due to the lack of a large ice storage facility.

- Each cooperative does not have their own ice storage facility, making it difficult to stock ice.

### 3) Western Fishermen's Cooperative Society, Ltd.

#### a. Background of the cooperative

The Western Fishermen's Cooperative Society, Ltd. is a fishermen's cooperative based in Gizo and it was established and registered in October 1992. It was set up under the assistance of Canada's ICOD Rural Fishing Groups Project during its second term.

The objectives of the ICOD project during its first phase was to secure cash revenue derived from fisheries for the fishermen, to increase employment opportunities from fisheries and its related industries, to foster a spirit of cooperation in the fishing activities of the inhabitants, and to accelerate the development of commercial fisheries. During this period, the ICOD built four fishing boats and set up five fishermen groups. According to a project report,

three of the five fishermen groups were fostered to undertake small-scale commercial fisheries.

Moreover, marketing and filet processing of high priced fish (kingfish, red snapper, etc.) were also implemented in order to support fishing activities, and a marketing network utilizing air transport for processed fish, including cray fish was developed.

The objective of the second phase of the project, beginning in 1992 to March 1994, was to establish economically independent fishermen cooperatives and to set up a system of management and control.

The major goals of the cooperatives were to accelerate the rise in economic profits for fishermen associations and its members based on a spirit of mutual cooperation.

b. Member qualifications

As membership has not been restricted to fishermen, the composition of cooperative members currently include part-time and professional fishermen, sport fishing enthusiasts as well as consumers such as the Gizo Hotel. Moreover, members are scattered over wide distances from Vella Lavella Island to Marovo Lagoon, Choiseul Island, etc.

Professional fishermen are mainly immigrants from Malaita Island and the immigrants of Teiteiana from Kiribati.

c. Organizational structure

Management and operation of the cooperative is carried out by elected committee members.

The highest decision making body is the General Assembly; and all inhabitants of Western Province are eligible for membership in the cooperative.

Individual members are required to purchase one share of the cooperative at SI\$50 and group members must purchase four shares at a cost of SI\$200. The ICOD project manager is currently fulfilling the role of cooperative manager, since the cooperative is still in its initial stages.

d. Cooperative activities

The sale of fishing equipment to its members, the purchase and marketing of crayfish and high priced fish such as beche de mer harvested by members, are the cooperative's major activities at present. Fishing gear is marketed by the

cooperative at a lower price than the retail shop in Gizo, in addition to importing and stocking gear not available in the store.

e. Issues confronting the cooperative

There are many members other than fishermen in the cooperative, which is further compounded by the difficulty of organizing members scattered over a wide geographical area. These factors make it arduous to operate the organization on member consensus and to foster mutual cooperation and collaboration in fish production activities. As a result, marketing fishing gear and high priced fish have essentially become the core activities of the cooperative. However, in view of the existing conditions in fisheries, the organization is beneficial for professional fishermen.

Issues which must be resolved for the present are as follows:

- At present the cooperative is mainly concerned with purchasing high priced fish for the Honiara and the export markets. Expanding the scope of these activities to include the purchase and sale of low priced fish and consignment sales is desirable.
- Currently, the ICOD project manager has taken on the role of cooperative manager. In order for the cooperative to become self-sustaining, it is necessary to foster talented local staff members.
- Despite the fact that the second term of ICOD assistance ends in March 1994, the cooperative is in its initial stages and is trying to increase its members. In addition, the members have not attained the management skills to become self-sustaining as an organization; and a few more years will be required before the cooperative can become self-sustaining. Subsequently, the project will need further assistance in order to continue.

(4) Fisheries related community organizations

1) Vilaviru Producers Development Co-op. Association Limited (VDA)

a. Summary of the cooperative

This cooperative is a multi-purpose association, established in 1986 and registered in December 1991. Its objectives are to develop fisheries, agriculture, forestry, commerce, etc. in the area between Poro in southern Choiseul Island and Taora, and to provide transport services, scholarships and other financial

assistance services to the inhabitants. Subsequently, its activities include fisheries, fresh fish transport, and fish marketing.

b. Organization of the association

The geographical scope of the organization covers the areas of Poro, Punia, Putatu, and Boboe in southern Choiseul Island and includes numerous villages within this wide area. The membership fee is SI\$10.00 for one share. The Board of Directors is composed of ten members and the highest decision making body is the General Assembly.

c. Number of members

There was a total of 140 registered members in 1991, 53 members from Poro, 9 members from Putna, and 68 members from Pututu and Boboe.

d. Activities

The association owns a 40 ton cargo/passenger vessel (Tana) which transports the region's agricultural products (mainly copra) and fishery products in addition to passengers, to the capital city of Honiara and conveys daily commodities back to this region on its return trip.

An unique practice of this cooperative is its use of the cargo/passenger vessel, Tana in its fishing activities. The fishermen go to the fishing grounds along with Tana, carry out their fishing operations, and immediately load their fish catch on to the cargo/passenger boat to be transported to Honiara. In this respect, it functions very much like the mother ship used in fishing operations.

Utilizing this method, the cooperative harvested approximately 43 mt in 1991 and about 29 mt in 1992 which were then transported and sold in Honiara (the fish harvest volume and the number of trips made by the boat in 1992 were low, due to a breakdown of the refrigerating equipment on the boat).

The fish catch transported to Honiara was sold to the Solomon Island College, the Central Hospital, restaurants, the market, exporters (Pao Yang Ltd.), etc.; and in addition to government and private groups, it was also sold to wontoks living in Honiara (who purchase the fish at the jetty when the boat docks in Tara).

Of all the fisheries related cooperatives in the country, the aforementioned operations of this particular association, centering around fish harvesting and fresh fish sales from a remote area to Honiara, are the only activities that are financially profitable (Table II.1.6.15).

e. Issues to be resolved

Although the cooperative was in the red for the fiscal year of 1992, it has achieved financial viability and its activities have been in the black for the fiscal years 1990 and 1991. The major underlying cause for the deficit recorded in 1992 was the mechanical breakdown of the RGS on board Tana, which reduced the number of trips transporting fresh fish.

However, the profit margin is small. The vessel Tana was built 15 years ago and the boat has depreciated. The high ratio of maintenance costs (13 percent) and the high interest rates on loans (about 15 percent) are financially burdensome for the association.

In addition, although the cooperative has had a chairman with managerial skills since 1991, there is an overall shortage of human resources and one of the issues confronting the organization is the recruitment of supplementary staff members.

2) Community projects

In addition to the aforementioned, several other fishery projects by joint regional companies as a major means of promoting fisheries in the area, are being planned. These regional projects only require the screening and approval of the PDU, in order to be implemented. However, in actuality, the majority of these projects progress no further than the planning stage.

The activities of the Puga project in the village of Dundee, adjacent to the sub-station of Munda in Western Province are delineated below as an example of what is being implemented.

The major activity is the sale and purchase of fresh fish between the two communities of Dundee village in Puga (about 23 households) and Dolavre (about 24 households). Although joint ownership of resources and production activities are not carried out, both communities carry out joint fish marketing activities. Profits derived from these activities are used for road repair, construction of schools, renovation of water supply facilities, etc. that benefit the entire community.

Fresh fish marketing activities of this community project began at the end of March 1992; and until the mechanical breakdown of its fresh fish cold storage facilities at the beginning of May, (purchasing activities is slated to restart at the end of July), approximately 1,500 mt of fresh fish were purchased from the villagers.

Although profits are small in terms of purchase volume, it is believed that the activity is financially viable, due to the two hotels and two restaurants in Munda, its close proximity to Noro, where there is a constant shortage of reef fish, and low labor costs. If stable production can be achieved and serious breakdowns in the machinery can be avoided, it may prove to be a successful venture.

(5) Potential of fishermen cooperatives and fisheries related organizations

The six fishermen cooperatives that have been registered according to the Cooperative Societies Act, commenced operations during the period of March 1992 to April 1993.

However, the existence of difficult problems such as antagonisms between the different tribes within the association, unfair operations by cooperative leaders, an undeveloped fresh fish transport system, and the inability to operate independently without foreign assistance, will require an inordinate amount of effort to vitalize their economic activities and to achieve autonomous management.

In contrast, the community operated Puga project has a higher potential to succeed, given such factors as the small scope of its activities which keep operating costs minimal, easily achieved consensus as a community project, and most importantly, the close proximity of a market.

Based on an evaluation of the aforementioned issues and factors, establishing and maintaining an exclusive fishermen's cooperative will require an inordinate amount of effort in areas where fishing grounds, fish market, and transport infrastructure are undeveloped and where the human resources of the nation have no knowledge of fishing technology and cooperative management skills. Subsequently, the effectiveness of measures to hastily establish such cooperatives is questionable.

Table II.1.9.1 Number of Cooperative Society by Type and Province (1993)

Type of Coop.	Consumer Coop.	Multi Purpose	Land- Purchase	Land- Develop	Fishery	Total	No. of membership
Honiara	1	0	0	0	1	2	8,058**
Guadalcanal	4	1	5	1	0	11	
Central	3	0	6	0	0	9	1,500
Western	6	7	4	1	1	19	1,594***
Choiseul	2	2	0	1	1*	6	
Isabel	4	10	8	1	0	23	1,7658
Malaita	2	4	0	1	4	11	1,695
Makira	11	2	0	2	0	15	1,582
Temotu	9	4	0	0	0	13	2,198
TOTAL	42	30	23	7	7	109	18,395

Remarks: \*, Multipurpose association involved in fishing related activities.

\*\*, Membership includes Guadalcanal Province.

\*\*\*, Membership includes Choiseul Province.

Source: Paper on Commercialisation and Privatisation  
Ministry of Commerce and Primary Industries 1992

### **1.9.3 Fish Marketing Regulations**

#### **(1) Summary of fish marketing system**

There are no specific fish marketing laws or legislation in the Solomon Islands. However, there are by-laws regulating the Honiara Market.

#### **(2) Market laws**

There are no specific laws regulating the fish market in the Solomon Islands. All activities and market pertaining to fishery products are controlled by the following by-laws.

##### **1) The Honiara (Market) By Laws**

The existing market laws are the Honiara (Market) By Laws, that regulate the public markets that are established under the authority of the Honiara Town Council (HTC). The Council will control every public market by the appointment of a Market Master and such other officer as the council may consider necessary. Public market is defined as any public market within the Honiara Town boundaries. The market by laws regulate the appropriate market fee, payable at the council office/or to the Market Master, the hours of opening and closing of the public markets, and the duties of the Market Master.

##### **2) The Honiara (Hawker) By Laws**

These by laws are also established by the authority of HTC. It defines the "hawking" or the sale, barter or exchange of goods, within the limits of Honiara Town boundaries. The goods included are wares, merchandise, foodstuffs, refreshments and drinks. However, it does not mention fishery products.



#### 1.9.4 Financial Assistance Programs

(1) Existing conditions in financial assistance programs for small-scale fishermen

1) Financial assistance programs for small-scale fishermen

A system of financial assistance (loans) for fishermen engaged in small-scale commercial fisheries has not been established. This is due to a shortage of capital and a minimal demand for revenue since much of the fisheries carried out in the nation are subsistent fisheries, with the exception of large-scale commercial fisheries. Subsequently, the Development Bank of Solomon Islands (DBSI) has been the center of financing for the small-scale agriculture, forestry, and fisheries sectors of the country.

2) Summary of DBSI

The DBSI was established with the goal of assisting economic and social development. The financiers are the Central Bank and the government owned Investment Corporation of Solomon Islands. The authorized capital is SI\$10,000,000 and the paid-up capital is SI\$5,213,604.

3) Existing conditions of DBSI financing

a. Amount of loan, interest rates, number of cases according to sector

The existing condition of DBSI financing for each sector in 1990 and 1991 are shown in Table II.1.9.2.

The amount of loans made to the agricultural sector in 1990 and 1991 is SI\$571,000 (15 percent of total loans) and SI\$336,000 (7 percent of total loans), respectively. The number of loan cases for this sector was 80 cases (52 percent) and 41 cases (35 percent), respectively, for the years 1990 and 1991. The number of cases in this sector is higher than in others, but the average loan amount per case was small, averaging SI\$7,138 in 1990 and SI\$8,195 in 1991.

b. Amount of loans issued to fishery sub-sector by province

Loans extended to the fishery sub-sector for the past three years beginning from 1990 to 1992, according to province are shown in Table II.1.9.3.

According to these figures, the loan amount extended to this sector from 1990 to 1992 was SI\$156,127, equivalent to only about 12 percent of the total amount of loans extended to the agricultural sector. Moreover, the loan amount per case averaged SI\$3,400 and was minimal in size.

The number of loans extended was the highest for Western, Central, and Malaita Provinces, which indicates that fishery related activities are more active there than in other provinces.

c. Loan guidelines

DBSI loan guidelines for small-scale fisheries is as follows:

- Loans which are to be used to finance Arumi and FRP fishing boats, boats with outboard engines, fishing nets and other gear, esky and other fishery related activities.
- Qualified fishermen intending to carry out fisheries on a commercial basis.
- Applicants recommended by the Fisheries Division of the Natural Resources Department.
- Applicants with two guarantors and collateral in the form of a bill of sales for machinery or other assets.
- A loan period of 18 months with no term of deferment.
- Fifty percent of the required amount for the project must derive from DBSI loans.
- The annual interest rate is 10 percent.

d. Repayment conditions

Appropriate data regarding the repayment of loans extended to the small-scale fisheries sector was not available at the time of this survey study.

However, according to the report on loan repayment ratios of the research officer (based on a study using available data), there were 29 cases of delayed loan repayments (about 31 percent) out of a total of 93 projects in the fishery sector until 1991 (Table II.1.9.4).

In the same report, the ratio of loan arrears according to branch offices was about 68 percent at the Auki branch office, and a comparatively low ratio of arrears for Honiara at 13 percent, 7 percent in Guadalcanal, and 3 percent in Isabel Province.

(2) Feasibility of a credit system

Subsistent fisheries is the major form of fisheries in the Solomon Islands and the population of fishermen engaged in small-scale commercial fisheries is small. Moreover, the market for fresh fish is not fully developed and a sudden rise in the population of small-scale commercial fishermen is not anticipated. Fishermen cooperatives which center

exclusively on fishermen, have only recently been established and they are still financially and technologically ineffectual. Subsequently, the development of a credit system for fishermen organizations as seen in advanced nations, is not possible.

Government funding of a credit system is another possibility, but it is unfeasible in view of the current financial condition of the government.

In contrast, the interest rates of DBSI loans for the small-scale commercial fisheries sector are low compared to interest rates and conditions of medium and large loans (minimum 14 percent), in view of the existing loan environment of DBSI. When the interest rates on loans are compared to those of commercial banks (about 18 percent), the loan conditions are moderate.

In view of the aforementioned, it would be more appropriate to continue the DBSI loans (while looking for lower interest rate loans), develop the fresh fish market and monetary economy at the current stage, and plan a system of financing later.

In conclusion, setting up a system of financing for the small-scale fisheries sector is still too early and untimely.

Table II.1.9.2 Loan Amount by Sector 1990 and 1991

Sector	1990				1991			
	Number	%	Value (SI\$) ('000)	%	Number	%	Value (SI\$) ('000)	%
Agriculture	80	52	571	15	41	34.5	336	7
Industry	9	6	389	11	16	13.5	1,423	28
Commerce	38	25	1,350	36	45	38	1,053	20
Service	27	17	1,398	38	17	14	2,341	45
Total	154	100	3,708	100	119	100	5,153	100

Source: 1) Annual report 1991. DBSI.  
2) Response to a letter of inquiry from DBSI 1991 July.

Table II.1.9.3 Loan Amount for Fisheries Project by Province (1991 &amp; 1993)

Province	No. of Project	Loan Amount	%
Malaita	5	33,925	22
Western	10	40,108	26
Guadalcanal	3	9,905	6
Isabel	2	5,048	3
Makira	2	12,797	8
Central	9	35,888	23
Honiara	5	18,456	12
Total	36	156,127	100

Source: Response to a letter of inquiry from DBSI, July 1993.

Table II.1.9.4 Ratio of Arrears of Fisheries Related Loan by Province

Branch	No. of Project	Amount of loan (SI\$)	Share (%)	Arrears (%)	Number of Projects in Arrear	Balance of loan (SI\$)	Balance of loan (%)
Auki	18	67,909	14.00	68	12	85,565	126
Central	17	97,013	20.00	22	4	37,835	39
Gizo	18	72,760	15.00	30	5	50,932	70
Gadalcanal	11	29,104	6.00	7	1	10,768	37
Honiara	13	130,968	27.00	13	2	35,361	27
Isabel	4	14,552	3.00	1	1	5,821	40
Makira	12	72,760	15.00	33	4	48,749	67
TOTAL	93	485,066	100.00		29	275,031	

Source: "The Report on Fisheries Sub-Sector of Agriculture Sector" by Research Department of DBSI, June 1992

### 1.9.5 Public Corporations

#### (1) Public corporations of the Solomon Islands

The availability of private investment capital in the Solomon Islands is limited. As a result, investment in economic and industrial development related operations is usually undertaken by the central or provincial government run public corporations or joint venture companies established between the government and the private sector.

These public corporations are divided into central government and provincial government established organizations.

##### 1) Central government operated public corporations

- a. Institutions such as the Post Office, the Water Unit, Marine Transport Unit, etc. are public corporations which operate under the central government budget.
- b. Public corporations which have received government assistance, but which operate under an autonomous budget are the Solomon Islands Port Authority, the Livestock Development Authority, Solomon Islands Electricity Authority, Solomon Islands Housing Authority, the Investment Corporation of Solomon Islands, Commodities Export Marketing Authority, the Tourist Authority, etc.
- c. Joint venture firms between the government and private sector (including foreign firms)

Firms such as Solomon Taiyo, Levers Solomon Co., Solomon Islands Plantation, Co., Solomon Airlines, Solomon Islands Telecom Co., etc. are joint venture firms between the government and the private sector. The government invests in these companies through the Investment Corporation of Solomon Islands. In addition, the Investment Corporation of Solomon Islands has also invested in public financing institutions such as the DBSI and the NBSI, etc.

#### (2) Public corporations established by provincial governments

The provincial governments have also established public corporations in order to actively participate in economic activities, with the objective of promoting economic and industrial development within their respective provinces.

The Malaita Development Authority (MDA), the Guadalcanal Development Authority (GDA), the Isabel Development Authority (IDA), the Central Development Authority (CDA), etc. are examples of public corporations set up by the provincial

governments. Currently, the activities of the MDA include the management and operations of the provincial rest house, communication hall (for lease), fish market, agricultural machinery, truck rentals, and other activities formerly operated directly by the provincial government. The main activities of the GDA are mainly concerned with the coconut plantations.

With the exception of the capital city of Honiara, the economy of each province is largely subsistent; and compounded by shortages in financial and human resources, the effectiveness of public corporations has been curtailed.

(3) Acts and ordinances pertaining to public corporations

Public corporations established by both the central and provincial governments are regulated by laws. For example, the central government operated SIEA was established under the Electricity Act and the MDA was set up under the Malaita Province Development Ordinance.

The ordinances or acts which regulate public corporations are passed upon approval of the Prime Minister and the National Parliament or by the Provincial Premier of the Provincial Assembly.

The function, type, legal authority, scope of operations, activity content, etc. of public corporations are all regulated by these ordinances or acts. These laws differ according to the objective of the public corporation and there are no uniform laws which are applied. However, they usually contain the following regulations.

- 1) Name of act or ordinance and a definition of the terminology used.
- 2) Intent to establish a public corporation, its functions and authority (the objective of the public corporation, its policies, structure, activity content and scope)
- 3) Financial resources  
(Invested capital, authority to manage finances, right to invest, regulation on financial application, auditing authority, etc.)
- 4) Others  
(Right to establish employment regulations, regulate employee illegal behavior)
- 5) Supplementary  
(Scope of investment, authority to appoint public corporation personnel)

(4) Structure, institution of public corporations

The internal functions, corporate name, number of personnel, etc. of public corporations are regulated by the aforementioned existing acts or ordinances. Although these laws differ somewhat in content, regulations pertaining to function are the same.

For example, the Board of Directors for the CDA is allowed five to seven members, whereas the number of Board Directors for the MDA is restricted to five members. The structure, number of personnel, qualifications of Board members, etc. differ between respective public corporations which are free to establish an organizational structure in keeping with their objectives and activities. A general outline of the internal organization of a public corporation is given below.

1) Board of Directors

The Board of Directors is responsible for carrying out the policies and activities of the public corporation.

a. Type

A Board of Directors with decision making powers.

A contingent Board of Directors without decision making powers.

b. Qualifications

- Board of Directors with decision making powers

Board members are qualified personnel in agriculture, commerce, manufacturing, finance, management, etc. who are unrelated to the Provincial Assembly.

- Contingent Board of Directors without decision making powers (the number of board members and their qualifications differ according to public corporation)

The General Manager, the provincial governor, provincial vice-minister or high official, etc. are appointed to serve as advisory board members.

c. Selection of the Board of Directors

Board members are selected by the relevant authorities and appointed by the government.

2) Management

Actual management and operations of the public corporation are implemented by the General Manager appointed by the Chairman of the board and qualified staff members hired by the corporation.

(5) Objective, function, and scope of operations

The objective, functions, and content of each public corporation's operations are defined and regulated by a relevant act or ordinance.

For example, the MDA is authorized to oversee a wide variety of sectors ranging from the city's fish and meat markets, air and marine transport law, agricultural, commercial, manufacturing industries, recreation facilities, restaurants, bars, financial institutions, to real estate, etc.

However, the activities of public corporations are restricted and defined by its founding act or ordinance and to the policies and intentions of the government and its relevant agencies.

Although the SIEA is financially autonomous in its operations, it is required to submit an annual report to the National Parliament.

(6) Finances

The investment and operating capital and assets of a public corporation are defined and regulated by its act or ordinance. Subsequently, its financial management and operations is also determined by its act or ordinance. Generally, the finances of a provincial public corporation is given below.

1) Investment capital

Capital and assets are transferred from the central or provincial government.

2) Operating capital

Government capital, interest, grants, loans, and capital earned from its operations are managed in accordance with the organization's objectives and operations, as set forth in its ordinance. Generally, 25 percent of net profits earned from its activities are set aside as operational reserve funds, and the remainder is utilized as provincial finances in a joint decision by the corporation and the provincial government.

(7) Feasibility of establishing a public corporation

As delineated above, there are a variety of public corporations in the Solomon Islands. Public corporations are regulated and established according to their objectives, functions, etc. Subsequently, a variety of public corporations can be established according to legal acts or ordinances and their structure, function, and operations defined.



### **1.9.6 Solomon Islands Legal and Taxation Systems**

An overview of the legal framework in the Solomon Islands for business activities, regulations governing individual and company income tax, and foreign investment incentives available to business enterprises are described here. It also looks at the taxes and business climate affecting fisheries enterprises where there may be potential to promote private/public sector cooperation in the fisheries sector.

#### **(1) Company formation**

Every individual, firm or corporation engaged in business operations in the Solomon Islands is required to register with the Registrar of Companies as provided by the Registration of Business Names Act. The registration procedure calls for a Statement of Particulars (Form BN/2) containing the following information:

Local companies, wholly owned by Solomon Islanders, incorporated under the Companies Act are not subject to Investment Board approval. Other companies not wholly owned by Solomon Islanders or overseas companies which establish a place of business in the Solomon Islands must apply for Investment Board approval. Upon incorporation and within 30 days of submitting all documentation, the Registrar issues a Certificate of Incorporation.

Formation of private companies requires a minimum of two members and public companies seven members. A private company is limited to fifty shareholders, though there are exceptions and exempt status may be granted for closely held companies. All companies are obliged to keep proper records, prepare annual accounts, and have them audited. Fees and costs associated with formation vary with complexity of the company's structure and authorized capital. Annual and routine business fees are modest.

#### **(2) Taxation**

##### **1) National income tax system**

Resident persons, including companies, are liable for tax on all income which accrues in, is received in, or derives from activities in the Solomon Islands. Non-resident persons are liable only on income which accrues in or is derived from the Solomon Islands. Taxes are due to the National Government, Ministry of Inland Revenue. There are no requirements to file returns with individual Provinces, though each maintains the right to levy taxes or license fees as it deems appropriate.

There are two kinds of taxes; individual tax and company taxes, and in this study the individual tax is excluded.

## 2) Taxation of Companies

Companies are taxed on total income less allowable deductions. Total income is broadly defined as gross income plus receipts deemed to be income by law. Allowable deductions include the gross amount of any dividend paid in any year by a resident company as well as most debits to the revenue account of business enterprises.

- a. Rates of Tax: 35 cents on the dollar for companies incorporated in the Solomon Islands and 50 cents on the dollar for companies not so incorporated.
- b. Dividend Withholding Tax: Resident companies are required to deduct and remit to the Inland Revenue Division withholding tax at the rate of 20 percent from dividends paid to residents and 35 percent from dividends paid to non-residents.
- c. Losses: A deficit in any year is deducted in determining income chargeable to tax in the next year provided the shareholders remain substantially the same. There are no time restrictions or business continuity tests.
- d. Depreciation (fixed rate method): The diminishing value of assets is depreciated in one of three classes:
  - immovables, including buildings, fixtures and fittings, bridges, wharves, slipways, boilers and oil storage tanks, at 5 percent per annum;
  - vehicles, vessels, aircraft and all plant machinery, at 25 percent.
- e. Tax Holidays and Investment Incentive depreciation: Recently enacted amendments provide tax holidays of three to six years to "approved enterprises" (both local and foreign) based on the percentage of local value added as defined in relation to the value of ex-factory sales of approved products. Special provisions apply where the capital of the investment exceeds SI\$10 million.

Additional exemptions apply to enterprises engaged in specific undertakings. Tourist-oriented projects receive five-year tax holidays and certain accelerated depreciation. Export profits from manufactured or processed goods, fresh seafood, and fresh agricultural produce are eligible for tax holidays for three to six years and an allowance of 150 percent of expenditure on promotion and marketing of exports. Agriculture, forestry, animal husbandry and fisheries can generally apply tax holidays for a period of five out of any ten years. Accelerated depreciation may be applied to factory construction or expansion.

f. Special Classes of Business: Special provisions apply to the determination of income chargeable to tax in the case of insurance and cooperative societies.

g. Withholding Tax: Withhold tax for individuals engaged in fisheries activities are as follows.

- Residents	Fishing operations	10 percent
	Sales of marine products	10 percent
- Non-residents	Foreign pole & line fishermen	10 percent
	Foreign purse-seine fishermen	15 percent

### 3) Indirect Taxes

Other Solomon Islands indirect taxes incurred in the course of doing business by both individuals and companies include the following. The duties are generally tax deductible expenses; the taxes are not.

a. Goods Tax: According to Goods Tax Act passed in December 1992, a manufacturer or wholesale merchant must pay, i.e., charge and remit, goods tax on the wholesale value of goods manufactured in the Solomon Islands or imported at the rate of 8percent unless:

- a sales tax number is properly quoted by the purchaser;
- the vender is deemed not be a manufacturer or wholesale merchant in relation to a particular transaction; or
- the goods sold, or the purchaser, are specifically exempted by the legislation.

b. Sales Tax: There are no sales tax for fishery products.

c. Customs Duty: The 10percent Customs Levy on goods entering the Solomon Islands was abolished with the imposition of the Goods Tax in 1992 by order of the Minister. (Fisheries gear including nets, lines, hooks, wire, seine twine, net preservatives, deck equipment, and fishing boats used solely for commercial fishing were exempt.) The duty on live, fresh, frozen or dried fish, mollusks or crustaceans has increased from 10 percent to 50percent; the duty on processed and canned marine products from 50 percent to 100 percent.

d. Export Duty: Duties are levied on several natural resource commodities. Those specific to the fisheries sector include 10 percent export duty on shells; 30percent on unworked trochus shell; 3.5 percent on fresh, chilled or frozen tuna-like fish and billfish; 5 percent on dried tuna-like fish, commonly known as arabushi; and 10 percent on all species of fresh fish, including shellfish and coral gems.

### (3) Foreign Investment Incentives

The Solomon Islands places great emphasis on attracting foreign investment as a means to increase economic activity by offering a broad range of incentives to foreign investors. The net economic benefit of the proposed investment is the dominant consideration in assessing both the acceptability of an investment and the degree of assistance it will be accorded. Thus the assessment process focuses particular attention on the impact the investment will have on the followings.

- 1) Widening the productive base.
- 2) Strengthening the technical and marketing expertise of the private sector;
- 3) Generating either net export income or import cost savings; and
- 4) Providing employment and training especially in areas outside Honiara.

The Solomon Islands Foreign Investment Board is empowered to negotiate investment incentive packages tailored to individual proposals. Available incentives include tax holidays, import concessions for raw materials and plant construction, duty free exports, carry forward losses, accelerated depreciation, and export market development and training incentives. Those directly applicable to fisheries and marine transportation, both priority areas of investment, are listed below.

### (4) Fisheries and marine transportation investment incentives

- 1) Tax holidays may be granted for 3-10 years depending on capital investment and percentage of local value added from the date of business commencement; normal taxation and depreciation starts at the end of this period. Very large projects, in excess of SI\$10 million, in the national interest may negotiate special terms.
- 2) Those exporting 100 percent of their production may apply for 100 percent tax relief for a period of five years irrespective of local value added.
- 3) An enterprise producing and exporting fresh, manufactured or processed seafood not granted tax exemptions under the Tax Holiday Incentive may be exempted from income tax on the export profits and income for a period of 3-6 years.
- 4) Profits obtained in any one year of the Tax Holiday period are exempted from taxes. Losses experienced in any one year of the Tax Holiday period will be accumulated and applied to profits obtained in subsequent years.

- 5) Off-shore or deep-sea fishing enterprises may claim exemption from income tax for five years out of a ten year period from the date of commencement of commercial production.
  - 6) Up to fifteen years exemption from withholding tax on dividends paid to shareholders on accumulated profits may be granted, and up to ten years exemption from withholding tax on interest payments.
  - 7) Accelerated capital write-off of 40 percent in the first year and 5 percent per annum thereafter may be granted to manufacturing enterprises.
  - 8) Double deduction for expenditure on apprenticeships and tertiary education in the Solomon Islands and overseas may be permitted.
  - 9) 150 percent tax deduction for bona fide expenses incurred in the promotion and marketing of exports may be permitted, and 150 percent tax deduction for the cost of inter-Province transport of raw materials and approved products.
  - 10) Duty free entry for capital equipment, materials and equipment required for the construction of cargo or passenger vessels, and drawback on re-exported items without time limitation may be permitted.
  - 11) Subject to exchange control regulations, the foreign investor is entitled to transfer foreign currency out of the country at the prevailing official rate of exchange and after payment of taxes on the proceeds from the sale of the business or dividends and profit.
  - 12) Marine product exports originating in the Solomon Islands enter Australia and New Zealand duty free under the South Pacific Regional Trade and Economic Cooperation Agreement (SPATECA) and the European Community under the LOME IV Convention.
- (5) Tax incentives/commission of foreign fisheries enterprises

The incentives and tax concessions offered to investors in fisheries are available to both foreign and local business enterprises on application to the Investment Board. But it appears only fisheries enterprises with foreign interests have taken full advantage of the investment incentive program. Solomon Taiyo Limited (STL), the largest and most visible fisheries enterprise, has used the program effectively.

(6) Tax status of local fisheries enterprises

Local fisheries enterprises generally receive the same treatment under the Solomon Islands tax system. Private sector fishing companies, importers and exporters, whether partnerships or incorporated companies, are subject to the Company Tax and Indirect Tax Regulations described earlier. Although eligible to apply to the Investment Board for investment incentives, local companies have been unable to take full advantage of the investment program, largely because the scale of their investment is considerably less than the enterprises engaged in tuna operations.

Fisheries associations and cooperatives are treated the same as private sector companies. They must pay corporate tax and goods tax, and remit the 10 percent withholding tax on payments to fishermen, even though they may be members, if the cooperative or the association intends to resell the catch.

Statutory bodies such as the Solomon Islands Electric Authority, Port Authority or Livestock Development Authority do not pay corporate taxes and generally not withholding taxes, only pay tax on employee earnings. The Provincial Government Development Authorities receive similar treatment. They do not pay corporate tax, only PAYE tax, and some have received withholding and goods tax exemptions from the Tax Commission. One result is that the business arms of the Provincial Governments enjoy a tax advantage over private sector operators. The Malaita Development Authority, for example, is exempted from withholding and goods taxes. The EC Rural Fisheries Enterprise Project is exempted from withholding tax only. Yet both enterprises compete with private sector fish wholesalers, who receive no special treatment, in purchasing fishermen's production in North Malaita.

(7) Business climate for fisheries enterprises

The incentives offered to investors in the fisheries sector appear attractive. Tax holidays and deductions, fiscal procedures, and profit repatriation measures are favorable, but the overall business climate is not conducive to the expansion of local, private sector fisheries operations. The tax structure, driven by the need to generate income at the national, provincial and even the community level, has constrained operators and discouraged new or further investment.

Private sector operators cite several reasons affecting their willingness to expand their fisheries business activities. Among them are the difficulty of doing business in the Solomon Islands; the lack of suitable infrastructure; the low-margin, high-risk nature of most fisheries enterprises; the limited resource potential of marine resources currently in

high demand such as lobster, beche-de-mer, pearl lip oyster and trochus; and the low volume of fin fish available on the market for processing and export.

In addition to corporate tax, fisheries enterprises incur a variety of varying fees and expenses in the course of undertaking their activities. Fishing fees ranging up to SI\$10,000 may be levied by Provincial Governments. Annual shipping licenses up to SI\$500 per boat may be necessary to move marine products out of a Province. Marine product business/trading licenses costing up to SI\$5,000 per year are required on some commodities by some Provinces. Commissions up to 10 percent of the value of the catch may be collected by local chiefs, and compensation fixed at rate of SI\$1-2,000 may be paid to communities for the right to purchase marine products from local fishermen.

Private sector operators seem to have been able to absorb the additional costs imposed by Provinces and communities because their activities are primarily export-oriented. Their continued operations up until quite recently indicate that the differential between operation costs and the overseas sales price was sufficient to allow an acceptable profit. But that situation is now in jeopardy with the recent introduction of the 8 percent Goods Tax in addition to the 10 percent export duty on fresh/frozen fin fish and shellfish. The margin that had existed may not be sufficient to cover the increased tax cost of doing business. In view of this situation, the national government should take an objective look at the tax structure and the special treatment enjoyed by provincial development authorities and reassess their affect on private sector business activities.

### 1.9.7 Evaluation of Foreign Assistance

Fisheries development in the Solomon Islands is heavily dependent on external economic and technical assistance. Virtually all development initiatives have been donor supported, though some have included a Solomon Islands Government contribution. The annual recurrent budget of the Fisheries Department has grown steadily since 1984, but it is almost totally consumed by salaries and wages, operating costs, and communications. Substantial fees are received from Japanese and other distant-water fishing vessels operating under fishing license access arrangements, but these revenues are retained by the national government and are not necessarily available to the Fisheries Division for development activities. Given the overall deteriorating balance of payments position of the Solomon Islands, it is likely the country will remain dependent on international assistance to support fisheries development initiatives.

#### (1) System of assistance

Under the present National Coalition Partnership Government the Ministry of Development Planning (MDP) has been mandated the portfolio function of economic planning and national development. As a result, the MDP is the central coordinating body for all national development programmes and projects proposed for financial assistance. New procedure for submission of development projects requiring financial assistance from both external donor agencies and the Solomon Islands Government is summarized in Fig.II.1.9.1.

The initiating ministry having identified a development project requiring financial assistance should submit a project profile to MDP. On the other hand the Provincial Government should submit the project profile to the Ministry of Provincial Government and Rural Development (MPGRD) who after endorsement of the project should submit it to MDP. Likewise initiating statutory authorities should submit its project profile to its respective ministry who after endorsement of the project should submit it to MDP.

Similarly ministerial proposal for short-term consultancies of less than 12 months duration should be submitted to MDP. Provincial Government and statutory authorities proposals for short-term consultancies should also be submitted in the manner described for projects above.

All projects submitted will be scrutinized by MDP for consistency with the NCP Government plans, policies and priorities and then further submitted to the National Development Planning Council (NDPC) for formal approval.



Projects approved by NDPC will then be further developed and documented by the initiating agencies and further appraised by MDP for financial, economic and technical viability. Approved projects would then be forwarded and negotiated with funding agencies.

(2) Assistance plans

Foreign assistance projects are broken into four categories: (1) Small-Scale Fisheries and Marketing Infrastructure; (2) Commercial Fisheries Development; (3) Resources Assessment and Aquaculture; and (4) Institutional Development and Training. The major projects are shown in Table II.1.9.5.

(3) Evaluation of foreign assistance

In the area of small-scale commercial fisheries and traditional coastal fisheries, foreign aid projects have been successful in developing and introducing fishing and quality control technology on a trial basis. However, issues which are delineated below, must be resolved in order to enable these foreign aid projects to take root in the area.

- 1) Social and cultural factors (work volition, traditional customs, etc.): The adaptability of subsistent fishermen to newly introduced technology is low.
- 2) Transport: The population is widespread and scattered throughout the nation and integrated effects cannot be expected. Although cargo and passengers rely on ocean transport, it is difficult to secure economically viable routes due to the nation's numerous islands,. As a result, the volume of cargo and the level of services are extremely poor and this situation is a great impediment to fish transport.
- 3) Management and operations: Due to a shortage of manpower and an undeveloped organizational system, continued operation of the project after a transfer of management, remains precarious.
- 4) Economic and financial aspects: The projects are small in scope and are geographically scattered, making steady shipment of fish products difficult. In addition, the market is also unstable and there are too many impeding factors which hinder the profitability and operation of the project on a commercial basis.

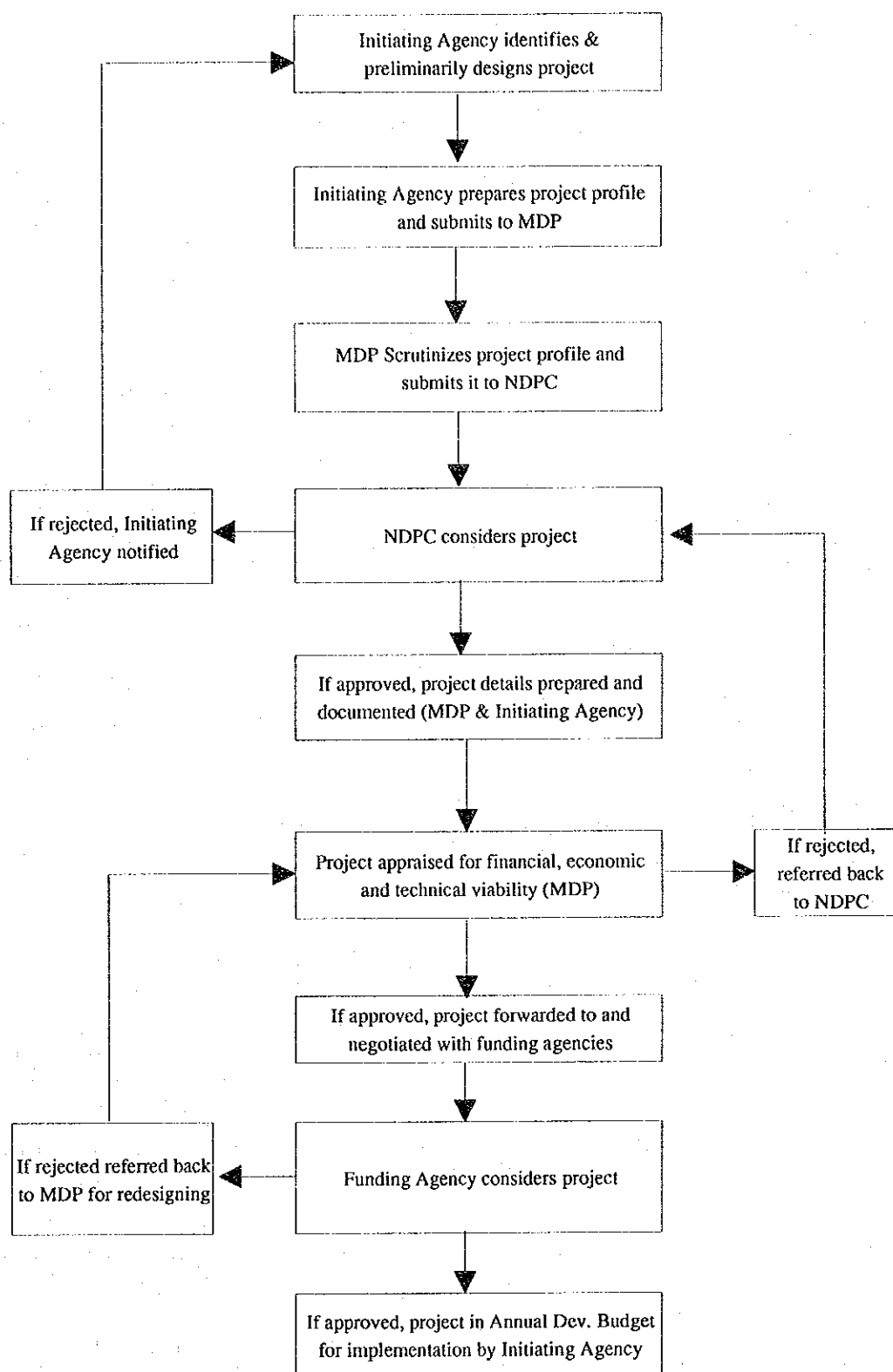


Fig. II.1.9.1 Process Procedure of Foreign Assistance Project

Table II.1.9.5 International Fisheries Development Assistance Projects (1/2)

Donor	Category	Name of the Project	Project Year	Funding Amount	Project Content
JICA	SFMI	Rural Fisheries Development Project	1981~1984		Construction of 9 Fisheries Centers Bldg.: 280 m <sup>2</sup> , similar layout plan, office, training room, marketing room, fishermen's room, residential area. Equip.: 12 m <sup>3</sup> walk-in cold storage, 40 KVA generator. Provision of 4.94 ton fish carrier vessels and 105 ton cargo-passenger vessel
AIDAB	SFMI	Rural Fisheries Development Project	1980~1984	NA	Provision of ice making machine (800 kg/day) for JICA-built Fisheries Center.
AIDAB	SFMI	Provision of Refrigeration Spare Parts	1987~1988	S\$300x10 <sup>3</sup>	Provision of spare parts for ice making machines in the Fisheries Centers.
EC	SFMI	Development of Rural Fishing Enterprises Project	1989~1994	S\$1,271.5x10 <sup>3</sup>	Organization of fishermen groups and provision of fishing boats with engine and fishing gears. Coordination/assistance in fish marketing & fishing at existing three Fisheries Center.
USAID	SFMI	Rural Fisheries Center and Management Project	ongoing	S\$952x10 <sup>3</sup>	Provision of 5 sets of ice making machine for the rural Fisheries Center. Construction of 7 Fisheries Center. Sponsor in training senior fisheries officer and opening annual conference for senior fisheries officer.
OFCF	SFMI	Rehabilitation of Fish Marketing Infrastructures (FDA PIN Project)	1992	NA	Repairing ice making machine and promoting refrigeration technology transfer at existing three Fisheries Centers.
ICOD	SFMI	Establishment of Rural Fishing Groups	1990~1992	\$129x10 <sup>3</sup>	Support of the development of small-scale fishing groups in western Province. Providing fishing boats/gears and training the fishermen's group. Coordinate fish marketing.
UNDP	SFMI	Artisanal Boatbuilding Project	1985~1987	\$85.7x10 <sup>3</sup>	Designing local fishing boat & training boatbuilders.

Source: FD, EC, OFCF

Table II.1.9.5 International Fisheries Development Assistance Projects (2/2)

Donor	Category	Name of the Project	Project Year	Funding Amount	Project Content
JICA	SFMI	Noro Fisheries Infrastructure Project	1989~1992	\$24x10 <sup>6</sup>	Provision of ice making machine (800 kg/day), 500 ton cold storage 4 ton/day blast freezer, workshop marketing area, office for rural fisheries development.
OFCF	RAA	Coastal Bottom Fisheries Development Project	1987~1989	\$955x10 <sup>3</sup>	Investigation of deep-water snapper resources at Lambi. Provision of fish research vessel.
OFCF	SFMI	The Coastal Fisheries Development Project in North Malaita	1989~1994	\$500x10 <sup>3</sup>	Improvement and introduction of fishing gears & methods. Improvement of fish marketing & handling technology. Technology transfer on repair/maintenance of O/B engines & fishery related equipment. Provision of FRP boats, fishing gears, O/B engines, ice boxes, radiotelephones, ice making machines, cold storages, generators & trucks.
AIDAB	IDT	Fisheries Resources Research & Development Project	1988	\$1.9x10 <sup>6</sup>	Construction of the new Fisheries Department building in Kukum.
FAO/ UNDP	IDT	Review of Solomon Islands Fisheries Statistics Program	1980	NA	Review of the statistics gathering and data processing activities of the Fisheries Research and Resource Management Division of the Fisheries Department.
FAO	IDT	Review of the Fisheries Act	1987	NA	Review of the Fisheries Act and Associated registration.

Source: FD, EC, OFCF

Remarks:

- JICA : Japan International Cooperation Agency
- OFCF : Overseas Fishery Cooperation Foundation
- AIDAB : Australian International Development Assistance Bureau
- FAO : Food and Agriculture Organization of the United Nations
- UNDP : United Nations Development Programme
- EC : European Community
- USAID : U.S. Agency for International Development
- ICOD : International Center for Ocean Development (Canada)
- SFMI : Small-scale Fisheries and Marketing Infrastructure Development
- IDT : Institutional Development and Training
- RAA : Resources Assessment and Aquaculture

## **1.10 Review Of Environment Law / Priorities And Initial Site Assessment**

### **1.10.1 Summary**

At the time of this Study, there was a draft bill for an environmental act, A Bill for an Environment Act (Draft), Australian Centre for Environmental Law, SPREP, IUCN, Feb 1993, that was to be presented to Cabinet for approval. Should this bill be approved, Solomon Islands will then have an integrated environmental legislation that should encompass environmental planning, assessment & monitoring, natural resources & national heritage protection, pollution control and enforcement provisions.

During the Study period, the Act had not been approved therefore it was not reviewed for this report as the Act will likely change in the review process by the Attorney General and the Cabinet.

The Regional Environmental Technical Assistance (RETA) conducted a review of the relevant environmental law in Solomon Islands at the end of 1992 by Boer B, titled Review of Environmental Law in Solomon Islands (Pre-Print Draft), SPREP, IUCN, ADB. The comprehensive legal review covered all the existing legislation within their respective areas:

- environmental law and sustainability
- international environmental obligations
- constitutional and administrative structure, customary law
- land tenure in Solomon Islands
- environmental planning & assessment
- water quality and management
- water, land, air and noise pollution
- public environmental health
- conservation of biodiversity
- conservation of cultural heritage
- fisheries
- agriculture
- forestry
- mining and energy
- tourism

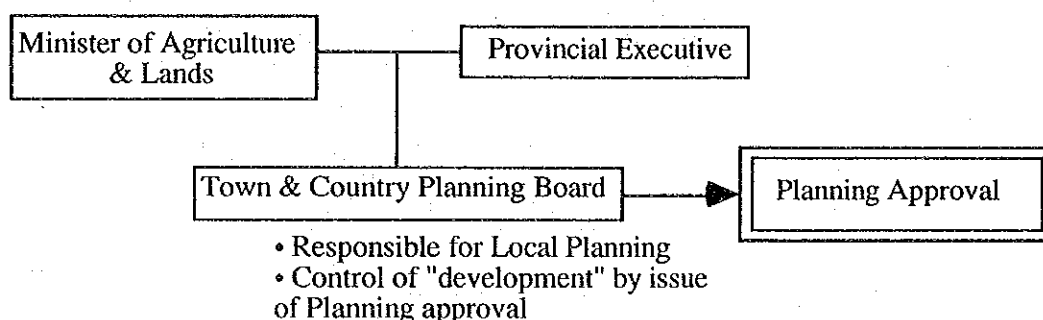
### **1.10.2 Environmental Planning & Assessment**

At present the existing legislation/policy that have relevance to environmental planning and assessment are:

- Town and Country Planning Act 1979
- Investment Act 1990
- Research Act 1982
- Honiara Town Council, Building By-Laws, 1960
- Western Province Building Ordinance 1991
- Western Province Environmental Policy

(1) Town and Country Planning Act 1979

This Act is the main legal mechanism for regulating the planning at both the national and provincial levels. It is administered by the Physical Planning Unit, Ministry of Agriculture and Lands. The amendment in 1982 devolved to the provinces and Honiara Town Council the physical planning function to be conducted by the Town and Country Planning Board in each province.



The followings are not covered by the definition of "development" in the Act therefore does not require planning permission;

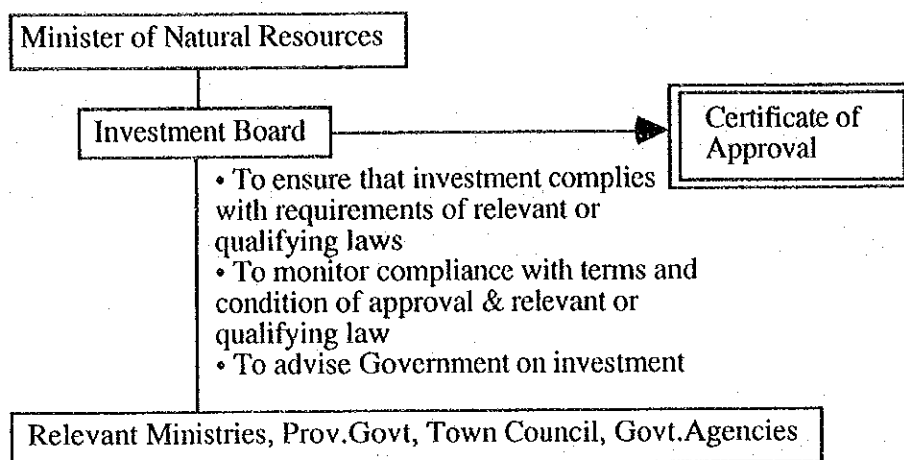
- interior alterations of a building
- road improvement or maintenance
- street works & associated services
- development of land adjacent to a house
- the use of any land for the purposes of agriculture, livestock keeping, fishing & forestry
- other developments as prescribed by the Minister

There are no guidelines on environmental planning matters or provision for consultation with other public bodies in the consideration of an application by the Board.

The Board does not have jurisdiction over customary lands. An appeal of the Boards' decision may be made to the Minister. The decision of the Minister shall be final and shall not be questioned in any proceedings whatsoever.

(2) Investment Act 1990

This Act applies to both local and foreign investment. It is administered by the Minister of Natural Resources through the Investment Board. On receipt of a proposal from the investor, the Board gives notice to the relevant Ministries, Provincial Governments or Town Council as the case may be, seeking their approval of the proposal. The relevant public bodies are to ensure that the proposal complies with all "relevant or qualifying laws". The Act does not contain any direct requirement for environmental considerations.



(3) Research Act 1982

Under this Act, approval is required for overseas agencies / experts to do research work in Solomon Islands. Research is widely defined and covers environmental survey & data collection. Approval is given by the Research Application Committee so the Provincial Government are prevented from seeking outside assistance to do environmental research / work without first obtaining central government approval.

(4) Honiara Town Council, Building By-Laws, 1960

These By-Laws apply to erecting a new building, re-erect, add to, alter or convert a building, or to cover an open space between walls and building. It covers the approval of the design, structural components, site of the building but does not have provisions for environmental assessment.

(5) Western Province Building Ordinance 1991

These ordinance are similar to the Honiara Building By-Laws. They have reference to compliance with Local Planning Scheme which is formulated by the Town & Planning Board under the Town and Country Planning Act.

(6) Western Province Environmental Policy

The legal status of this Environmental Policy is unclear from the document. It would appear that this Policy is for administrative & policy guidance with regards to the environment, promote environmental awareness and to highlight possible causes of environmental degradation.

There is a draft Western Province Environmental Management Ordinance which is yet to be approved by the Provincial Assembly and it is in connection with this draft Ordinance that the realisation of the Policy's recommendation could be attain. This draft Ordinance has not been reviewed in this report as it has not been approved by the Provincial Assembly.

### 1.10.3 Provincial & National Environmental Priorities & Legislation

The priorities listed below are the top three priorities of each of the provinces identified in the Nationwide Environmental Management Strategy (NEMS).

(1) Rennell Bellona Province

1) Priorities Strategies & Programmes

This is a newly established province and as such their environmental priorities were not included in the NEMS. There is a proposal put forward by the Ministry of Tourism & Aviation to list Bellona and Rennell Islands as World Heritage Sites.

2) Main Provincial Ordinances relating to the Environment

No environmental legislation

(2) Central Province

1) Priorities Strategies & Programmes

- a) Strengthen monitoring of industrial waste including ship wrecks
- b) Improve solid waste disposal programme
- c) Coastal environmental management plans for Priority One Areas: Noro and Tulagi. Priority Two Areas: Nggelas and Savo.

2) Main Provincial Ordinances relating to the Environment

No environmental legislation

(3) Choiseul Province

1) Priorities Strategies & Programmes

- a) Provincial environmental awareness workshops
- b) Coastal environmental management plans for Priority Two Areas: Choiseul Bay
- c) Reef, estuary and lagoon resources survey

2) Main Provincial Ordinances relating to the Environment

No environmental legislation of its own but Western Province Ordinances continue to operate.

(4) Guadalcanal Province

1) Priorities Strategies & Programmes

- a) Provincial environmental awareness workshops
- b) Customary landowner forestry awareness and traditional knowledge programme
- c) Expanded customary land reforestation programme



- 2) Main Provincial Ordinances relating to the Environment
  - Wildlife Management Area Ordinance 1990
  - Protection of Historic Places Ordinance 1985
- (5) Honiara Town Council
  - 1) Priorities Strategies & Programmes
    - a) Improved solid waste disposal programme
    - b) Upgrade sewage facilities in Honiara
    - c) Waste disposal education
  - 2) Main Provincial Ordinances relating to the Environment
    - a) Honiara Refuse Disposal, By-Laws, 1967
    - b) Honiara Licensing of Business, By-Laws, 1965
    - c) Honiara Market, By-Laws, 1965
- (6) Isabel Province
  - 1) Priorities Strategies & Programmes
    - a) Assistance to landowners to enable them to extract and market timber from their own land
    - b) Conservation of marine turtles - Arnaevon Conservation Area
    - c) Guideline development for controlled harvest of reef and lagoon resources
  - 2) Main Provincial Ordinances relating to the Environment
    - a) Wildlife Sanctuary Ordinance 1982 as amended in 1991
    - b) Preservation of Culture Ordinance 1987
    - c) Business License (Amendment) Ordinance 1984
- (7) Makira Province
  - 1) Priorities Strategies & Programmes
    - a) Promote sustainable forest management
    - b) Customary landowner forestry awareness and traditional knowledge programme
    - c) Expanded customary land reforestation programme
  - 2) Main Provincial Ordinances relating to the Environment
    - a) Preservation of Culture and Wildlife Ordinance 1984
    - b) Business License (Amendment) Ordinance 1984
- (8) Malaita Province
  - 1) Priorities Strategies & Programmes
    - a) Improve and upgrade sewage disposal in Auki
    - b) Improved solid waste disposal programme
    - c) Protect the best soil for food crop production

- 2) Main Provincial Ordinances relating to the Environment  
No environmental legislation
- (9) Temotu Province
- 1) Priorities Strategies & Programmes
    - a) Documentation of traditional knowledge and management systems
    - b) Application and promotion of traditional knowledge
    - c) Protect endangered marine species (conservation of marine turtles and crocodile population monitoring)
  - 2) Main Provincial Ordinances relating to the Environment  
Environmental Protection Ordinance 1989 (Environmental Protection Regulations 1991)
    - a) Preservation of Culture Regulations 1990
    - b) Business License (Amendment) Ordinance 1984
- (10) Western Province
- 1) Priorities Strategies & Programmes
    - a) Promote sustainable forest management
    - b) Customary landowner forestry awareness and traditional knowledge programme
    - c) Expanded customary land reforestation programme
  - 2) Main Provincial Ordinances relating to the Environment
    - a) Draft Western Province Environmental Management Ordinance 1991
    - b) Western Province Coastal and Lagoon Shipping Ordinance 1991
    - c) Western Province Building Ordinance 1991
    - d) Business License (Amendment) Ordinance 1989
    - e) Preservation of Culture Ordinance 1989
    - f) Public Nuisance Ordinance 1991
    - g) Simbo Megapode Management Area Ordinance 1990
- (11) National Government
- 1) Priorities Strategies & Programmes
    - a) Improve environmental awareness and education
    - b) Submit all policies, development programmes and projects to EIA
    - c) Strengthen the resource information database through survey, in particular Reef, estuary & lagoon resources survey

At the time of this Study, Priority 5 - Introduce A Comprehensive Framework Of Environmental Laws, was being carried out with the draft Environmental Management Bill which was to be presented to the Cabinet for approval.

- 2) Main Provincial Ordinances relating to the Environment
  - a) Town and Country Planning Act 1979
  - b) Investment Act 1990
  - c) Research Act 1982
  - d) Forest and Timber Ordinance, 1969
  - e) Forest and Timber Utilisation Act, 1991
  - f) Water Supply Act 1981
  - g) Environmental Health Act 1980
  - h) Mines and Mineral Act 1990
  - i) The Fisheries Act 1972 as amended in 1977
  - j) Solomon Islands Tourist Authority Regulations, 1972
  - k) Provincial Government Act 1981

#### **1.10.4 Site Environmental Factors Considered**

As a first step to identifying model areas for implementing development/ improvement projects, the existing Fisheries Centres of Solomon Islands were assessed to identify physical, economic and social constraints to development, if any. These were assessed on the following items with the results summarised in Table II.1.10.1.

The relative scale of the artisanal fishery practiced in the Solomon Islands has not created serious environmental effects. The constraints to development imposed by some of the Fisheries Centres are not due to the nature of the natural environment or resources but more of the problem of the physical infrastructure or geographical location.

##### **(1) Conflict with other site /waterway uses**

The existing uses of the sites are considered to see if there is conflict with other activities. All the fisheries centre are located within their own compound for the sole purpose of fishing activities/marketing therefore there are no conflict with other activities within its compound. In the case of the Honiara Main Market, the market is used by other commodities sellers in addition to fish sellers with their individual requirements. The present use of land at the markets of Honiara poses slight constraints to development and will need to be redesigned for better hygiene and efficiency. The Kukum Fishing Village has no dedicated place for selling of its fish. This activity being carried out beside the main road creates traffic hazard.

There will be some conflict in the use of the waterway as the fishermen are not the sole users. Other users are, for example, commercial fishing vessels, passenger and cargo boats.

(2) Power supply, water quality & quantity, infrastructure conditions

The aforementioned site conditions have been considered to determine their adequacy for its intended uses.

(3) Cyclone / typhoon hazards

Although the entire nation is subject to cyclones, the location of the site and its nearby surrounding islands (if any) will determine the degree of cyclone effect on the site.

(4) Site topography constraints / erosion hazards

The site's topography is considered and the danger or existence of erosion is assessed.

(5) Site mini-hydro potential

The potential for mini-hydro exploitation at the site (or nearby areas) has been examined. The power and water supply generated by the scheme would benefit not only the fishing centres but the whole community.

(6) Historical / cultural heritage of site (if any)

As all the centres or sites are in existence /developed with no new sites proposed, it is assumed that no historical / cultural heritage are located in these locations.

(7) Labour supply / including skill labour condition

The labour situation in the area has been considered to assess its effects on the fishing activities / enterprise of the sites.

(8) Resettlement / change of present land use

There is no resettlement required as all the sites have been delineated and set aside for its purpose with no other conflicting users on it. All the fisheries centres' and fish market's present land use will remain the same.

(9) Effect of traditional fishing rights

Although the presence of traditional fishing rights restrict the free fishing movement of the fishermen, they have beneficial environmental aspects. The practice of resource management by some of the community in their fishing area ensures sustainable development.

(10) Effect on economic and social structure

The effect of the fishing enterprise on the economic and social structure of the area of the site has been considered.

(11) Effect on tourism

Though the project component is fish marketing, the market or fishing centres nonetheless have an indirect effect on the local tourism. An unsightly or dirty market or fishing centre will have an adverse effect on the tourist that might visit such places.

(12) Remoteness from marketing / needs for freezer storage

The physical distance of the sites from the main marketing area of Honiara or local demand centres will determine the need for storage facilities for the fish until it can be transported to these centres.

(13) Effect of factories / industries / commercial fishing

The presence of fish based factories, industries or commercial fishing will have a positive effect on the fish marketing of the area as it will boost the demand for fish.

(14) Availability of fisheries resources

Although fishery resources data are not available for Solomon Islands, there are concerns of over harvesting of reef and lagoon resources near centres of high population. The lack of data on the fisheries resources available makes it impossible to estimate the sustainable yield or to impose limits on catch. However, the traditional fishing methods and subsistence fishing carried out in the more rural areas of Solomon Islands, does suggest that fishery resources, especially the bottom fishes are not over exploited in these areas.

(15) Related projects effects

Related projects considered are:

OFCF	Malaita Coastal Fishing Development
OFCF	Facilities Rehabilitation
EEC	Rural Fishing Enterprises Project
USAID	Construction of Fishing Centres
ICOD	Establishment of Rural Fishing Groups
Ministry of Tourism & Aviation	World Heritage Site Listing of Rennell

(16) Pollution

With the exception of the commercial fishing centres on Noro and Tulagi, pollution (if any) from the fishing centres are considered slight since the only source of pollution are the waste water from the fish washing / cleaning activities.

Table II.1.10.1 Initial Site Environmental Consideration

Location	Civil Considerations:	Conflict with other site uses	Conflict with other waterway uses	Power supply condition	Water quality & quantity condition	Infrastructure condition	Cyclone / typhoon hazards	Site topography constraints / erosion hazard	Site Mini-hydro potential	Historical / Cultural heritage of site (if any)	Community Considerations:	Labour supply, including skilled labour condition	Resettlement / change of present land use	Effect of traditional fishing rights	Effect on economic and social structure	Effect on tourism	Marketing / Economic Considerations:	Remoteness from marketing / needs for freezer storage	Effect of factories / industries / commercial fishing	Other Considerations:	Availability of fisheries resources	Related Projects effects	Pollution
Honiara Main Market	S	S	*	S	S	S	S	NA	NA			*	NA	NA	+	S		*	*		NA	+	M
Kukum Fishing Village	S	*	*	S	S	S	S	NA	NA			*	NA	*	+	S		*	*		M	+	M
Rove Market	S	*	*	S	S	S	S	NA	NA			*	NA	NA	+	S		*	*		NA	+	S
Kukum Market	S	NA	*	S	S	S	S	NA	NA			*	NA	NA	+	S		*	*		NA	+	S
Marau	*	*	*	*	S	S	*	NA	NA			S	NA	S	+	*		S	*		S	*	S
Lambi	*	*	S	S	L	M	S	NA	NA			S	NA	S	+	*		S	*		S	+	S
Yandina	*	*	*	S	S	S	*	NA	NA			S	NA	S	+	*		S	*		S	+	S
Tulagi	*	S	*	S	*	S	*	NA	NA			S	NA	S	+	*		S	+		M	*	M
Gizo	*	S	+	S	*	S	*	NA	NA			*	NA	NA	+	*		S	+		S	+	S
Munda	*	*	+	S	*	S	*	NA	NA			S	NA	S	+	*		S	*		S	*	S
Noro	*	S	+	S	+	S	*	NA	NA			*	NA	S	+	*		S	+		M	*	M
Seghe	*	*	S	S	M	*	*	NA	NA			S	NA	S	+	*		M	*		S	*	S
Buala	*	*	*	*	*	S	*	+	NA			S	NA	S	+	*		S	*		S	+	S
Tatamba	*	*	S	S	*	S	S	NA	NA			S	NA	S	+	*		M	*		S	+	S
Auki	*	S	+	S	*	S	*	+	NA			S	NA	S	+	S		S	*		M	+	S
Maluu	*	*	+	*	*	S	*	+	NA			S	NA	S	+	*		M	*		S	+	S
Takwa	*	*	*	*	*	S	*	NA	NA			S	NA	S	+	*		M	*		S	+	S
Apio	*	*	S	S	L	L	S	NA	NA			S	NA	S	+	*		M	*		S	*	S
Kira Kira	*	*	M	L	L	L	S	+	NA			S	NA	NA	+	*		M	*		*	+	S
Namugha	*	*	*	*	*	*	*	NA	NA			S	NA	NA	+	*		M	*		*	+	S
Posarae	*	*	NA	*	*	S	*	NA	NA			S	NA	S	+	*		L	*		*	+	S
Sire	*	*	S	*	*	S	*	NA	NA			S	NA	S	+	*		L	*		*	+	S
Pututu	*	*	NA	*	S	S	*	NA	NA			S	NA	S	+	*		L	*		*	+	S
Lavanggu	*	*	*	*	*	L	S	NA	NA			S	NA	NA	+	*		L	*		*	+	*
Lata	*	*	*	M	*	L	S	NA	NA			S	NA	S	+	*		L	*		*	+	S

Note:

- L = Serious environmental constraints to development / Serious Effect  
 M = Moderate environmental constraints to development / Moderate Effect  
 S = Slight environmental constraints to development / Slight Effect  
 \* = No environmental constraints to development / No Effect  
 NA = Not Applicable / None  
 + = Favourable Condition / Effect



## 2. FUTURE PROJECTION





## **2. FUTURE PROJECTION**

### **2.1 Volume of Fish Supply/Demand**

The following assumptions and conditions have been used in projecting the supply and demand of fish products, mainly fresh, frozen and canned fish for 1995, 2000 and 2010.

#### **(1) Assumptions**

- 1) The population statistics for 1995 provided by the Statistics Office and the projected World Bank projections for 2000 and 2010, were used. The population distribution ratio for 1995 was used to project the population of each province.
- 2) The future demand for fresh, frozen, and canned fish was based on the estimated per capita fish consumption of Honiara and each province for 1992 (Table II.2.1.1).
- 3) The future export demand of frozen, canned, and smoked fish, as shown in Table II.2.1.2, was projected on the following assumptions.
  - a. The fish catch volume of tuna, bonito and other species will be kept at present levels, in order to protect resources and to prevent inundation of the international market.
  - b. Canning of tuna/bonito is an important industry for the nation in terms of economic growth and employment opportunities; and export and production have been steadily increasing for the past seven years. The export volume of canned fish is anticipated to surpass 1992 export levels by 20 percent in 2010 with efficient operation of existing facilities and comprehensive training of employees, in view of the growing demand of the canning market and Solomon Taiyo Ltd. (STL)'s target figures.
  - c. The export volume of smoked fish (arabushi) has been about 2,000 mt annually for the past seven years and it is anticipated to maintain a uniform growth in future. Loin processing which is the ingredient for smoked fish began in 1993 and the targeted export volume is 500 mt (STL) for that year. It is anticipated that export volumes will increase by 10 percent annually, to an estimated volume of 3,000 mt in 2010.
- 4) There are no export records of fresh fish from the Solomon Islands. However, interview surveys have confirmed that 50 mt of fresh fish are projected to be

exported from Honiara in 1993. Future projections of fresh fish export volume were based on the export ratio of the total volume of fresh fish to Honiara.

Export of fresh fish from Western Province was projected based on effective use of the existing fish collecting vessel in Gizo and the marketing and processing facilities available at the Noro fishing base. Since operations will be on a trial basis, the export volume is projected at 10 mt in 1995, 18 mt in 2000 and 33 mt in 2010, based on such factors as the average number of fishing trips, the average fish harvest volume and the existing loading capacity of the transport vessels.

- 5) The import volume of fishery products has been decreasing in recent years and it is minimal at present. In view of a national policy promoting self-sufficiency, the imported volume was projected as zero in future.

## (2) Demand volume

The projected total demand of fish products in 1995, 2000 and 2010 is shown in Table II.2.1.3. The projected total domestic demands (including total export volume) is about 56,493 mt in 1995, 62,232 mt in 2000 and 74,371 mt in 2010.

Of this figure, the total domestic demand will reach 23,419 mt (41 percent) in 1995 and 34,743 mt (46 percent) in 2010 due to population growth. Export will increase slightly from 33,074 mt (59 percent) in 1995 to 39,628 mt (53 percent) in 2010. Although the export volume is projected to rise, its ratio of total demand volume will decrease due to a higher domestic demand growth in comparison to export growth.

## (3) Supply volume

The projected supply of fish products in 1995, 2000 and 2010 is shown in Table II.2.1.3. The total estimated fish supply volume of 1995 which includes both domestic production volume and import volume, will amount to 56,493 mt of which 20,218 mt (36 percent) will be subsistent fish and 36,275 mt (64 percent) will be marketed fish products. In 2010 the estimated supply will increase to 74,371 mt of which 29,995 mt (40 percent) will be subsistent fish and 44,386 mt (60 percent) will be marketed fish products.

The 1995 projected volume of marketed fish is 21,901 mt (60 percent) of frozen fish, 10,865 mt (30 percent) of canned fish, 3,000 mt (8 percent) of smoked fish, and 509 mt (2 percent) of fresh fish.

In a breakdown of the figures projected for 2000 and 2010, the ratio of frozen fish is anticipated to decrease gradually and the ratio of canned and smoked fish will increase. However, in 1995 about 92 percent of the volume of marketed fish and 91 percent in 2010

will be comprised of export fish. The marketed volume of domestically produced fish will occupy only a very small percentage.

## **2.2 Origin and Destination of Fish Products**

### **(1) Distribution principle**

The following distribution principle was applied for origin/destination volume of fish products for 1995, 2000 and 2010.

- 1) The distribution shares of origin/destination volume to Honiara in 1992 was used for fesh fish.
- 2) The distribution ratio of 1992 was applied for domestic frozen/canned fish.
- 3) The assumptions cited earlier for fish supply and demand were applied for exports of frozen/canned/smoked fish.

### **(2) Future origin/destination volume of fish products**

The origin/destination of fish products for 1995, 2000 and 2010 is shown in Table II.2.2.1. Of the total supply of 56,493 mt in 1995, about 33,074 mt (59 percent) will be produced and exported by large-scale commercial fisheries in Western and Central provinces and the remaining 23,419 mt (41 percent) will be marketed for domestic consumption. Of the total fresh fish supply volume of 20,727 mt landed by small-scale fisheries, 20,218 mt (97.5 percent) will be consumed in the production area, and only 435 mt (2.1 percent) will be marketed to Honiara. The remaining 74 mt (0.4 percent) will be exported.

The supply of canned fish (1,865 mt) to other areas in the country will originate from Western Province. Frozen fish which is consumed in Honiara will be produced by STL in Western Province and National Fisheries Development Ltd. (NFD) in Tulagi on the shore opposite Honiara.

In 2010, the total supply volume is estimated at 74,371 mt, of which 39,628 mt (53 percent) will be exported and the remaining 34,743 mt (47 percent) will be consumed domestically.

Table II.2.1.1 Estimated Fish Products Supply and Per Capita Fish Consumption in Honiara & Provinces (1992)

	Honiara		Province	
	Supply (mt)	Per Caput (kg)	Supply (mt)	Per Caput (kg)
1) Fresh Fish	369	9.32	18,765	61.90
2) Frozen Fish	765	19.32	-	-
3) Canned Fish	763	19.27	939	3.10
Total	1,897	47.90	19,704	65.00
Population (1992)	39,600		303,132	

Remarks :  
 1) Estimated population of Honiara in 1992 (39,600)  
 2) Estimated population of provinces in 1992 (303,132).  
 3) Figures are whole weight equivalent.

Source:  
 1) FD, MNR  
 2) STL & NFD  
 3) Field Survey (The Development Study on Improvement of NFMS in Solomon Islands, 1993)

Table II.2.1.2 Projection of Fish Products from Industrial Fishery (1986-2010)

	Unit: mt									
	1986	1987	1988	1989	1990	1991	1992	1995	2000	2010
1) Frozen Fish										
- Export	39,737	26,226	34,516	28,705	11,035	37,882	21,357	21,000	21,500	22,500
- Domestic (STL)	-	-	680	678	643	551	335	443	514	550
- Domestic (NFD)	-	-	-	-	-	248	415	458	530	570
2) Canned Fish										
- Export	3,264	3,943	4,071	4,508	5,855	8,826	9,907	9,000	10,000	12,000
- Domestic	1,579	1,321	1,746	1,946	2,870	1,215	1,520	1,865	2,161	2,767
3) Smoked Fish	1,236	1,714	1,802	2,035	2,489	1,996	1,848	3,000	3,500	5,000
	45,816	33,204	42,815	37,872	22,892	50,718	35,382	35,766	38,205	43,387

Remarks :  
 1) Figures are whole weight equivalent.  
 2) Smoked fish includes loin.

Source :  
 1) FD, MNR  
 2) STL & NFD  
 3) Field Survey (The Development Study on Improvement of NFMS in Solomon Islands, 1993)

Table II.2.1.3 Supply/Demand Balance of Fish Products (1995, 2000 &amp; 2010)

(1) 1995

Unit: mt

	SUPPLY				DEMAND				
	Self	Marketed	TOTAL		Domestic Consumption			Export	TOTAL
	Consumption	Fish			Import	Hon	Prov.		
1) Fresh Fish	20,218	509	0	20,727	435	20,218	20,653	74	20,727
2) Frozen Fish	0	21,901	0	21,901	901	0	901	21,000	21,901
3) Canned Fish	0	10,865	0	10,865	887	978	1,865	9,000	10,865
4) Smoked Fish	0	3,000	0	3,000	0	0	0	3,000	3,000
Total	20,218	36,275	0	56,493	2,223	21,196	23,419	33,074	56,493

(3) 2000

Unit: mt

	SUPPLY				DEMAND				
	Self	Marketed	TOTAL		Domestic Consumption			Export	TOTAL
	Consumption	Fish			Import	Hon	Prov.		
1) Fresh Fish	23,431	628	0	24,059	504	23,431	23,935	92	24,027
2) Frozen Fish	0	22,544	0	22,544	1,044	0	1,044	21,500	22,544
3) Canned Fish	0	12,161	0	12,161	1,027	1,134	2,161	10,000	12,161
4) Smoked Fish	0	3,500	0	3,500	0	0	0	3,500	3,500
Total	23,431	38,205	0	62,264	2,575	24,565	27,140	35,092	62,232

(2) 2010

Unit: mt

	SUPPLY				DEMAND				
	Self	Marketed	TOTAL	TOTAL	Domestic Consumption			Export	TOTAL
	Consumption	Fish			Import	Hon	Prov.		
1) Fresh Fish	29,995	989	0	30,984	861	29,995	30,856	128	30,984
2) Frozen Fish	0	23,620	0	23,620	1,120	0	1,120	22,500	23,620
3) Canned Fish	0	14,767	0	14,767	1,315	1,452	2,767	12,000	14,767
4) Smoked Fish	0	5,000	0	5,000	0	0	0	5,000	5,000
Total	29,995	44,376	0	74,371	3,296	31,447	34,743	39,628	74,371

Remarks:

- 1) Fresh fish caught by small scale fishermen.
- 2) Frozen fish produced by commercial fisheries.
- 3) Per capita of fish consumption of 47 kg/year in Honiara.
- 4) Per capita of fish consumption of 65 kg/year in provinces.
- 5) Figures are whole weight equivalent.

Source:

- 1) Statistics Office, MOF (1995 Population estimate)
- 2) World Bank Population Estimates (2000 & 2010 Population)
- 3) Fisheries Division, MNR

Table II.2.2.1 Origin/Destination of Fish Products in Solomon Islands (1995, 2000 &amp; 2010)

1995												Unit: mt		
PRODUCTION	Destination Origin		DOMESTIC CONSUMPTION										EXPORT	TOTAL
			Honaira	Guad	Malaita	Makira	Central	Isabel	Western	Choiseul	Temotu	Rennel & Belona		
	Honiara	Fresh											64	64
	Guad.	Fresh	43	4,224									4,267	4,267
	Malaita	Fresh	12		5,987								5,999	5,999
	Makira	Fresh	0			1,777							1,777	1,777
	Central	Fresh	257				1,394						1,651	1,651
		Frozen	458										458	10,748
	Isabel	Fresh	82					1,189					1,271	1,271
	Western	Fresh	2						3,313				3,315	10
		Frozen	443										443	10,710
		Canned	887	217	275	86	65	55	168	53	54	6	1,865	10,865
		Smoked											0	3,000
	Choiseul	Fresh	38							1,038			1,076	1,076
	Temotu	Fresh									1,180		1,180	1,180
	Rennel/Bel.	Fresh										116	116	116
		Fresh	435	4,224	5,987	1,777	1,394	1,189	3,313	1,038	1,180	116	20,653	74
		Frozen	901	0	0	0	0	0	0	0	0	0	901	21,000
		Canned	887	217	275	86	65	55	168	53	54	6	1,865	9,000
		Smoked	0	0	0	0	0	0	0	0	0	0	0	3,000
TOTAL			2,223	4,441	6,262	1,863	1,459	1,244	3,481	1,091	1,234	122	23,419	33,074

2000												Unit: mt		
PRODUCTION	Destination Origin		DOMESTIC CONSUMPTION										EXPORT	TOTAL
			Honaira	Guad	Malaita	Makira	Central	Isabel	Western	Choiseul	Temotu	Rennel & Belona		
	Honiara	Fresh											74	74
	Guad.	Fresh	50	4,896									4,946	4,946
	Malaita	Fresh	14		6,938								6,952	6,952
	Makira	Fresh				2,059							2,059	2,059
	Central	Fresh	298				1,615						1,913	1,913
		Frozen	530										530	10,535
	Isabel	Fresh	95					1,378					1,473	11,065
	Western	Fresh	2						3,840				3,842	1,473
		Frozen	514										514	18
		Canned	1,027	252	318	99	75	64	194	61	63	7	2,161	10,965
		Smoked											0	11,479
	Choiseul	Fresh	44							1,202			1,246	12,161
	Temotu	Fresh									1,368		1,368	3,500
	Rennel/Bel.	Fresh										135	135	3,500
		Fresh	504	4,896	6,938	2,059	1,615	1,378	3,840	1,202	1,368	135	23,935	92
		Frozen	1,044	0	0	0	0	0	0	0	0	0	1,044	24,027
		Canned	1,027	252	318	99	61	64	194	61	63	7	2,161	21,500
		Smoked	0	0	0	0	0	0	0	0	0	0	0	10,000
TOTAL			2,575	5,148	7,256	2,158	1,676	1,442	4,034	1,263	1,431	142	27,140	35,092

2010												Unit: mt		
PRODUCTION	Destination Origin		DOMESTIC CONSUMPTION										EXPORT	TOTAL
			Honaira	Guad	Malaita	Makira	Central	Isabel	Western	Choiseul	Temotu	Rennel & Belona		
	Honiara	Fresh											95	95
	Guad.	Fresh	64	6,267									6,331	6,331
	Malaita	Fresh	23		8,882								8,905	8,905
	Makira	Fresh				2,636							2,636	2,636
	Central	Fresh	560				2,068						2,628	2,628
		Frozen	550										550	11,025
	Isabel	Fresh	144					1,765					1,909	11,575
	Western	Fresh	4						4,915				4,919	1,909
		Frozen	570										570	33
		Canned	1,315	322	407	127	97	82	249	79	80	8	2,767	11,475
		Smoked											0	12,045
	Choiseul	Fresh	65							1,539			1,604	12,000
	Temotu	Fresh									1,751		1,751	14,767
	Rennel/Bel.	Fresh										173	173	5,000
		Fresh	860	6,267	8,882	2,636	2,068	1,765	4,915	1,539	1,751	173	30,856	128
		Frozen	1,120	0	0	0	0	0	0	0	0	0	1,120	30,984
		Canned	1,315	322	407	127	97	82	249	79	80	8	2,767	22,500
		Smoked	0	0	0	0	0	0	0	0	0	0	0	23,620
TOTAL			3,295	6,589	9,289	2,763	2,165	1,847	5,164	1,618	1,831	181	34,743	12,000

### **3. ZONING AND SELECTION OF MODEL AREAS**





### **3. ZONING AND SELECTION OF MODEL AREAS**

#### **3.1 Zoning**

Regional zones will be designated throughout the nation according to a marketing improvement plan. Zoning will be based on the following criteria.

(1) Zoning criteria

- 1) Natural conditions (geography, topography, weather)
- 2) Socio-economic structure: population, race, manufacturing/industry
- 3) Infrastructural improvements
- 4) Passenger/cargo transport: transport conditions and volume
- 5) Fish transport and marketing structure
- 6) Fish demand (consumption, export)

(2) Zoning

Based on the prevailing conditions of the fish marketing system and its future potential, three of the following types of zones are proposed.

- 1) Type 1: Economic zone of Honiara
  - a. Development zone 1 (the capital, Honiara and its outlying areas)
  - b. Development zone 2 (Florida Islands)
- 2) Type 2: Regional promotion/development
  - a. Development zone 3 (Western Province)
  - b. Development zone 4 (north Malaita Province)
- 3) Type 3: Promotion of remote islands (southern part of Isabel Province, northern and eastern parts of Makira Province, Rennel, Temotu, southern part of Choiseul Province). The proposed zones are shown in Fig. II.3.1.1.

#### **3.2 Zone Characteristics**

(1) Development zone 1 (Honiara city and its outlying areas)

The capital of Honiara is the nation's foremost consumption area and improvements in its marketing system have a close bearing on rural fisheries development; and it is the focal point of a marketing system covering a vast area. Presently, the public market which handles all fishery products is a small retail market, but in future it is necessary to renovate it to a wholesale market or a facility capable of fulfilling marketing functions which will provide stable, large volume of fish, produce and daily commodities. Based on the

aforementioned two points, improving the Honiara Central Market is vital to improving the fish marketing system of the nation.

1) Infrastructure, facilities, equipment

a. Honiara: Improve ocean facilities (wharves, landfills, jetties)

Improve land facilities (market buildings and relevant facilities, waste water treatment facilities, pavement, communication facilities)

b. Marau: None

c. Lambi: Improve jetty, effective use of building

d. Yandina: None

2) Operation and organization

a. Honiara city: Strengthen management and operational organization

b. Fresh fish transport, marketing activities/ information/quality control

Establish a "fish marketing authority" operated by the national and provincial governments, fishermen, and private sector.

(2) Development zone 2 (Florida Island): Comprehensive coastal villages development project

Florida Island, located on the opposite shore from the capital of Honiara, is currently the major area supplying fresh fish to Honiara. It is estimated that the fish supply volume from Florida Island will reach 470 mt in the year 2010. This is equivalent to 55 percent of the marketed fresh fish landing volume of small-scale fisheries. Therefore, in order to ensure a stable fresh fish supply to Honiara in future, it is important to introduce a comprehensive improvement plan in this area.

1) Infrastructure, facilities, equipment

Gela, Tulagi, Buena Vista: Improvement of ocean facilities (jetties, shipping vessels).

Land facilities (ice storage, communication equipment, buildings)

2) Operation and organization

a. Project operations: Project will participate in the "Fish Marketing Authority" based in Honiara.

b. Fishermen organizations: Fishermen are scattered in the outlying areas and it is difficult to unify them into one organization. Therefore, as part of the operational strategy of the aforementioned fish marketing authority, an organization of fishermen and local inhabitants in charge of marketing activities will be set up and rationalization of marketing and transport activities will be carried out.

- (3) Development zone 3 (Western Province): Comprehensive coastal villages development project

This zone contains Noro, an area with the second largest infrastructure development project after Honiara and the export base for large-scale commercial fishery. It is important to foster small-scale commercial fisheries and promote exportation by utilizing this infrastructure and the marketing facilities.

Division of the zone into three sub-zones was based on fishery resource and export conditions as well as renovated infrastructure, and disparities in social conditions (see Fig. II.3.2.1).

1) Infrastructure, facilities, equipment

a. Sub-zone 1 (Gizo)

Off-shore facilities: Improve jettys, effective use of existing shipping vessels

On-land facilities: Provide ice storage, communication equipment

b. Sub-zone 2 (Munda, Noro)

Off-shore facilities: Effective use of existing transport vessels,

On-land facilities: Effective use of Noro plants, and transport vehicle

Infrastructure: Repair bridge (between Munda and Noro), repair water supply facilities (Munda)

c. Sub-zone 3 (Seghe)

Land facilities: Provide ice making machine

2) Operation and organization

a. Project operations: Noro will be the base of operations for the zone; and the project will be run by the national and provincial governments and STL.

b. Fishermen cooperatives: Fishermen organizations will be set up in the three sub-zones; and they will be responsible for transporting fish from the production site to the operations base of the base.

- (4) Development zone 4 (north Malaita Province): Comprehensive coastal villages development project

North Malaita is one of the most highly populated areas of the nation and the regional demand for fish products is high. Fish marketing facilities, equipment, infrastructure, organization, including system and operations are undeveloped, but fishing technology is being transferred through OFCF projects. However, after OFCF project

implementation terminates in early 1994, expanding the fish marketing system remains an important issue.

- 1) Infrastructure, facilities, equipment  
Infrastructure: Improve bridges (between Auki and Takuwa)
- 2) Operation and organization
  - a. Project operations: Utilizing Auki, the base of zone operations, the MDA, established by the provincial government, will be strengthened.
  - b. Fishermen cooperatives: The fishermen cooperative set up by OFCF (currently limited to technology transfer on a trial basis) will be fostered and strengthened. It will be responsible for the first stage of shipping activities for fish produced by other cooperatives to the zone center. All information required for project operations will be provided by the aforementioned "fish purchasing company".
- (5) Remote area development (Isabel, Makira, Rennel, Temotu, Choiseul)
  - 1) The Fisheries Center on each outer island has either been completed or is still under construction. Therefore, the operational expertise of the fish marketing and transport system employed by EC project in Tatamba (Isabel Province) and by VDA in Choiseul Province will be transferred to these centers.
  - 2) Improving the living standards of the coastal inhabitants on the remote islands will be the focal point of the development plan.
    - a. Isabel and Choiseul provinces: The fish marketing system to Honiara from the outer islands of Isabel and Choiseul has been developed by the EC and the producers cooperative (VDA), respectively. However, it is necessary to improve the operational structure of the cooperatives, in order to ensure their sustainability after the EC project has been terminated.

The cooperative in Choiseul Province possesses their own transport ship and their marketing system is well established. However, it is necessary to improve ocean (fishing boats) and land facilities in order to increase fish production.
    - b. Makira Province (Star Harbor): The on-land and off-shore facilities (jetties, transport vessels) of Star Harbor in Makira will be constructed by EC and USAID in 1993.

- c. Temotu, Rennel Belona Provinces: Fisheries in both Rennel and Temotu remain at subsistent levels. There is a Fisheries Center in Temotu and the Rennel Fisheries Center is expected to be completed this year.

Rennel Belona became independent from Central Province in early 1993 and subsequently, it has the least developed infrastructure among the provinces of the nation. There is only one road running from the capital Lanvangu to the airport in the northern part of the island; and a road to Lake TeNggano in the southern area of the island is under construction by EC from 1993. Transportation vehicles are in extreme shortage and there is only one dump truck on the island. There are no jetties for unloading supplies at the harbor and cargo is unloaded onto boats in the offshore waters of the island.

The coastal areas contain perpendicular cliffs with very little level land and there is only one other coastal community aside from the capital of Lanvangu. Excluding the capital, the population is concentrated on the plateau adjacent to the airport road in the northern area of the island and around Lake TeNggano in the south. Subsequently, the south is dependent on Lake TeNggano for their fish supply, but in the north where infrastructure and transport means are undeveloped, implementing fish marketing activities is difficult. In addition, there are rest house facilities at Lake TeNggano, one of the few resort areas in the country. Therefore, improvements in infrastructure and transport means are necessary to develop this outer island.

### **3.3 Selection of Model Areas**

Of the three types of development zones, areas with the highest achievement potential and effect were selected.

(1) Type 1: Honiara economic zone

- 1) Model Zone 1: Development zone 1 (Honiara)
- 2) Model Zone 2: Development zone 2 (Florida Island)

Model Zone 1 (Honiara) and Model Zone 2 (Florida Islands) are closely interrelated and cannot be treated separately in terms of Project implementation. Therefore, both zones have been selected.

(2) Type 2: Regional development

Model Zone 3: Development zone 3 (Western Province)

Zone 3 (Western Province) and Zone 4 (northern Malaita Province) are categorized as Type 2. Northern Malaita Province is centered on regional

distribution and markets very little fish to Honiara. In contrast, there are fish processing and marketing facilities at Noro and shipping and transport vessels in Gizo in Western Province. By effectively utilizing these facilities, improvements in fish marketing over a wide area, including enhancement of coastal fishing communities can be anticipated.

Based on these factors, Model Zone 3 was selected as a model area.

(3) Type 3: Outer island development

Model Zone 4: Rennel Island

The five provinces of Isabel, Makira, Rennel, Temotu, and Choiseul are categorized as Type 3. Among these provinces, Rennel Province is the newest and most undeveloped of the five. Effective use of the Fisheries Center currently under construction, improved living standards of its inhabitants, and promotion of tourism are anticipated to effectively promote this remote island.

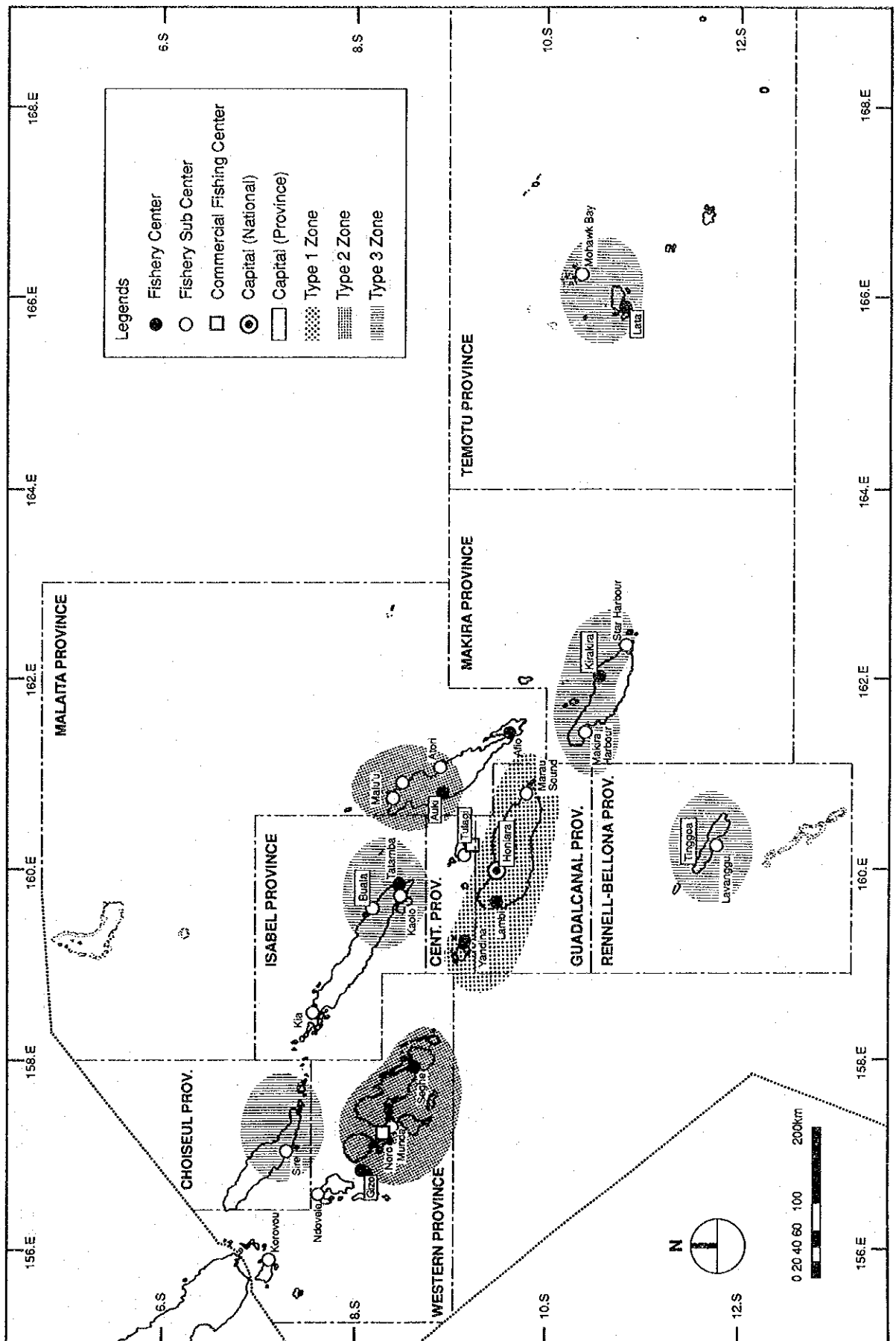


Fig. II.3.1.1 Location of Proposed Zones



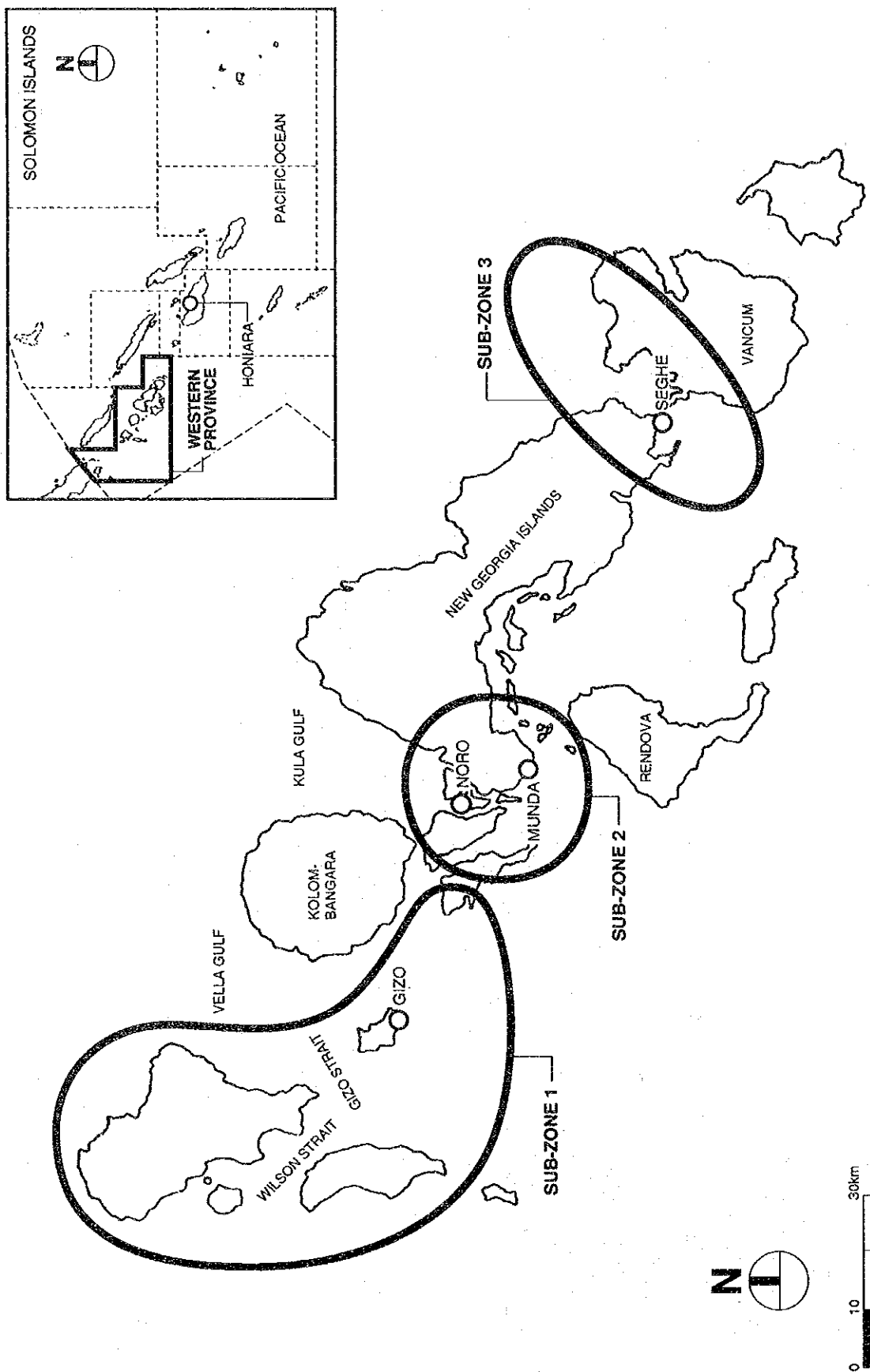


Fig II.3.2.1 Proposed Three Sub-Zones for Developing of Model Zone 3 in Western Province

### III. REGIONAL LEVEL



## **1. PRESENT CONDITIONS OF MODEL ZONE 1**

This zone encompasses the capital, Honiara, Guadalcanal Island, and the Russell Island of Central Province.

### **1.1 Fish Marketing System**

#### **(1) Socio-economy of coastal villages**

##### **1) Honiara Town**

The capital town of Honiara is located along the northwestern coast of Guadalcanal Island and encompasses an area of 22m<sup>2</sup>. It is the political and economic center of the nation; and in addition to the presence of national and foreign government agencies, international organizations, light manufacturing industries, businesses, transport services, basic infrastructure such as hospitals, university, electricity, roads, international airports are developed.

Presently, the town is divided into 12 districts of which Cruz District containing Honiara International Airport, Rove District to the west, and Bokesa District to the east form the center of the town. Government related agencies and offices, banks, hotels, shops, and private businesses are located there. Light manufacturing industries are found in the eastern coastal area of the town which is also a base for the petroleum and food processing industries. The airports are located in the easternmost outskirts of the town. Residential areas are mainly concentrated behind the commercial area, spread out among the low hills.

Currently, Honiara Town is largely divided into residential, government, commercial, manufacturing, and airport districts. However, due to population growth and development of industries, plans to redistrict the town is underway by the Town Council.

According to the 1986 census, the racial composition of Honiara residents is about 86.24 percent Melanesian, 6.67 percent Polynesian, 2.86 percent Kiribati, 2.46 percent European, 1 percent Chinese, and 0.76 percent Asian.

The population has grown rapidly, doubling in ten years from 15,006 people in the 1976 to 30,413 people in 1986. The population growth rate from 1986 to 1992 was estimated to be about 4.4 percent yearly. It is projected that the population will reach 46,660 people in 1995 from 39,600 people in 1992. This is approximately 12 or 13 percent of the estimated total national population; and it will markedly continue to concentrate in Honiara Town.

	1976	1981	1986	1992	1995	2000
Honiara						
Population	15,006	19,716	30,413	39,600	46,660	54,075
Annual Growth Rate (%)		6.9	7.7	4.4	5.5	2.9
Density (People/sq. km.)	682	896	1,382	1,800	2,121	2,458
Solomon Islands			285,263	342,732	432,000	553,000

Source: 1) Population Census (1986)  
2) Statistics Office, MOF (1993)  
3) World Bank Population Estimates (2000 Population)

A large number of immigrants from the provinces who are drawn by the employment opportunities available in Honiara is the underlying cause for the population growth. According to the 1986 census, residents native to the capital comprised only 28 percent of its population with 72 percent of its inhabitants originating from other provinces (Malaita, 37 percent, Western, 12 percent, and other provinces, 23 percent).

The majority of Honiara residents are salaried workers employed by government or private businesses. According to 1992 statistics, the number of employed workers was 13,355 (including 373 part-time workers), which was 49.8 percent of the total number of salaried workers in the nation; and it clearly indicates the tendency for industry to concentrate in Honiara. Salaries are also the highest in the nation at SI\$769 per month in 1992 (the national average is SI\$631 a month).

A high 51 percent of the population of salaried workers (about 6,785) are employed by the central government or government related agencies which is an indication of the relatively small number of private industries.

In a breakdown of salaried workers in Honiara according to industry, 2,610 people were employed in commerce, 1,094 in banking, 1,045 are in transport services, 1,163 in mining, 602 in construction, etc. There are only 111 people employed in agriculture, forestry, and fisheries. As a result, Honiara is greatly dependent on other provinces for fresh fish and food supply.

Although the fishing industry is comparatively active, full-time fishing activities are carried out by only one fishing village in Kukum where its inhabitants are immigrants from Malaita. Fishing operations are carried out by five clans and seven fishing groups. Under these circumstances, Honiara Town is forced to rely on fresh fish imported from other provinces in order to meet its current consumption demands. In the face of a rising demand for fresh fish stemming from a growing population, Honiara Town is confronted with the issue of increasing its fresh fish supply.

## 2) Guadalcanal Island

Guadalcanal Island forms Guadalcanal Province; and it contains the capital town of Honiara in an area of 22km<sup>2</sup> on its northwestern coast. It is the most important and foremost island of the nation.

The island is about 160km from east to west, 45km from north to south and covers an area of about 5,446km<sup>2</sup>. It is the largest, centrally located island in the nation and comprises approximately 19 percent of the nation's total land area. The island has a 2,000m mountain with two soaring peaks and a chain of hills which forms its topography. But, the coastline stretching east of Honiara Town contains a wide, flat plain of about 450km<sup>2</sup>.

According to the 1986 census, the population was 49,918 and the population growth rate for the period of 1986-1992 was about 4.05 percent, much higher than the total national growth rate of 2.93 percent. It is projected that the population will reach 66,630 in 1992, making it the second largest province of the nation. The population is sparse on its steeply inclined southern coast, and tends to concentrate in the relatively level area of the northern coast.

The principal industry is agriculture and copra production is the major crop. In 1991, 4,536 mt were produced which comprised 21 percent of the total national production volume of copra. In addition to copra, the province is the only producer of palm oil in the nation.

Due to its steep mountain, the province has comparatively abundant forestry resources which cover an area of about 287km<sup>2</sup>; and approximately 12,000m<sup>3</sup> logs were produced in 1986 (about 28 percent of the total national production volume).

Mining and commerce are relatively undeveloped.

The number of employed workers was 3,477 people in 1992 which was only 5 percent of its total population. Excluding a segment of the suburban residents of Honiara, the majority of its inhabitants are mainly engaged in subsistent agriculture of root crops, fruits, and vegetables and subsistent fishing along the coast.

Fisheries Centers have been set up in the Marau in the northeast and the Lambi in the west. Although the majority of the islanders are engaged in subsistence fisheries, fishing is actively carried out in Marau due to the Fisheries Sub-center, Rural Fisheries Enterprise Project (REFP) activities promoting small-scale commercial fisheries, and reefs abundant in resources. As of June 1993, five

fishermen groups have been formed under the EC project which produced 1.7 mt of fish from January to June 1993 (about 44 percent of the targeted volume). In addition to the fishermen groups of RFEP, there are five to ten other fishing groups which the RFEP advises, supplies fishing gear, purchases fish catch, and provides other services.

The Fisheries Center in Lambi has been closed as of October 1993. Two fishing groups in the district are engaged in small-scale commercial fisheries. They transport and sell their fish catch at the Honiara Central Market about once a week. In addition, there are a few coastal villages on the northern coast which occasionally transport and sell fresh fish in Honiara, although the majority are engaged in subsistent fisheries. However, it is estimated that the number of villages involved and the frequency of their marketing activities are negligible.

### 3) Russell Islands

Although the Russell Islands are located in Central Province, ocean and air transport services are directly connected to Honiara; and it is geographically and economically closely tied to the national capital.

In addition to its two main islands of Pavuvu and Mbanika, the Russel Islands are comprised of approximately 70 large and small elevated reef islands, comprising a total land area of about 210km<sup>2</sup>. Mbanika island is the central and foremost island containing the provincial capital of Yandina, an airport, and jetty.

According to the 1986 census, the total number of households throughout the islands was 770, with a population of 4,700 people; and it is estimated that the population has risen to 5,900 people as of 1992.

The major industry of the islands is the coconut plantations which comprise a total land area of about 5,000 hectares, including the large plantation of Levers Solomons Limited and the smaller plantations of local inhabitants.

According to 1986 statistics, 10,787 mt of copra were produced in the Russell Islands which was about 94 percent of the total production volume of Central Province. Of this figure, about 86 percent or 9,329 mt were produced by Levers Solomons Limited.

However, in recent years approximately 90 percent of copra produced by this company is processed into exported coconut oil and cattle cake. The company is also shifting into cocoa and livestock development and following STL, it is the second major industry in the Solomon Islands. It is estimated that the majority of

the employed workers on Russell Islands (about 600 to 700 people) are employed by Levers Solomons Limited.

Aside from the aforementioned, agricultural activities such as root crop, fruit, and vegetable cultivation are subsistent. In the case of fisheries, despite the presence of many resource rich reefs, fishing activities of inhabitants remain at subsistent levels.

However, in the provincial capital of Yandina, an EC project promoting small-scale commercial fisheries is underway and a segment of the population is engaged in fish marketing activities. Although there are only five fishing groups under EC supervision, it is estimated that 15 to 20 other groups are also involved in commercial fishing activities. Through the auspices of the provincial Fisheries Center, fish is sold to the employees and families of Levers Solomon, Ltd. and it is also transported and marketed at the Honiara Central Market.

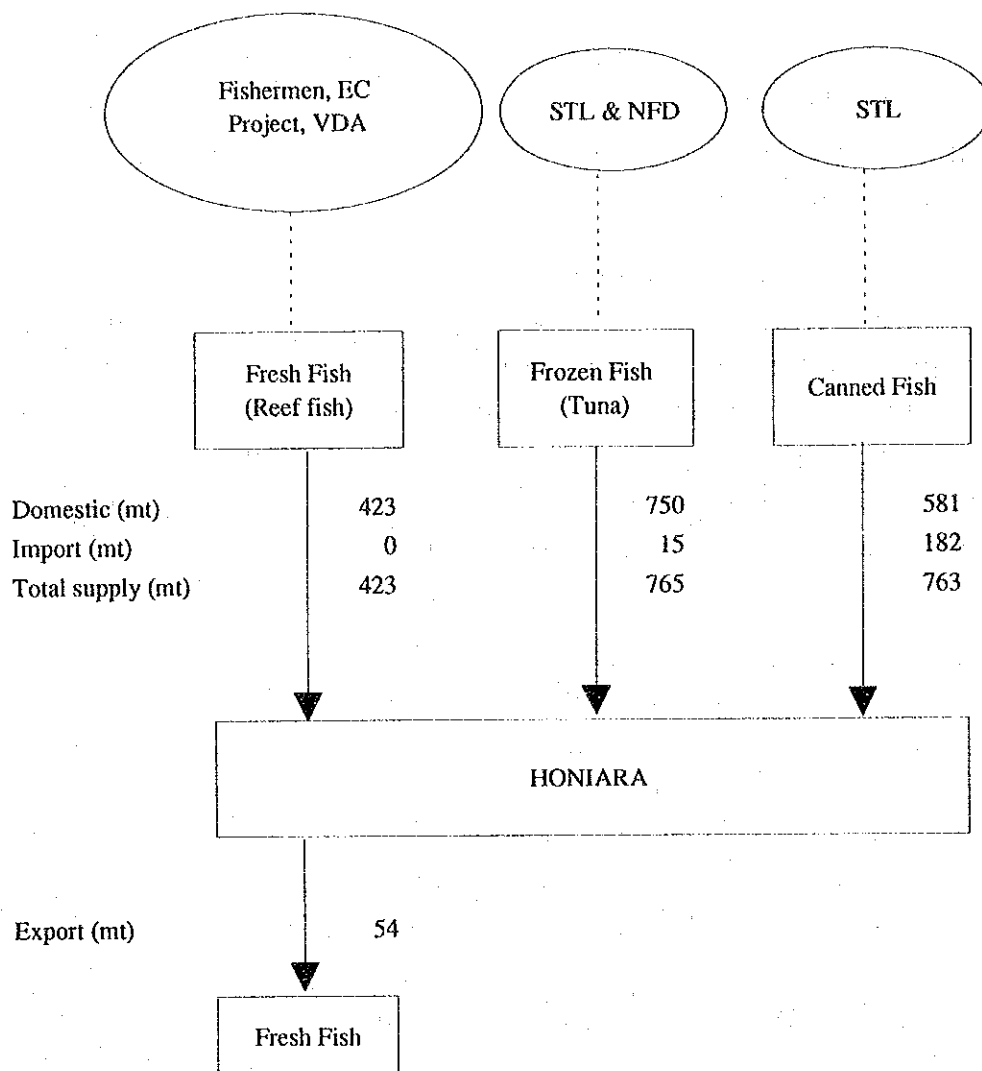
## (2) Fish marketing system

Honiara is the main urban fish consumption area where there is a high demand for fresh, frozen, and canned fish. The principal markets are the Honiara Central Rove and Kukum Markets. The supply of fish products to Honiara comes from a number of sources as shown in Fig. III.1.1.1, and it totaled 1,951 mt in 1992. The supply of fresh fish was 423 mt, of which about 60 percent (250 mt) was from the Central Province. The supply of frozen fish (tuna and skipjack) originated from STL in Noro of Western Province and NFD in Tulagi of Central Province; and in 1992, the frozen fish volume amounted to 765 mt that included an imported volume of 15 mt. Honiara was also supplied with 763 mt of canned fish, of which 76 percent (581 mt) was produced domestically and 24 percent (182 mt) was imported.

Fresh fish is mainly supplied by individual fishermen who are also retailers, in addition to fresh fish supplied by the EC project, and the VDA. STL transports its frozen fish from Noro once a month using its own boat and sells frozen fish to retailers in Honiara. There is also an agent who directly purchases from STL on orders from retailers and transports using provincial cargo/passenger boat to Honiara once a week. The agent purchases frozen fish at SI\$1.60/kg from STL and sells it at SI\$2.50/kg to retailers in Honiara.

Fresh fish fetches a higher price than the frozen fish. The retail price of fresh fish ranges from SI\$7.50/kg to SI\$8.00/kg, and frozen tuna is sold for about SI\$4.00/kg to SI\$4.40/kg.





Remarks: 1) Figures refer to 1992 data.

2) Figures are expressed in whole weight equivalent.

Source: 1) Fisheries Division

2) EC and STL & NFD

3) Market survey (The Dev. Study on Improvement of NFMS in Solomon Islands, 1993)

Fig. III.1.1.1 Supply Volume of Fish Products to Honiara (1992)