

THE STUDY
ON
COASTAL PROTECTION AND PORT IMPROVEMENT
IN
THE COOK ISLANDS

FINAL REPORT

(VOL. II: SHORT-TERM DEVELOPMENT PLAN)

August 1992

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

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Final Report
For the Study on
Coastal Protection and Port Improvement

Contents

Volume II : Short-Term Development Plan

	PAGE
Chapter 11: Definition of Short-term Development Plan	
11.1 Necessity of the Project-----	11 - 1
11.1.1 Plocity Objectives-----	11 - 1
11.1.2 Possible Countermeasures-----	11 - 2
11.2 Definition-----	11 - 4
11.3 Investment Scale and Implementation Plan-----	11 - 7
Chapter 12: Short-term Development Plan : Coastal Protection	
12.1 Formulation of the Short-term Development Plan-----	12 - 1
12.1.1 Phased Development Plan Discussions-----	12 - 1
12.1.2 Refinement of Plan-----	12 - 3
12.2 Design Criteria-----	12 - 8
12.2.1 Natural Conditions-----	12 - 8
12.2.2 Structural Conditions-----	12-17
12.2.3 Wave Overtopping Criteria-----	12-22
12.2.4 Wave Run-up-----	12-25
12.2.5 Cyclone Arrivals-----	12-35
12.2.6 Return Period of Cyclone Wave-----	12-38
12.2.7 Effect of Coastal Protection Work-----	12-39
12.2.8 Major Protection Materials-----	12-42
12.3 Preliminary Design : Site-1 "Health Department"-----	12-43
12.3.1 Existing Conditions-----	12-43
12.3.2 Scale of Proposed Coastal Projection-----	12-44
12.3.3 Proposed Defense Line-----	12-45
12.3.4 Basic Section and Type of Structure-----	12-46
12.4 Preliminary Design : Site-2 "Avarua/Avatiu Urbanized Area"----	12-50
12.4.1 Avarua East-----	12-50
12.4.2 Avarua Harbour-----	12-57
12.4.3 Avarua/Avatiu Coast-----	12-61
(Avarua West Breakwater to Avatiu Stream)	
12.5 Preliminary Design : Site-3 "Airport East"-----	12-70
12.5.1 Existing Conditions-----	12-70
12.5.2 Purpose of Proposed Coastal Protection-----	12-71
12.5.3 Scale of the Proposed Coastal Protection-----	12-71
12.5.4 Proposed Defense Line-----	12-73
12.5.5 Basic Section and Type of Structure-----	12-73

12.6	Preliminary Design : Site-4 "Airport West"-----	12-78
12.6.1	Existing Conditions-----	12-78
12.6.2	Purpose of the Proposed Coastal Protection-----	12-80
12.6.3	Seawall near MET : Section 4-1-----	12-80
12.6.4	North-West Corner, Detached Breakwater : Section 4-2 -----	12-83
12.6.5	(At the North-West corner of Causeway) Seawall at the Western End of Causeway : Section 4-4 -----	12-86
12.7	Preliminary Design : "Port Park Complex" -----	12-92
12.7.1	Existing Conditions-----	12-92
12.7.2	Scale of New Land by the Project -----	12-93
12.7.3	Proposed Land Use-----	12-94
12.7.4	Parapet Wall-----	12-95
12.7.5	Other Considerations -----	12-96
 Chapter 13: Short-term Development Plan : Port Improvement		
13.1	Formulation of Short-term Development Plan -----	13 - 1
13.1.1	Objectives-----	13 - 1
13.1.2	Planning Premises-----	13 - 2
13.2	Required Port Facilities -----	13 - 4
13.2.1	Deep-sea Port Area-----	13 - 4
13.2.2	Fishing Port Area -----	13 - 9
13.2.3	Breakwater-----	13-10
13.3	Operation and Management-----	13-12
13.3.1	Current Operation and Management-----	13-12
13.3.2	Recommendations Concerning Current Problems of Port Operation and Management Problem-----	13-19
13.4	Proposed Port Layout Plan -----	13-26
13.4.1	Avatiu Harbour-----	13-26
13.4.2	Avarua Harbour-----	13-27
13.5	Design Criteria -----	13-30
13.5.1	Natural Conditions-----	13-30
13.5.2	Structural Conditions-----	13-33
13.6	Preliminary Design : "Avarua Harbour" -----	13-37
13.6.1	Basic Section and Type of Structure : East Breakwater -----	13-37
13.6.2	Basic Section and Type of Structure : West Breakwater-----	13-39
13.6.3	Marina Wharf and Jetty ; Avarua East and Stream Outlet -----	13-39
13.6.4	Repair of Existing Damaged Wharf -----	13-39
13.6.5	Basic Section and Type of Structure : Temporary Wharf behind West Breakwater-----	13-39

13.7	Preliminary Design : "Avatiu Harbour"-----	13-47
13.7.1	Basic Section and Type of Structure : East Breakwater-----	13-47
13.7.2	Basic Section and Type of Structure : West Breakwater-----	13-50
13.7.3	Basic Section and Type of Structure : Commercial Sector-----	13-52
13.7.4	Basic Section and Type of Structure : Fishery Sector-----	13-52
 Chapter 14: Construction Program		
14.1	Construction Program-----	14 - 1
14.2	Preliminary Construction Schedule-----	14 - 5
 Chapter 15: Project Cost Estimates		
15.1	Summary of Project Cost-----	15 - 1
15.2	Coastal Protection Work-----	15 - 2
15.2.1	Summary of Cost-----	15 - 2
15.2.2	Initial Investment Cost-----	15 - 2
15.2.3	Maintenance Cost-----	15 - 4
15.3	Port Improvement Work-----	15 - 5
15.3.1	Summary of Costs-----	15 - 5
15.3.2	Initial Investment Cost-----	15 - 5
15.3.3	Operation and Maintenance Cost-----	15 - 8
15.4	Disbursement Schedule-----	15 - 8
15.5	Detail of Cost Estimation-----	15 - 8
 Chapter 16: Evaluation of the Project		
16.1	Investment Scale and Implementation Plan-----	16 - 1
16.2	Examination of the Positive Effects of the Project-----	16 - 1
16.2.1	Business Effect-----	16 - 1
16.2.2	Utilization Effect-----	16 - 3
16.3	Purpose and Methodology of the Economic Analysis-----	16 - 6
16.3.1	Purpose-----	16 - 6
16.3.2	Methodology-----	16 - 6
16.3.3	Conversion into Economic Prices-----	16 - 7
16.4	Prerequisites of the Economic Analysis-----	16 - 9
16.4.1	Period of Calculation-----	16 - 9
16.4.2	"With" Case-----	16 - 9
16.4.3	"Without" Case-----	16-10
16.4.4	Cargo Throughput-----	16-10

16.5	Benefits-----	16-11
16.5.1	Benefit Items-----	16-11
16.5.2	Decrease in Land Loss by Coastal Protection-----	16-11
16.5.3	Maintaining Economic Activities-----	16-13
16.5.4	Protection of Residential and Public Buildings/ Decrease in Maintenance Cost of Transport System-----	16-14
16.5.5	Increase in Land Value-----	16-15
16.5.6	Savings in Ships' Waiting Costs-----	16-16
16.5.7	Savings in Waiting Cost for Gangs Due to Delay of Ship Arrival-----	16-17
16.5.8	Savings in Interest Payments-----	16-17
16.5.9	Decrease in Operation Cost by Improvement of Cargo Handling Efficiency-----	16-18
16.5.10	Decrease in Working Time of Labourers-----	16-19
16.5.11	Decrease of Maintenance Cost of Breakwaters-----	16-19
16.5.12	Decrease in Off-Shore Handling Cost in the Event of Damage at Wharf-----	16-19
16.5.13	Decrease in Damages of Port Facilities-----	16-21
16.5.14	Avoidance Direct Damage to ILS-----	16-22
16.5.15	Construction/Maintenance Cost in Without Case-----	16-22
16.6	Costs-----	16-23
16.6.1	Construction Cost-----	16-23
16.6.2	Administration and Operation/Maintenance Costs-----	16-24
16.6.3	Renewal Investment Costs-----	16-24
16.7	Calculation of EIRR-----	16-25
16.7.1	Annual Costs and Benefits-----	16-25
16.7.2	Calculation of EIRR-----	16-25
16.8	Conclusion-----	16-28
16.8.1	Evaluation of Base Case-----	16-28
16.8.2	Sensitivity Analysis-----	16-28
16.9	Preliminary Financial Analysis-----	16-32
16.9.1	Purpose of the Financial Analysis-----	16-32
16.9.2	Methodology of the Financial Analysis-----	16-32
16.9.3	General Prerequisites of the Financial Analysis-----	16-33
16.9.4	Conclusion-----	16-38
Chapter 17:	Organization for Project Implementation	
17.1	Executing Agency-----	17 - 1
17.2	Cooperative Management-----	17 - 1
17.3	Operation and Maintenance-----	17 - 2
17.4	Communications-----	17 - 3
Chapter 18:	Environmental Consideration	
18.1	General Description-----	18 - 1
18.2	Environmental Control of Coastal Areas-----	18 - 1

18.2.1	Water Quality -----	18 - 1
18.2.2	Scenery -----	18 - 3
18.3	Environmental Consideration to the Project -----	18 - 3
18.4	Future Prospect -----	18 - 4
Chapter 19:	Preparations for Project Implementation	
19.1	Administrative Aspects-----	19 - 1
19.2	Technical Aspects-----	19 - 1
19.3	Financial Aspects-----	19 - 2

Final Report for the Study on
Coastal Protection and Port Improvement

APPENDIX
(Separate Issue)

Contents

- Appendix A-1 Scope of Work (April 17, 1991)
- Appendix A-2 Minutes of Meeting (April 17, 1991)
- Appendix A-3 Minutes of Meeting (October 18, 1991)
- Appendix A-4 Minutes of Meeting (February 7, 1992)
- Appendix A-5 Minutes of Meeting (March 20, 1992)
-
- Appendix B-1 Cost Estimation for Short-term Development Plan
-
- Appendix C-1 Coast File
- Appendix C-2 Topographic Survey (Nov. 1991 by the team)
- Appendix C-3 Soil Investigations (Nov. 1991 by the team)
- Appendix C-4 Perception Study of Villagers Opinions
- Appendix C-5 Wave Hindcasting at Rarotonga by Cyclone Sally
-
- Appendix D-1 Outlines of Master Plan and Short-term Development Plan Preparation

List of Tables and Figures : Volume-II

		PAGE
Chapter 11:		
Table 11-1	Initial Investment Cost-----	11 - 7
Fig. 11-1	Construction Schedule, Coastal Protection and Port Improvement : Cook Islands -----	11 - 8
Fig. 11-2	Master Plan Coastal Protection and Port Improvement at the Avarua/Avatiu Coast: Site-2 -----	11 - 9
Fig. 11-3	Short-term Development Plan of Coastal Protection and Port Improvement at the Avarua/Avatiu Coast: Site-2 -----	11-10
Fig. 11-4	Short-term Development Plan of Coastal Protection, at "Health Department": Site-1 -----	11-11
Fig. 11-5	Short-term Development Plan of Coastal Protection, at "Airport East": Site-3 -----	11-12
Fig. 11-6	Short-term Development Plan of Coastal Protection, at "Airport West": Site-4 -----	11-13
Chapter 12:		
Table 12-1	Seawall Formation Estimated, Feb., 1992 -----	12 - 2
Fig. 12-1	Standard Section: Coastal Protection -----	12 - 2
Fig. 12-2 A	MOW Avarua Protection Works, 1991/1992-----	12 - 4
Fig. 12-2 B	Deepwater Wave and Equivalent Deepwater Wave Along the Northern Coast of Rarotonga -----	12-10
Fig. 12-3	Wave & Current Simulation Water Depth vs. Wave Direction -----	12-11
Fig. 12-4	Water Depth vs. Wave Direction Wave Height -----	12-11
Fig. 12-5	Wave Height vs. Wave Direction Wave Setup Above MSL +0.7 m-----	12-12
Table 12-2 A	Assumed Sally Wave Group (at the most dangerous moment)-----	12-16
Table 12-2 B	Allowable Over-topping Discharge (Seawall) -----	12-22
Table 12-2 C	Coefficient used for Estimation of Run up Height-----	12-25
Fig. 12-6	Wave Run-up Height Estimation-----	12-26
Fig. 12-6 A	Wave Run-up Curve-----	12-28
Fig. 12-6 C	Cross Section of Coast Bank (No. 14-3) -----	12-33
Table 12-2 D	Rock Dumping by Gene -----	12-34
Fig. 12-6 D	Relationship among Over topping (ΔR), Dumping Width (W)and Rock Size (D) -----	12-36
Fig. 12-7	Number of Cyclones Recorded in the South Pacific Ocean, 1939/1991 -----	12-38
Table 12-2 E	Cyclone Wave Height by Return Period -----	12-38
Fig. 12-8	Return Period Estimates Ship Report Data from Grid Square No.5 (15.0 - 25.0° S, 155.1 - 165.00 W)-----	12-39

Table 12-3	Effect of Project (In Number of Reduced Model Cyclones)-----	12-41
Table 12-3 A	Comparison between Concrete and Rocks-----	12-42
Table 12-4	Damage Reduction Estimate by Project: Site-1-----	12-45
Fig. 12-9	Coastal Protection Alignment Plan: Site-1-----	12-48
Fig. 12-10	Typical Section, Site-1-----	12-49
Table 12-5	Damage Reduction Estimate by Project: Site-2(1) (Avarua East)-----	12-51
Fig. 12-11	Coastal Protection Alignment Plan: Site-2, (1/2) and (2/2)-----	12-55
Fig. 12-11 A	Typical Section, Site-2-----	12-56
Table 12-6	Beach Road Formation: Avarua Coast-----	12-61
Table 12-7	Damage Reduction Estimate by Project: Site-2(2)-----	12-63
Table 12-8	Damage Reduction Estimate by Project: Site-2(3)-----	12-64
Fig. 12-12	Typical Section, Site-2-----	12-68
Fig. 12-12 A	Typical Section, Site-2-----	12-69
Table 12-9	Damage Reduction Estimate by Project: Site-3-----	12-72
Fig. 12-13	Coastal Protection Alignment Plan: Site-3-----	12-75
Fig. 12-14	Typical Section, Site-3, (1/2) and (2/2)-----	12-76
Table 12-10	Damage Reduction Estimate by Project: Site-4(1)-----	12-81
Table 12-11	Damage Reduction Estimate by Project: Site-4(2)-----	12-84
Table 12-12	Damage Reduction Estimate by Project: Site-4(3)-----	12-87
Fig. 12-15	Coastal Protection Alignment Plan: Site-4-----	12-89
Fig. 12-16	Typical Section, Site-4, (1/2) and (2/2)-----	12-90
Table 12-13	Land Use in Port Park Complex-----	12-94
Fig. 12-17	Typical Parapet Wall Arrangement (Earth Dike)-----	12-95
Fig. 12-18	Concrete Staircase-----	12-96
Fig. 12-19	Built-in Bench-----	12-96

Chapter 13

Table 13-1-1	Cargo Handling Volume for the deep Sea-Berth in Avatiu Harbour-----	13 - 3
Table 13-1-2	Maximum Size of Vessels-----	13 - 3
Table 13-1-3	Number of Calling Vessels and Cargo Handling Volume per Vessel-----	13 - 3
Table 13-1-4	Number of Fishing Boats and Volume of Caught Fish-----	13 - 3
Fig. 13-2-1	Yacht Berthing Arrangement-----	13 - 4
Table 13-2-1	Required Number of Deep-sea Berths for Foreign Trade and Container Cargo Handling Facilities in 1997-----	13 - 5
Table 13-2-1(a)	Berth Occupancy Rate of Deep-Sea Berth-----	13 - 5
Table 13-2-1(b)	Container Freight Station in 1997-----	13 - 6
Table 13-2-1(c)	Marshaling Yard-----	13 - 6
Table 13-2-1(d)	Container Storage Yard in 1997-----	13 - 6
Table 13-2-1(e)	Dimension of Fishing Boat-----	13-11
Table 13-2-1(f)	Relation Between Area of Ice machine Building and Capacity of Ice machine-----	13-11
Fig. 13-2-2	Vessel Turning Pattern and Required Turning Basin--	13 - 8
Fig. 13-3-1	Organization Chart of TLT-----	13-13
Fig. 13-3-2	Organization Chart of Marine Resources-----	13-14
Table 13-3-2	Annual Budget of TLT 1991-1992 (Estimate)-----	13-20
Table 13-3-3	Profit and Loss Statement of Waterfront Commission --	13-21
Fig. 13-3-3	Organization Chart of Proposed Management Body ----	13-25
Fig. 13-4-1	Layout of Short-Term Development Plan Avatiu and Avarua Harbour-----	13-28

Fig.	13-4-2	Layout of International Wharf (Short Term)-----	13-29
Table	13-5-1	Wave Height Comparison at Avarua Passage-----	13-31
Table	13-5-2	Wave Height Comparison at Avatiu Passage-----	13-31
Fig.	13-5-1	Wave Height Comparison at Avarua Passage-----	13-34
Fig.	13-5-2	Wave and Current Simulation : Current Vector-----	13-34
Fig.	13-5-3	Sections of Avarua and Avatiu Passage-----	13-35
Fig.	13-5-4	Location of Section-----	13-35
Fig.	13-6-1 A	Section of Avarua East Breakwater (Land Ward 60 m)-----	13-37
Fig.	13-6-1 B	Section of Avarua West Breakwater-----	13-38
Fig.	13-6-2 A	Design Wave and Specified Armour Size for Avarua Breakwaters-----	13-40
Fig.	13-6-2 B	Proposed Alignment Plan: Avarua-----	13-41
Fig.	13-6-3	Typical Section, Avarua Harbour, (1/5) to (5/5)-----	13-42
Fig.	13-7-1 A	Avatiu East Breakwater, Landward 130 m-----	13-47
Fig.	13-7-1 B	Avatiu East Breakwater, Lagoon End 50 m-----	13-48
Fig.	13-7-1 C	Avatiu East Breakwater, Reef Front 70 m-----	13-49
Fig.	13-7-1 D	Avatiu East Breakwater, Head 30 m-----	13-50
Fig.	13-7-1 E	Avatiu West Breakwater, Landward 195 m-----	13-51
Fig.	13-7-1 F	Avatiu West Breakwater, Head 30 m-----	13-52
Fig.	13-7-1 G	Design Wave and Specified Armour Size for Avarua Breakwaters-----	13-53
Fig.	13-7-1	Proposed Alignment Plan: Avatiu-----	13-54
Fig.	13-7-2	Typical Section, Avatiu Harbour, (1/5) to (5/5)-----	13-55

Chapter 14

Table	14-1	Quantity of Major Works-----	14 - 2
Table	14-2	Master Construction Schedule-----	14 - 3
Fig.	14-1	Construction Schedule-----	14 - 4

Chapter 15

Table	15-1	Project Cost Summary-----	15 - 1
Table	15-2	Currency Components-----	15 - 1
Table	15-3	Project Cost Summary: Coastal Protection Work-----	15 - 2
Table	15-4	Initial Investment Cost: Coastal Protection Work-----	15 - 3
Table	15-5	Currency Components: Coastal Protection Work-----	15 - 4
Table	15-6	Project Cost Summary: Port Improvement Work-----	15 - 5
Table	15-7	Initial Investment Cost: Port Improvement Work-----	15 - 6
Table	15-8	Currency Components: Port Improvement Work-----	15 - 6
Table	15-9	Disbursement Schedule-----	15 - 8
Table	15-10	Unit Price of Major Work-----	15 - 9
Table	15-11	Currency Breakdown Samples-----	15 - 9

Chapter 16

Table	16-1	Summary of Business Effects-----	16 - 2
Table	16-2	Utilization Effects-----	16 - 4
Table	16-3	Type of Benefits-----	16 - 5
Table	16-4	Value of Coastal Land-----	16-12
Table	16-5	Area to be Protected-----	16-12
Table	16-6	Value to be Secured-----	16-13

Table 16-8	Rise in Land Value -----	16-15
Table 16-9	Benefits from Saving in Ship Staying Cost and Saving in Cargo Handling Cost -----	16-20
Table 16-10	Damages in Port Facilities-----	16-21
Table 16-11	Construction/Maintenance Cost in Without Case (Economic Price)-----	16-22
Table 16-12	Economic Prices of Construction Costs-----	16-23
Table 16-13	Annual Costs and Benefits in Economic Price -----	16-26
Table 16-14	EIRR Calculation - Base Case -----	16-27
Table 16-15	Sensitivity Analysis for EIRR-----	16-28
Table 16-16	EIRR Calculation - Case A -----	16-29
Table 16-17	EIRR Calculation - Case B-----	16-30
Table 16-18	EIRR Calculation - Case C-----	16-31
Table 16-19	Cargo Handling Volume in Avatiu Harbour -----	16-34
Table 16-20	Initial Investment-----	16-34
Table 16-21	Rough Estimation of Port Revenues -----	16-36
Table 16-22	Assumed Operating/Maintenance Cost-----	16-37
Table 16-23	Results of FIRR -----	16-38

Chapter 17 None

Chapter 18 None

Chapter 19 None

Chapter 20 None

**Chapter 11: Definition of Short-term
Development Plan**

Chapter 11 Definition of Short-term Development Plan

Purpose of this study is preparation of Master Plan and Short-term Development Plan for coastal protection and port improvement on the island. The Master Plan was proposed in Vol. I and aims at outlining the long-term objectives for coastal protection and port improvement on the island. The Short-term Development Plan will be prepared in this volume.

11.1 Necessity of the Project

11.1.1 Policy Objectives

The project is proposed based on the following policy objectives of the Government of Cook Islands.

- i) Protection of the national land and the security of the nation against natural disasters.

The Cook Islands consists of 15 island situated from 156° - 167° west longitude to 8° - 23° south latitude.

Because of its location, the nation is attacked by cyclones every year and suffers heavy damage such as coastal erosion. Especially on Rarotonga Island's where the population is concentrated. Consequently, commercial and business facilities, the airport, port and roads are heavily damaged during cyclones.

A future concern is that electric cables, gas pipelines and water supply lines that are buried along the coast, as well as the other public facilities such as schools and hospitals may be damaged in the event of a strong cyclone.

- ii) Maintaining a supply of items essential for human life and related fundamental materials.

Rarotonga Island has the most important transportation foot-holds, such as the Rarotonga Airport and Avatiu Harbour. The transported materials are items essential for human life and related fundamental materials.

Therefore, by protecting those transport facilities and ensuring the safety of ship maneuvering, the nations' social and economic stability will be maintained.

iii) Promotion of Industries

Future economic growth depends upon the promotion of industries in the various regions, utilizing the prevailing natural conditions.

Therefore, certain facilities, such as a marina, which can be the core of industry will be needed.

Moreover, because the basic purpose of a fishery is to supply food to inhabitants and tourists on the island, the mooring facilities for small craft and stock facilities are required.

iv) Increase Employment Opportunities and Prevent of Population Outflow

Because of the current shortage of employment opportunities in the country, the labor force, especially the younger workers, have sought employment countries. The people have vague misgivings about the future social-cultural development.

Therefore, to erase these misgivings, it will be necessary to increase employment opportunities together with promoting industries.

11.1.2 Possible Countermeasures (Contents of the Project)

Countermeasures to achieve the said policy objectives can be summarized as follows:

- i) To protect the national land and to ensure the nation's safety, appropriate coastal protection will be undertaken in the project.
The area to be protected is the coastline since public utilities such as the airport and port as well as the city environs are in close proximity to the coast.
- ii) To provide coastal protection works in respect to natural disasters by wave over-topping and coastal erosion. Location to be protected will be selected based on the past damage and land use requirement at its hinterland.
- iii) To cover the damaged areas by coastal protection works.
 - Coastal area near the Health Department and its surroundings
 - Coastal area in front of the Avarua urbanized area
 - Coastal area in front of the fuel storage yards at the Eastern end of existing airport
 - Beach road near the MET

- Beach road at the North-West corner of airport
- Beach road at the West end of airport

Not only Cyclone Sally but also Val/Wase and Gene should be taken into consideration of protection plan.

- iv) To maintain an adequate supply of items essential for life and related fundamental materials.

The improvement of breakwaters, basin and wharfs, and the procurement of a tugboat in Avatiu Harbour will be undertaken to minimize damage to the port caused by cyclones, and to ensure the safety of ships maneuvering.

Additionally, to enhance physical distribution, the procurement of necessary cargo handling equipment is also considered in the project.

- v) To establish and promote industries such as tourism, the improvement of breakwaters, basin and the wharf in Avarua Harbour which is used for usual mooring and emergency evacuation of small fishing crafts.

- vi) To create both comfortable and safety circumstances, a port-park complex in the Avarua central coast that will function not only as a green zone and parking area but also as a cyclone buffer zone, will be established.

- vii) To supply food to the nation and tourists, fishery related facilities in Avatiu Harbour will be established.

- viii) By promoting industries and, through the implementation of the project, employment opportunities and the number of permanent residents will increase.

- ix) The aim of the above measures is towards the realization of land protection, the safety of the nation, and a stabilized national economy.

Based on the above, the project can be considered to be in harmony with the policy objectives of the Cook Islands Government.

Furthermore, if the current situation remains unchanged, there is a strong likelihood that heavy damage will be inflicted in the near future. Therefore, given that the primary aim of the project is to protect the national land and to defend it against natural disasters, the urgency of the project should be recognized.

11.2 Definition

The Master Plan is a final objective which is a target to be attained over a long time span. The Short-term Development Plan is a milestone that must be accomplished first.

Work components proposed in the Master Plan include the various work categories and large scale investments required to meet the demands of target year 2010. Some of the work can be implemented around the year 2010. However, other specified work should be executed promptly to meet urgent requirements. Thus, all the works recommended in the Master Plan are not necessarily assigned the same priority.

It is understood that the Short-term Development Plan should only include the urgently required work. Thus, the objective of the Short-term Development Plan is to draw up a scheme outlining the urgently required components of the Master Plan.

Character of Short-term Development Plan

As discussed in Chapter 10, the basic criteria of the high priority work can be summarized as follows:

- i) Protection work having a high investment efficiency compared to the necessary costs that might require for restoration of the expected damage in the case of no investment.
- ii) Any existing facility that can not be substituted by others.
- iii) Any existing facility already being damaged that requires urgent repairs as the only alternative.
- iv) Any existing facilities which can not ensure the safety of its users.

If these criteria are applied to the project, the scope of urgently required work can be categorized as follows:

| | |--------------| | Category "A" | |--------------|

Among the places where wave overtopping by a Sally class cyclone is expected and the existing facilities are important and can not be substituted by others.

This category may include the following work:

- i) Urbanized area along the beach road in Avarua.
- ii) Government offices and public facilities along the beach road in Avarua.
- iii) Port facility in Avatiu Harbour
- iv) Fuel storage facilities on the coastal bank near the existing airport
- v) Government offices and public facilities near the Health Department

Category "B"

Among the places where coastal erosion by a Sally class cyclone is foreseen and the existing facilities are important and can not be substituted by others.

This category may include the following works.

- i) Facilities located immediately eastward of Avarua Harbour.
- ii) Runway westward end on the reclaimed land.

Category "C"

Among the existing waterfront facilities, those that should be provided with urgent repair work or improvements.

This category may include the following works.

- i) Repair work to the Avatiu Harbour quaywall
- ii) Widening of the turning basin and the provision of a tug boat for the safety of vessels maneuvering in Avatiu Harbour
- iii) Longer calm approach channel of Avatiu Harbour
- iv) Fisheries facilities in Avatiu Harbour
- v) Repair work to the berthing facilities at Avarua Harbour
- vi) Repair work to the breakwaters at Avatiu and Avarua Harbour

As seen above, the coastal protection work in the Short-term Plan will be concentrated on the northern coast from the eastern boundary at Village Pue to the west end of airport as the western limit. Among them, the Port Park Complex, defined as an area between Villages Ngatipa and Avatiu, will be provided with continuous protection work. However, areas other than the Complex will be partly protected where required.

The port improvement work classified in the Short-term Plan will mainly be performed at Avatiu Harbour. Avarua Harbour will also be improved as a part of the marina development.

These preliminarily selected work components will be evaluated as shown in the following Chapters.