**DRAFT**

# PROJECT PREPARATORY DOCUMENT

## JALUIT ATOLL CONSERVATION AREA PROJECT, REPUBLIC OF THE MARSHALL ISLANDS

**August 1999**

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## EXECUTIVE SUMMARY

## 1. Background to the Project

The Jaluit Atoll Conservation Area Project started with a proposal from the RMI-Environmental Protection Agency in 1997 for consideration of the area under SPBCP support. Consistent with SPBCP selection practices, a team of specialists was assigned to investigate the areas' biodiversity and to assess its suitability with respect to the SPBCP criteria. That investigation led to the submission of a Concept Proposal to SPBCP's Technical Management Advisory Group (TMAG) recommending the Jaluit Atoll for inclusion in SPBCP. Endorsement by TMAG of Jaluit's concept proposal in 1997 opened the way for detailed planning of the Conservation Area Project. This took the form of follow-up visits and consultations with the Jaluit community, its landowners, the Jaluit Local Government Council and government agencies in Majuro, Jaluit Atoll Development Association and the local fishermen's cooperative.

This Project Document is based on the views and ideas expressed in these consultations. The Project design follows SPBCP's model for conservation area, but the finer details are based on consensus reached during consultations on issues of priority concern, preferred activities, the management structure, CACC membership, and the roles of various stakeholders among other matters.

The unsustainable harvesting of the marine resources constitutes the fundamental problem for the Project and the major threat to the area's biodiversity. The Project seeks to address this issue through a resource management planning process which output will form the blueprint for future management. The Plan's thrust will be to protect the rare and endangered marine species and habitats at the same time prescribing management interventions for the sustainable use of the range of species that are of economic value to the community.

## 2. Features of the Conservation Area

The proposed Conservation Area is the entire Jaluit Atoll. This covers a total surface area of 689.74 sq. km of lagoon and 91fringing islets having 11.34 sq. km of land area.

The biodiversity of the Jaluit Atoll comprises of the lagoon, reef, mangrove, and coastal terrestrial ecosystems. Within them are also flora and fauna communities of mammals, birds, vegetation, and a range of marine species. The key biodiversity elements are birds, turtles, giant clams, corals, trochus, pearl, coconut crab, sea cucumber, sponges, lobsters, reef-fish, deep-sea bottom fish and vegetation communities.

Jaluit Atoll has a resident population of about 2,500 people, primarily inhabiting 6 of the atoll's 91 islets. (A 1994 census estimated a population of 1,924 individuals in 240 households). Jabor Islet is the most populated islet with 800 people and is the political and commercial center hosting the Local Government Council office, and the main social amenities and infrastructures, including the hospital, schools, airstrip, wharf, utilities, and the few trading businesses.

## 3. Rationale, strategy, goal & objective and target group of the Project

### 3.1 Rationale for selection

The biodiversity conservation rationale for selecting Jaluit Atoll complies with the established criteria of SPBCP. This is detailed in Table 2 page 13. In brief, Jaluit possesses globally significant ecosystems in its coral reefs, lagoons and mangrove areas. The high diversity of species of marine fauna and flora, and the presence of internationally endangered species such as turtles adds to this significance.

The intricate human-environment interactions that are at the root of resource overexploitation and conservation pose a challenge for sustainable resource management and sustainable development in general. The need to utilize resources within the carrying capacity of the resource systems dictates that sustainable use is the only option. In this

sense, sustainable use and conservation are synonymous terms. The challenge and rationale for the Project is to make it work for the community of Jaluit.

## 3.2 Project Strategy

Addressing the main issue of resource depletion and overexploitation revolves around management interventions based on a properly formulated resource management plan. A phase of information gathering and community consultation on issues and options are essential parts of the planning process. Given the nature of the problem, it is clear that the threatened species of high economic value needs to be replenished and be given time to recover to viable population levels. Consequently effective controls and regulation of use are essential. These measures may lead to the immediate loss of income for some. The Project hopes to compensate for these losses through the development of alternative income generating activities. Principal among the options investigated is community-based tourism. Other options revolve around processing and marketing of locally produced coconut-based products, handicraft making and others.

To support and complement planning and implementation, the community capacity will be strengthened in a number of key areas. This includes the establishment of management structures for the Project, training in special skills areas such as project management, planning, biological monitoring, business management, and others.

## 3.3 Project Goal and Objectives

***Goal***

To conserve and sustainably manage the biodiversity of the Jaluit Atoll for the subsistence and the socio-economic development needs of its present and future generations.

***Specific Objectives***

- To formulate and implement a resource management plan to facilitate the replenishment and the sustainable management of Jaluit Atoll's marine resources.
- To strengthen the capacity of the Jaluit community to implement the resource management plan via the establishment of appropriate local management structures

and the provision of training, information, technical expertise and financial assistance.

- To diffuse the dependence for income on the exploitation of marine resources by encouraging, facilitating and supporting the development of viable income generating alternatives that are compatible and complementary to the conservation of Jaluit's biodiversity.

### 3.4 Target Groups

The main target group are the community people and commercial operators whose daily dependence on the marine resources for subsistence, cash income and profits constitute the biggest threat to the marine resource.

Other target groups include the Local Government Council, the Jaluit Atoll Development Association and the Jaluit Atoll Fisheries Cooperative whose support are critical to the success of the Project.

Schools, youth, women are also important targets of the awareness raising and educational campaigns.

## 4. Features of the Design

The main features of the Project design consist of a

- A Project management structure consisting of a Lead Agency (the RMI-EPA), a locally constituted Conservation Area Coordinating Committee (CACC), and a Conservation Area Support Officer (CASO).

- A community-based resource management planning process with an information gathering and community consultative phase. The outputs from this phase will be a resource management plan, resource survey information and baseline data on the marine resources that will be the basis for management and monitoring.

- A component focusing on the development of alternative income generating activities including community-based tourism, handicraft making and the processing and marketing of other local products.

- A capacity building and training component will concentrate on the development of relevant skills in management of small income generating activities, biological monitoring, and awareness raising and educational programmes targeting youth, schools and the communities generally.

## 5. Project management

Project Management consists of the

- RMI-EPA as the Lead Agency which will be headed by the Project Manager. The Project Manager shall have overall responsibility for the efficient execution of project activities, and the timely reporting of progress in work implementation and the full accounting of Project funds.
- A Conservation Area Support Officer (CASO) who will be responsible for the day-today running of the Project on behalf of the Project Manager, and who will ensure the timely and effective implementation of quarterly work plans.
- The Conservation Area Project Coordinating Committee who shall be a sub-committee of the Local Government Council and shall be chaired by the Mayor of Jaluit. The Committee will have an advisory role to the Project Manager and will ensure that the quarterly workplans reflect the communities' concerns and priorities for work.. The Committee will also ensure that all benefits and costs associated with the Project are equitably distributed.

## 6. Benefits, costs and risks of the Project

The main direct benefits of the Project will be the replenishment of depleted resource stocks and their subsequent sustainable management for the entire Jaluit Atoll. The direct recipients of these benefits are therefore the Jaluit people of today and in the future. The

indirect beneficiaries are the people of the Republic of the Marshall Islands to whom this resource will be marketed, and who will benefit in other ways through its protected biodiversity.

No significant social costs will be incurred as a result of the Project. But some financial loss may be experienced by commercial operators initially once resource harvesting is regulated to within sustainable levels.

The main risk to the Project is the limited two year period of SPBCP funding available relative to the amount of work that is planned. Planned work may not be fully implemented in time. The time constraint underscores the need for efficient and effective project management, and the commitment of the CACC and the Jaluit community in supporting project implementation.

## 7. Personnel requirement over time

The Project will have one full time CASO. This CASO will be supported in his work by other staff of RMI-EPA as required from time to time. The CASO will also be the secretary for the CACC.

Technical studies such as marine surveys will require the contracting of expert consultants. Local consultants will be used to lead or support the lead expert and will be recruited on a need-to basis.

The Project Manager will be the General Manager of the EPA. Given his other responsibilities, he is expected to spend only part of his time to ensure that the project is implemented according to sound management practices and the guidelines of the SPBCP.

The CACC will meet quarterly or if necessary more frequently depending on the requirements of the Project.

## 8. Financial requirements by year in US$

| # | Component | Year 1999 | Year 2000 | Year 2001 | Total per component |
|---|---|---|---|---|---|
| **1** | CA Administration | 32,500 | 28,500 | 28,000 | 89,000 |
| **2** | CA Management | 1,000 | 37,000 | 47,000 | 85,000 |
| **3** | CA Sustainable Development | 0 | 51,000 | 32,250 | 83,250 |
| **4** | CA Awareness & Information | 1,500 | 3,000 | 1,000 | 5,500 |
| **5** | CA Training | 0 | 24,500 | 0 | 24,500 |
| | **TOTAL** | **$35,000** | **$144,000** | **$108,250** | **$287,250** |

## A. INTRODUCTION

In June 1997, the Environment Protection Authority (EPA) of the Republic of the Marshall Islands requested the South Pacific Biodiversity Conservation Programme (SPBCP) of SPREP for possible consideration of Jaluit Atoll as a conservation area project. Subsequently a preliminary assessment of the area's biodiversity was conducted with SPBCP assistance to determine its suitability given SPBCP's criteria and to provide information to EPA for formulating a concept proposal.

The assessment found an area rich in species diversity particularly in its marine life and a local community concerned with the overharvesting of their marine resources and eager for effective solution for its sustainability. Thus the interest expressed by the Environment Protection Authority (EPA) for a conservation area project is fully shared by the Jaluit community including the local government Council. The same interest underpinned a similar project proposal submitted by the Jaluit Atoll Development Association (JADA) - an NGO of Majuro based Jaluit people.

The same aim to protect and conserve the Pacific islands biological diversity preoccupies the South Pacific Biodiversity Conservation Programme. This GEF-AusAID programme is being implemented in 16 Pacific Island countries. The Jaluit Atoll of the Marshall Islands is the seventeenth.

The planning for the Jaluit Atoll Conservation Area Project took place over a two year period. Within this period, time was devoted to ensuring adequate community input into the identification of issues and priorities for action. There were also temporary setbacks as the community and the Local Government Council deliberated over the balance between conservation and development. This came to a head with the Live Reef Fish Project proposal which the Council seriously considered a possibility until the *lerioj's* intervened in favour of not approving it. The planning of this Project also benefited from independent studies conducted under JADA's initiative in collaboration and assistance from the University of Oregon Micronesia and South Pacific Programme. Two studies (D.Miller 1998 and E.Thomas, 1998) investigated the feasibility of community-based

tourism as an income generating activity. Some of their recommendations have been incorporated into this Document for SPBCP support.

During this planning phase, SPBCP provided training for key Jaluit representatives in regional training workshops during 1998 and 1999.

## B. PROJECT JUSTIFICATION

### B.1. Increasing international interest in Biodiversity Conservation

The formalization of the Convention on Biological Diversity (CBD) at the United Nations' Conference on Environment and Development (UNCED), the Earth Summit, held in Rio de Janeiro in June 1992, underlined the importance of biodiversity conservation as a basis for sustainable development everywhere. The CBD, which provides the framework for the protection of both terrestrial and marine biodiversity, was signed by nine Pacific Island Countries including the Republic of the Marshall Islands. The Convention is particularly important to countries of the Pacific Islands which have "globally significant areas of biological diversity" and whose peoples, cultures, and economies depend on the protection and sustainable use of their terrestrial and marine life. The importance of the protection of small island ecosystems is also included in Agenda 21, the UNCED Action Plan for the attainment of sustainable development.

The implementation of the CBD in the Pacific Island Countries is being facilitated by the SPREP-based South Pacific Biodiversity Conservation Programme (SPBCP). This Programme was initially planned for five years but has since 1997 been extended to the end of 2001. SPBCP carries a US$10.0M budget funded through the Global Environment Facility (GEF) and the Government of Australia.

The interest in the conservation of biological diversity is also reflected in the Republic of the Marshall Islands' National Environment Management Strategy (NEMS). This planning document has among its major programmes, initiatives for the protection of biodiversity. More recently the RMI has also completed its National Biodiversity Action Strategy and Plan (NBSAP) as required of party countries under the CBD. The

implementation of this strategy will be significantly advanced by the establishment of the Jaluit Atoll Conservation Area Project.

## B.2. South Pacific Biodiversity Conservation Programme (SPBCP)

### *B.2.1 SPBCP Philosophy*

The Conservation Area concept promoted by SPBCP differs from the traditional national park and protected areas concept in that it allows for the utilisation of resources in a sustainable manner, whilst promoting the conservation of areas of high biodiversity.

The programme is based on the following convictions:

- It is absolutely essential that the local population be an integral part of the project initiation process and that they agree to participate in its development and implementation.

- The Conservation Area Projects (CAPs) are intended to be community driven and owned. They must reflect the wishes and desires of the local people as, ultimately, the local people should take over the administration and management of the Conservation Area (CAs).

It is recognized that:

- There will probably be a lack of awareness and management skills amongst those with a direct interest (primary stakeholders) in conserving the environment;

- There will be a need to provide and create tangible benefits, including financial returns through sustainable development activities, to induce primary stakeholders to conserve the biodiversity of the areas selected for inclusion in the programme;

- Sustainable development will be an on-going and lengthy process, extending beyond the initial funding period provided by SPBCP. In the long term, stakeholders will have to become self-reliant and substantially dependent on their own community resources to carry out the conservation measures necessary to ensure the protection and enhancement of the environment for future generations.

### *B.2.2 SPBCP Aims and Objectives*

The aim of SPBCP is:

> To develop strategies for the conservation of biodiversity by means of the sustainable use of biological resources by the people of the South Pacific.

The objectives of SPBCP are to:

- Identify new areas important for conservation of biological diversity, which could become CAs;
- Assist in the creation of CAs that protect biodiversity and demonstrate ecologically sustainable development by the management of natural resources by local communities, NGOs and government agencies;
- Protect threatened or endangered terrestrial and marine species in the Pacific region;
- Improve regional awareness of the importance and means of conserving biological diversity;
- Improve capacities and working relationships between different sectors and agencies contributing to the conservation of the biological diversity.

### *B.2.3 Criteria for CA selection*

Areas selected for SPBCP support must meet set criteria. These criteria are reproduced below. Proposals should be able to meet all of the essential criteria (Category I) and at least one of the secondary level criteria (category II).

**Table 1: SPBCP Criteria**

| ***Category I selection criteria (essential)*** |
|---|
| (a) The proposed area must contain nationally and regionally significant examples of one or more ecosystems of global conservation concern, such as tropical forest, mangroves, wetlands, lagoons and coral reefs, and must be large enough to maintain their viability. |
| (b) The project must be achievable and exhibit a high degree of commitment by landowners, residents, resource users and other potential partners in |

the conservation area project.

(c) The proposed area must be sufficiently large and complex to encompass a wide range of interactions among people and natural resources prevailing in the country.

***Category II (at least one of these must be met)***

(d) The proposed area should contain high levels of biological diversity and ecological complexity, represented by a number of major environments, diversity of ecosystems, and/or large numbers of genera and species of plants and animals;

(e) The proposed area may be important for the survival of endemic species, or of species that are rare or threatened nationally, regionally or globally; and/or

(f) the proposed area may be threatened by destruction, degradation or conversion.

# C. THE JALUIT ATOLL CONSERVATION AREA PROJECT

## C.1. The Project Rationale

### C.1.1 Jaluit Atoll and the SPBCP Criteria

The following assessment of the Jaluit Atoll Conservation Area Project is made based on the results of a preliminary and rapid reconnaissance survey undertaken in 1997. The information on the biodiversity remains incomplete and limited.

**Table 2: SPBCP Criteria versus Jaluit CA features**

| SPBCP Criteria | Jaluit Conservation Area |
|---|---|
| **Category I: essential** | |
| (a) the proposed area must contain nationally or regionally significant examples of one or more ecosystems of global conservation concern, such as tropical rainforest, mangroves, wetlands, lagoons and coral reefs, and must be large enough to maintain their viability. | • Jaluit Atoll contains a highly diverse and complex lagoon, coral reefs and mangrove and littoral vegetation ecosystems. |
| (b) the project must be achievable and exhibit a high degree of commitment by landowners, residents, resource users and other potential partners in the conservation area project. | • The commitment of the landowners, community, local Government Council and the Government is above question. There is a common with the continuing over-harvesting of marine resources and a recognition among all sectors of the community of the need for sustainable management. |
| a) the proposed area must be sufficiently large and complex to encompass a wide range of the interactions among people and natural resources prevailing in the country. | • At 689.74 square kilometers of lagoon and 91 atoll islets with an area of 11.34 sq.km., the Jaluit Atoll (including lagoon and coral reefs) is of a size that is considered large enough for the requirement of SPBCP. |
| **Category II:**<br>(d) the proposed area should contain high levels of biological diversity and ecological complexity, represented by a number of major environments, diversity of ecosytems, and/or large numbers of genera and species of plants and animals;<br>(e) the proposed area may be important for the survival of endemic species, or of species that are rare of threatened nationally, regionally or globally; and/or | • The Jaluit Atoll is considered the most diverse and rich in marine life of the Marshall Is atolls. In the absence of specific information on Jaluit itself, information on Marshall Is in general is indicative of that richness: 799 known species of reef fish (827 fish species in total) , 45 coral species, 4 land crab species (Smith 1992); 18 birds species and 86 plant species (Merlin et al 1994). |

| | |
|---|---|
| (f) the proposed area may be threatened by destruction, degradation or conversion. | • five species. of giant clams are endemic and under serious threat. It is possible that there are other endemic marine species under this status.<br>• there are clear signs of serious resource over-exploitation. |

### C.1.2. A sustainable development rationale for the Project

As in many small islands wherein poorly managed subsistence and economic development activities constitute a major threat to the conservation of biodiversity, the SPBCP philosophy of conservation by means of 'sustainable use' offers the only practical approach to the realisation of long term sustainable development. In these situations, sustainable development is not an option; it is the only way. Such is the case in Jaluit Atoll. Thus the Project seeks to balance the pursuit of economic and utilitarian values within the carrying capacity of a fragile resource system that has been heavily exploited. This task involve interventions to restrict use in key sensitive habitats to allow for the replenishment and restocking of key species.

The resource situation is critical, demanding timely and decisive interventions. This situation is elaborated on below.

***Resource and opportunity cost argument***

The people of Jaluit Atoll have traditionally depended on the resources of its reefs, lagoon and deep sea to provide for their subsistence and cash needs. In recent times however, increasing population, changing lifestyles and higher material aspirations are putting unsustainable pressures on the resource base. The dwindling stocks of clams and other marine and land resources is the result of the collective impact of all Jaluit households and the high school who daily extract from the lagoon and reefs for their daily sustenance.

This situation has been seriously aggravated by the increasing involvement of commercial operators who harvest on a larger scale, and an increasing barter trade

between Jaluit people and relatives in Majuro who exchange containers of clams, fish, and other marine resources for consumables such as cigarettes and liquor. Therefore all these factors – subsistence, barter trade and commercial harvesting – are at the root of the over-harvesting that is placing the giant clam resource under the threat of depletion. The same forces are threatening other marine species having traditional and commercial value such as oysters, trochus, lobsters, mangrove crabs and many lagoon fish species.

The resource situation in the Jaluit Atoll is not altogether beyond salvation. Despite indications of rapid resource depletion for certain species, the chances for reversing the existing trends appear to be good. For example, observations during the planning of this Project revealed good signs of clam reseeding on several coral heads indicating the presence of good brood (mother) stock in the deeper parts of the lagoon which can be use to replenish the clam resource. The key spawning areas (for example mangrove areas and channel passages) for many fish species are also intact and under little or no threat. There are also potential options for alternative income generating that can contribute significantly to diffusing the pressure on resources while compensating for loss of income and other benefits. These options include deep-sea fishing, handicraft production, value-added processing and marketing ventures based on a number of traditional products (i.e. coconut-based candies and syrup, 'makoon' etc.) and community-based tourism.

But stemming and reversing present trends in resource use depend on management interventions being timely and decisive. Acting now is the more prudent option from an ecological and economic point of view. Allowing the situation to worsen may lead to an economically and ecologically irreversible condition, the social cost of which for the present and future generations would be immeasurable.

## D. THE PROJECT AREA

### D.1. The Republic of the Marshall Islands (RMI) – an overview

#### *D.1.1 Geographic profile*

The Republic of the Marshall Islands is composed of 29 atolls and five low-lying islands in the North-central Pacific Ocean. Twenty-two of the atolls and four of the islands are

inhabited. The atolls are scattered in an archipelago consisting of two roughly parallel island chains - the Western “Ralik” (sunset) and Eastern “Ratak”(Sunrise) chains. The atolls extend about 1130 km from North to South, from 14 34’N, and about 1290 km East to West, from 160 48’E to 172 10’E.

The annual rainfall varies considerably from North to South within the archipelago, the southern atolls receiving 120-170 inches, and the northern atolls receiving 100-175cm (NOAA 1898)

The total land area of the RMI is just under 110 sq. km, with a mean height above sea level of less than two meters. The total lagoon area is some 6,511 sq. km while its Exclusive Economic Zone encompasses over 1.2 million sq. km of the Pacific Ocean. The soils in the Republic are nutrient poor, thus limiting the nation’s agricultural base. The nation’s marine resources base is, however, considerably rich with a wide range of finfish and invertebrate species in its reef, lagoon and deep sea fisheries.

## MAP OF THE REPUBLIC OF THE MARSHALL ISLANDS

### *D.1.2 Socio-demographic profile*

The population of the Marshall Islands is estimated at 58,349 as of 1996 (48,084 in 1991) of which 76% resides in Majuro (27,776) and Ebeye (Kwajalein) (12,366) where US troops are stationed. The national growth rate is estimated at 4.3% according to 1988 census. Taking the high growth rate into account, the total population of RMI is predicted to grow 2.3 times in 1996 and 3.3 times in 2005. (RMI Statistical Abstract,1995 cited by Overseas Fisheries Cooperation Foundation, 1998).

The extremely high population growth rate with an increasingly young labour force is causing an influx into the capital region where prospects of employment are better. As a result, rural areas (outer atolls and islands) are becoming depopulated and turning into aging societies causing production downfall in agriculture and fisheries. The population structure show children of 0-14 years old accounting for 51.0% of total population. Children under 14 years old share a large part of rural (outer atolls) population while workers between 15-64 years are fewer (ibid.).

### *D.1.3 Political and economic background*

The politics and economics of the RMI have close relationship with the United States of America (USA). Historically, RMI was a UN sanctioned Trustee of the United States since 1947 and the nation became a member nation of the Compact Agreement with the USA in 1986. The Compact agreement is effective for 15 years from 1986 to 2001 during which a financial aid package is provided under the agreement to assist the development of RMI towards economic independence. The fund supports the major part of the economy and accounts for 50% of the national budget.

The GNP per capita, a barometer of economic activities, was US$ 1,680 in 1994 which ranks it higher than Kiribati ($730) and Solomon Islands ($800) and lower than the Federated States of Micronesia ($1,890) and Fiji ($2,320) for the same year. (World Bank Atlas, 1996).

In terms of economic development, the effective use and management of marine resources is the key to the independent economic development of RMI. The principles of

sustainable development, allowing improvement of the quality of human life while requiring humans to live within the carrying capacity of the supporting ecosystems, are essential here. A traditional way of life, future tourism potential and internal and international fishing ventures all rely on the ability of this resource to be renewable.

## D.2 Jaluit Atoll

### *D.2.1 Geographic description*

Area and location

The proposed Conservation Area is the entire Jaluit Atoll. This covers a total surface area of 689.74 sq. km of lagoon and 91fringing islets having 11.34 sq. km of land area. Jaluit Atoll is also known in the Marshallese language as Jalwoj, a diamond-shaped atoll located on the southern end of the eastern Ralik chain in the Marshall Islands. Its northern neighbour is Ailinglaplap Atoll. South of Jaluit is Namrik and Ebon Atolls, as well as the single island Kili.

Jaluit is located 6° 00’ northern latitude, and 169° 34’ eastern longitude. It was the capital of the Marshall Islands during the German administration in 1878-1914, and a Japanese administration from 1914-1943 until the Americans took over in 1944. It is located 130 miles south west of Majuro.

Climate

The tropical climate in the Marshall Islands is dominated by trade winds and surrounding ocean and shows little season variation. The southern atolls of the Marshall Islands tend to be wetter and have lusher vegetation due to the higher rainfall. The average monthly temperature ranges from 80°F - 85°F. The relative humidity averages between 75% and 85% over the year with little variation. Humidity approaches 100% during and after intense rainstorms. Tradewinds from the northeast dominate most of the year but the strongest are from November to June. Average precipitation of 100 inches per year is normal with minimum and maximum rainfall of 80 and 150 inches respectively.

Soil

The soil on Jaluit is typical of atoll type, highly calcareous, alkaline and highly permeable, as a result it is always low in fertility. The soil fertility, however, is better in the central part of the wider islets, particularly Jaluit-Jaluit and Imeij, due to the availability of biomass and less coral limestone.

### *D.2.2 Recent History*

Historically, Jaluit Atoll plays a significant role in the political history of the Marshall Islands. Jabor atoll of the Jaluit group has always been a miniature Jaluit metropolis, a tropical crossroads for fishemen, traders, beachcombers, missionaries, ship captains and colonial bureaucrats. During Micronesia's German era (1885-1914), Jabor's Jaluit Gessellschaft, a conglomorate of German trading companies, dominated trade in the Marshall Islands. Franz Hernsheim, a German diplomat who lived on Jabor, elevated Europe's view of Micronesia by writing a finely illustrated South Seas memoir, Sudsee-Erinnerungen, published in Berlin in 1833. Two years later, the German government established a protectorate over the Marshall Islands that lasted until the beginning of the First World War.

When the Japanese moved in (1914-1945), the Jabor town became a distant outpost in Japan's Nan'yo (South Seas) empire, housing government officials and employees of Nan'yo Boeki Kaisha (South Seas Trading Company). A community of Okinawan fishermen produced smoked fish in Jabor, and a radio transmitter linked the island with Pohnpei, Chuck and Palau.

### *D.2.2 Socio-economic profile*

Population

Jaluit Atoll has a resident population of about 2,500 people, primarily inhabiting 6 of the atoll's 91 islets. (A 1994 census estimated a population of 1,924 individuals in 240 households). Jabor Islet is the most populated islet with 800 people and is the political and commercial center hosting the Local Government Council office, and the main social amenities and infrastructures, including the hospital, schools, airstrip, wharf, utilities, and the few trading businesses.

## MAP OF JALUIT ATOLL

Social infrastructure

Jaluit is distinctive relative to other outer atolls in that its social infrastructure is developed as the base in the south-western district. Its administrative center of Jabor has a larger wharf which allows berthing of large boats; 24 hour power supply; supply of fuel-oil by a branch of an international major company (Mobil), and generally has better infrastructure than other outer islands.

The social services and infrastructure in Jaluit Atoll are limited and those that are available, with the exception of education, are concentrated in Jabor. Diesel-fueled generators provide electricity in the main islet of Jabor. Rain is the primary source of drinking water. All households have concrete and plastic catchments wherein roof-run-off is collected and stored. Other infrastructure includes an airstrip and boat ramp. A handful of vehicles can be seen on Jabor and a dirt road links Jabor with the neighboring islets of Jaluit to the east.

In the field of education, there are 5 pre-schools, and 10 elementary schools. Two of the elementary schools are church-owned and located in Jabor; the remaining 8 are public and scattered amongst the islets. One of the two public high schools in the Marshall Islands is in Jabor. This institution, with an enrolment in 1998 of about 200 students, provides high school education for all eligible students from the southern atolls (‘sunset atolls’) of the Republic. Schooling at the levels of pre-school, elementary and high school are state-funded.

A medical center served by a resident health assistant is located in Jabor. This facility provides basic health services including the treatment of minor illnesses, dispensing of limited medication and the delivering of newborn babies. There are also smaller dispensaries in the other 5 wards, each with a resident health assistant.

There is no central sewage system. Septic and water-sealed toilets are widely used. Interviews indicated that the beaches and lagoon are commonly used for defecating, a practice now more common on the outer islets than Jabor.

Contact with the outside world is limited to voice communication using VHF radios, and the postal service that comes in with the twice weekly flights of the local (Air Marshall) airline. Radio broadcasts out of Majuro is the only other means of contact with the outside world. There are no telephones.

Economy

Jaluit's economy is based primarily on subsistence activities. Of all the households on the atoll, 86.7% fish for subsistence, 68.5% grow food, 63.1% raise livestock, 62.6% make handicrafts and 52.7% produce copra (Five Year Local Development Plan for Jaluit Atoll 1992-1997 cited by D.Miller, 1997).

The main source of income for most families is the selling of copra to Government ships which visit the area on a monthly basis. More recently, the selling of pearl-shell oysters (at a US$1.00 per piece) and trochus shells to local businessmen has become a new source of cash for some. There is a growing barter trade with Majuro relatives and friends, involving the exchange of clam meat, lobsters, fish, land crabs and birds for cigarettes, liquor and other imported consumables.

There are also four small retail stores in Jabor selling foodstuffs, cigarettes and other consumable items. The local branch of the Marshalls Electric Company and the Mobil Oil Company provide a few employment opportunities.

### *D.2.3 Political profile of Jaluit*

The Local Government Council is the legal administrator for the conduct of all state affairs on the Atoll. The Council is a constitutional body comprising of a publicly elected Mayor and Council of _ popularly elected councilmen. The Council is constitutionally empowered to govern by ordinances although subject to limitations define by the national constitution and in some cases (such as with marine resources) other national legislation.

The traditional authority structure remains intact. Landowners (*leroijs and iroijs*) continue to command the respect and reverence amongst locals and therefore yielding

considerable power. A recent demonstration of this power was seen in relation to the Live-Reef fish trade proposal wherein the *leroijs*' disapproval, contrary to the interest shown by the Local Government Council, effectively prevented this proposal from being implemented.

### *D.2.4 The Biodiversity of Jaluit Atoll*

Very little documented information on the Atoll's biodiversity can be found. The following assessment was based on a week-long field assessment that included consultations with elderly fishermen and other community members (F.Toloa, S. Sesega, 1998) and subsequent independent assessments (J.Bungitak, 1999).

The biodiversity of the Jaluit Atoll comprises of the lagoon, reef, mangrove, and coastal terrestrial ecosystems. Within them are also flora and fauna communities of mammals, birds, vegetation, and a range of marine species. The key biodiversity elements are birds, turtles, giant clams, corals, trochus, pearl, coconut crab, sea cucumber, sponges, lobsters, reef-fish, deep-sea bottom fish and vegetation communities.

Key Terrestrial and Aquatic Ecosystems:

The coral reefs, lagoon, and mangrove ecosystems in the Jaluit conservation area play a major role in providing essential habitats for the productive biodiversity in Jaluit. The various marine ecosystems form part of an interdependent complex that is of national and regional interest. Nationally, it has a largely untapped economic potential that, with proper management, can supply the increasing subsistence demands of the community and for marketing on Majuro. The local fishery is also increasingly contributing to the country's exports and this trend is likely to increase in the future.

Although this marine ecosystem remain to be thoroughly studied, previous studies conducted in the northern islands and atolls of the Marshall Islands recorded a level of diversity that is exceptional in scope. For example, Smith (1992) noted approximately 45 coral species, 799 known fish species, and 4 land crab species. Merlin et al (1994) noted a total of 86 species of plants.

Mangroves:

Mangrove ecosystems, like forest ecosystems generally, are important repositories of biological diversity. Among the atoll's most productive ecosystems, they help regulate water flows, remove sediments and pollution, and provide essential habitat for fish, crabs, and numerous other species. The mangroves are found in swampy areas containing brackish water on several of the larger islands of the wet southern atolls (Stemmerman, 1981).

Within Jaluit, a few mangrove clusters support the community in terms of food (crabs, fish, fuelwood, etc.) and home construction materials. There are found in Anman, Jaluit-Jaluit, and Mejrirok. Four species of mangroves are found in these stands. These are Bruguiera gymnorrhiza, Lumnitzera littorea, Sonneratia alba, and Pemphis acidula. Spennemann & Lajuan (1990) noted that the trees had many traditional uses; the bark was used for dyes and the branches for eel traps. Also the species of Rhizophora also occurs in the Marshall Islands, but is usually found along shorelines.

Recently, a company in Majuro has been shipping mangrove lumbers from Jaluit in order to build tourist cottages. It is fear that continued shipment of the mangrove lumbers without any regulation or control would soon cause adverse affect on the mangrove habitats.

Coral Reefs

All the atolls and islands of the Republic are surrounded by fringing reefs, generally characterized by an ocean or seaward facing slope, and a reef top or flat. The upper portion of the windward ocean slope features a system of finger buttresses usually dominated by dense growth of a wide variety of corals and encrusting algae. The upper leeward slope of the ocean reef is traversed by deep gorges which contain benthic assemblages of coral and algae (Jones & Endean 1973). Coral reefs serve as "food storage" to the Marshallese people, by providing shelter or habitats for over 250 species of reef fish and invertebrates.

Although coral reefs withstand the constant pounding of ocean waves, they are especially sensitive to changes in nutrients, water temperature and light levels. When soil erosion, fertilizers, or sewage pollute the clear tropical waters where they thrive, these communities of slow-growing animals are often killed off, smothered or overgrown by fast-spreading algae.

Signs of eutrophication and pollution are readily evident on several reefs in the Marshalls, especially in areas adjacent to densely populated islets. Populated islets like Jabor in Jaluit Atoll is no exception. In Jabor, reef pollution from sewage and household waste discharged into reefs is suspected to be the main cause of increasing eutrophication.

Lagoon

The size of the lagoon, at 266.31 sq miles, ensures that it is sufficiently large and complex to be ecologically viable, and to adequate cater to the expansive life cycles and territorial needs of many finfish and nonfin fish species. The ecology of Jaluit lagoon also gives rise to a range of conditions offering a broad range of habitats for a large number of species. For example, the lagoon is daily flushed by four deep passes which are located on the southwestern and northeastern sides of the island. The lagoon is thus regularly replenished with ocean planktons and nutrients, providing ideal spawning conditons for the many reef and pelagic fish species including marbled cod (Epinephelus maculatus), skipjack (Katsuwonus pelamis), rainbow runner (Thulnus spp) and others. The richness also suggests that the possibility of the lagoon playing an important role in the migration patterns and life cycle of many other marine species.

The large size and depth of the lagoon passes also allow deep sea migratory species such as tuna to regularly visit the area, giving substance to local observations of yellow-fin tuna and skipjack spawning in the lagoon at certain times of the year.

The presence of many coral heads formations within the lagoon point to the high number of recruitment habitats for the juvenile reef fishes as well as reseeding areas for most

species of giant clams and the black lip pearl oysters. The area also hosts three different turtle species, land-crabs (coconut and land crabs) and many seabird species.

## *Key Species*

Avifauna

Eleven (11) different species of marine birds were seen during the reconnaissance survey. These are listed in the following table:

**Table 1: List of Seabirds Observed on Jaluit Atoll:**

| **Common Name** | **Scientific Name** |
|---|---|
| brown booby | *Sula leucogaster* |
| red footed booby | *Sula sula* |
| white tern | *Gygis alba* |
| black noody | *Anonus minutus* |
| brown noody | *Anonus stolidus* |
| sooty tern | *Sterna fuscus* |
| little tern | *Sterna albifrons* |
| white tail bird | *Phaethon lepturus* |
| black naped tern | *Stern sumatrana* |
| Pacific reef heron | *Egretta sacro* |
| cattle egret | *Bubulcus ibis* |

Consultations with Jaluit fishermen revealed that the following additional birds species also visit the Atoll at certain times of the year: black bellied plover (*Pluvialis squatrola*), golden plover (*Pluvialus dominica*), Mongolian plover (*Charadrius mongolus*), common ringed plover (*Charadrus hiaticula*), the wandering tattler (*Heteroscelus incanus*) and the *whimbrel (Numenius phaepus*). The Micronesian pigeon or Mulé (*Dacula oceanica*) is a common resident of the Imeij area. In total,18 bird species are known to frequent the area.

Estimates of bird populations could not be determined during the survey. Information gathered through consultations and interviews revealed that bird populations were exceptionally high until recently on the island of Lejron which the locals generally called the Bird Islet. It is also known that the impacts on the Atoll's avifauna from bird hunters and egg collectors have never before been more severe. For example, the entire bird population of Lejron deserted the islet late in 1996 and early 1997 and is now established on the islet of Enan Emaan, further north of Lejron. This migration, according to local reports, followed the worst episode of bird-killing in recent memory which left many birds wasted on trees and on the ground and the islet smelling of decaying carcasses for many months afterwards. The perpetrators are alleged to be Majuro-based locals who sell the eggs in the capitol.

Turtles

Three species of sea turtles are found in Jaluit. The green turtle (*Chelonia mydas*) and the hawksbill turtle (*Eretmochelys imbricata*) are the two most common. The leatherback sea turtle (*Dermochelys coriacea*) is noted by several elderly fishermen to have been on Jaluit in the past but has not been seen in recent times.

Local sources revealed that while Jaluit was once a rich turtle nesting area, populations have declined in recent times. Fishermen also insist that the ratio of green turtle and the hawksbill turtle nesting on Jaluit are the same. If true, this constitutes a rare occurrence relative to other atolls in the region which consistently record green turtles as being significantly more abundant than the hawksbill (F.Toloa, pers. comm. 1997).

Turtle is a sacred fish in Jaluit as in many atoll communities in the Pacific and sometimes is only harvested during the special community celebrations and social occasions. During the preliminary assessment, eighteen female turtles were caught (15 of which were from the nearby islet of Jemo) for a wedding on Jabor.

Giant Clams

Jaluit is known as the most rich atoll in the Marshall Islands for giant clams. Five species of giant clams - *Tridacna gigus, T. maxima, T.squamosa T. crocea,* and *Hippopus*

*hippopus* - are endemic to Jaluit. Four of these species were observed during this assessment. A sixth species - *Tridacna derasa* - was introduced into Jaluit in the early 1990's by the Marshall Islands Marine Resources Authority (MIMRA).

The coral heads in the lagoon on Jaluit is the main habitat for four of the endemic clam species. The exception is *Hippopus hippopus* which is most prevalent on the shallower part of the lagoon reef slope.

Coral

Jaluit has a diversity of coral types with coral species distribution specific to different marine habitats. On the lagoon coral heads, species of the hard coral (*Porites spp*), brain *coral (Favia spp*) and the brush coral (*Pocillopora spp*) dominate the shallow part while the staghorn coral (*Acropora spp*), fire coral (*Millepora spp*), and mushroom coral (*Fungia spp*) are more predominant on the deeper areas.

The natural passes into the lagoon presents a more diversified coral cover with species of *Acropora accuminata, A. humilis, A. irregularis, Pocillopora damicornis, P. verrucosa, Pavona cuctus, Fungia fungites,* and *Favia speciosa*. Interviews with local fishermen also revealed that during the World War II, locals were employed by the Japanese invaders to dive for two rare species of the black coral *Cirrhiphathes* in the passes, but this practice ceased with the defeat of the Japanese army after the War.

Trochus

*Trochus niloticus* was introduced to Jaluit from Palau in 1939, as a dietary supplement but its shell is also a valued commodity (Smith, 1992). On the other hand, *Trochus maximus* has no commercial value and is rarely harvested for food. It was established that trochus is most abundant and very productive on certain areas on the ocean side of Jaluit Jaluit Islet.

Macgowan (1958) noted that in 1957 sporadic harvesting had occurred at Jaluit and since then, trochus have been harvested for subsistence use. Since 1987, Jaluit have been exporting trochus shell to Majuro for a Korea market. There appears to be no

enforcement carried out for the harvesting of trochus as mandated by the Trochus Act established by the local government.

Pearl Oyster

One species, the black lip pearl shell *Pinctada margaritiferais*, is found on Jaluit, and only recently has this resource been harvested for the purpose of setting up a privately owned pearl farm in Arno island. A set-up for culturing them prior to shipment to Arno atoll is seen on the lagoon side of Jabor. The same outfit also buys pearl oysters from locals for $1.00 a piece.

Coconut Crab

Coconut crabs *Birgus latro* are collected and eaten as a delicacy in Jaluit and throughout the Marshall Islands. The harvesting of this resource was primarily for subsistence purposes, but there is a high demand for it in the urban area of Majuro. Although coconut crabs are found throughout the outer islets of Jaluit, Naen Islet is always known for its abundance. Traditionally, the harvesting of coconut crab on Naen was by prior-permission of the landowner and the minimum size restriction (measuring the carapace with the ten fingers) was strictly observed. These restrictions have not been observed by the locals since the landowner moved to live in Majuro. This has led to the near-depletion of this resource on Naen. Take and Arleb Islets, near Pinglap is the only known area in the atoll where numbers of this species are still quite healthy.

There is a lot of concern over the over-exploitation of this resource. A recent workshop which highlighted this problem has led to seasonal bans in Jaluit-Jaluit.

Sea Cucumber (Beche-de-mer)

Three species are reported on Jaluit, namely the lollyfish *Holothuria atra*, the black teat fish *H. nobilis* and the surf redfish *Actinopyga marutiana*. Commercial harvesting of the two commercial species is expected in the near future. A failed attempt at harvesting sea cucumber occurred in 1989 resulting in the loss of thousands of the beche-de-mer which the Jaluit-Jaluit community harvested but were unable to process.

Sponges

There are two unidentified varieties of sponges known to the locals and one that the old men remember the Japanese introduced during the World War II. The variety introduced by the Japanese is believed to be *Spongia officinalis*, which was the same variety transplanted in Ailinglaplap Atoll during their war campaign in 1934.

Lobsters

According to A. Smith (1992) the two species of rock lobsters having commercial value in the Marshall Islands are the *Panulirius penicillatus* and *P. versicolor*. The less valuable *Penulirius longipes fermoristriga* is also present but in lesser numbers. The two commercial species are most abundant off the coast of Majjea and Arpwe Islets.

Local demand for lobsters is limited despite its delicacy status elsewhere. Locals regard it only as food 'reserve', to be harvested in the absence of other preferred sea-food. There is concern, however, that the resource is rapidly depleting with the recent entrance of commercial operators for the Majuro market.

Reef Fish (< 60m deep)

No documented information of the inshore species specific to Jaluit atoll was found. Myers (1991), Randall (1986) and Randal and Randall (1987) documented a species list of the Marshall Island general and of the known 827 species, 799 species are reef fish. The families most commonly caught include: snappers (*Lutjanidae*), emperor (*Lethinidae*), groupers (*Serranidae*), wrasses (*Labridae*), rudder (*Kyphasus*) rabbitfish (*Siganidea*), surgeonfish (*Acanthuridae*) travellies and jacks (*Carangidae*), mullets (*Mugilidae*), parrotfish (*Sacidea*) and soldierfishes and squirrelfishes (*Holocentridea*). The following families are known (Smith, op cit.) to have been targeted for the aquarium trade: angelfish (*Pomacanthidea*), butterflyfish (*Chaetodontidae*), damselfish and anemonefishes (*Pomercentridae*), and triggerfish (*Balistidae*).

According to a local marine biologist and former head of MIMRA, the in-shore fish resources of Jaluit is one of the richest in species diversity in the Marshall Islands (John Bungitak, pers.com:1997). The harvesting of the inshore fisheries resources is only for

subsistance except for mullet, rainbow runners, snappers which recently have been sent regularly to a market outlet in Majuro.

Deep Slope Bottomfish

A trial project run by MIMRA and OFCF, which coincided with the preliminary assessment, recorded the following species during one of their day trips: *Aprio vircens, Pristipomoidees filamentosus, P. auricilla,, P. zonatus, Aphasus rutilans, Caranx lugubris, Lutjanus bohar, L. gibbus,* and *L minatus*. It is the first trial of its kind carried out in Jaluit and its objective is to assess the abundance of such a resource.

The following families was recorded by the SPC dropline fishing project in 1992 (Dalzell and Preston, 1991-7). The deep water snapper (*Etelinae/Apsilinae*), shallow water snapper (*Lutjaninae*), emperor (*Lethrinidae*), groupers and coral trouts (*Serranidae*), travallie and jacks (*Carangidae*), tunas and mackerels (*Scombridae*), oilfish and snake mackerel (*Gempylidae*) and barracudas (*Sphyraenidae*). These commercial bottomfish species are all found on Jaluit Atoll except one species of the *Stellinae* family (John Bungitak, op cit.).

Vegetation

Annex 2 listed 59 different species of plants observed on Jaluit, most of which were also noted by Merlin et al (1994). This consists of 30 species of woody plants, 10 herbal (non-woody) species, 3 creepers, 4 ferns, 2 aroids, 1 weed and 1 sea-grass species (ibid.). This list is not exhaustive and does not include the many varieties existing within species such as *Pandanus sp*., *Artocarpus sp*., *Musa sp.* and several others.

Of the 59 species Merlin (op cit.) noted that 33 are native, and the rest being of uncertain origin.

A typical profile of the Atoll's vegetation comprises of a (a) herbaceous strand located above the hightide mark on both sandy and rocky shores and normally hosting species such as *Triumfetta procumbens* and *Vigna marina*: (b) a littoral mixed shrubland located on the seaward edges dominated by *Scaveola sp*. and *Tournefortia argentea*: (c ) a

distinct zone of *Pandanus tectorius* on the rocky and often exposed windswept shores, and (d) in the more protected interior, a littoral forest of *Cordia, Guettarda, Barringtonnia, Callophyllum* and *Hernandia* species. Coconuts (*Cocos nucifera*) are also predominant in this zone.

In many islets and dominating the lagoon side, strands of *Pemphis acidula* along the seaward edges and, in some islets, extending well inland, is a distinctive feature. Thickets of this species with its main trunk branching very low at the base, sent out erect branches up to 15 feet in length and 6 inches in diameter.

Where communities had settled over the years, the predominant species other than Cocos nucifera is *Artocarpus sp*. with scattered *Callophyllum sp*., *Terminalia sp*., *Ficus sp*., *Barringtonia asiatica* dominating the canopy. In the understorey, a mixture of agricultural species of *Musa, Carica, Pandanus, Sacharrum* and others are cultivated. Along the shoreline in Jabor, plantings of *Casuarina equisetifolia* have grown to more than 5 meters in height.

On the islet of Jaluit is a small stand of mangrove trees dominated by *Brugiera gymnorrhiza* with stem sizes reaching 30 cm diameter and heights of 10 metres. *Rhizophora mucronata* is also found scattered and forming the undergrowth, whereas it is the dominant mangrove species on Imeij Islet. Other mangrove species noted are *Sonneritia alba* and *Lumnitzera littorea*.

## D.3 Marine Resource Management and Conservation in the Republic of the Marshall Islands

### *D.3.1 Overview of Marine Resource Use*

The fishery resources of the RMI is divide roughly into two sub-sectors, coastal fishery and offshore fishery. Coastal fishery consists mainly of traditional artisanal fishery at rural atolls (subsistence fishing). Offshore fishery is industrial fishery for skipjack and tuna within the 200 mile Exclusive Economic Zones (EEZ). Another fishery is small-scale farming.

Though coastal fishery is traditional and artisanal, it is the mainstay in the sector and plays an important role, as a whole, in providing fish foods for the people. The fishing ground is in and around the rural atolls with the main species include grouper, snapper and other reef and bottom fish; horse mackerel, mackerel (partially includes tuna and skipjack) and other pelagic fish; octopus and squid, lobster, shells and other molluscs and crustaceans.

Fishing this resource are small types of fishing boats with outboard engines or canoes suited for traditional hand lining, spear fishing, casting net, surrounding net, trolling etc., and an average annual output of around 2,700 tons (ADB, 1994).

The importance of fishing to the national economy is reflected in the fact that in 1995, 69% of the total households were classified as fishing households. The fishing industry thus contributes significantly to the creation of employment and to the national diet (89% of the animal protein come from fish).

The offshore fishery is based mainly in Majuro and consists mostly of longline and purse seine fishing targeting tuna and skipjack. It is operated with boats of Taiwanese and other foreign joint venture companies. Most companies have experience in joint venture business with Hawaiian-American and Taiwanese enterprises. The catches are mainly yellowfin and big-eye for export.

Another form of offshore fishery is that of licensed foreign boats operating in the RMI's EEZ. Japan and US fishing boats produced an average of 26,800 tons a year from 1989 to 1995 in that fishery. The license fees from these foreign boats amounts to between US$1.0 - $3.0M yearly. (RMI Statistical Abstract 1995).

### *D.3.2. National Institutional Arrangements - legislation, strategies and implementation arrangements*

**The Marine Resources Act 1997**

This is the authoritative legislation dictating how the marine resources of the RMI are to be conserved, managed and developed. The Act gives the Marshall Islands Marine

Resources Authority (MIMRA) exclusive authority over the conservation and management of fisheries, license issuances, etc., and explicitly permits MIMRA to take measures for the management and development of local fisheries within five miles, requiring prior consultation with the affected Local Government Council.

This latter responsibility – the management and development of local fisheries within five miles – is then delegated to the Local Government Councils. The Local Councils are thereby made responsible for the direct management and development of the reef and inshore fisheries within its waters. It is empowered to pass ordinances to this effect but the ordinances are still subject to final approval by MIMRA and the Attorney General, to ensure that the larger interests of the country are safeguarded.

**National Environment Protection Act 1984**

Section 30(1) of the National Environment Protection Act requires the RMI Environment Protection Agency in consultation with the Environmental Advisory Council and with the assistance of the Ministry of Resources and Development, to recommend to the Minister of Health Services a system of rational exploitation of fisheries and aquatic resources within the waters of the Republic. The section further requires RMIEPA to encourage citizen participation to maintain and enhance the optimum and continuous productivity of the marine waters.

**The Marshall Islands Marine Resources Authority (MIMRA)**

The Marshall Islands Marine Resources Authority (MIMRA) was established by the *Nitijela* on March 28, 1988 under the authority of the Marshall Islands Marine Resources Act, to provide for the exploration, exploitation, regulation, and management of marine resources in RMI, both living and non-living. It is the primary organization responsible for both the development and the protection of marine resources in RMI.

MIMRA is an independent statutory authority, established as a body corporate with perpetual succession. It has a five-member Board of Directors, the Minister of Resources and Development functioning as Chairman of the Board, and a Director of Marine Resources responsible for the agency's day-to-day management and administration.

There are approximately 20 employees and the agency is still very much dependent for its personnel on the Ministry of Resources and Development.

MIMRA has the power and the duty to conserve, manage and control marine resources, to establish and implement an Exclusive Economic Zone Management programme, to issue fishing licenses, to issue licenses for the exploration and exploitation of the seabed and subsoil of Fishery Waters and to negotiate foreign fishing agreements, with the approval of Cabinet. The dual roles as protector and exploiter of the same resources often place it in an awkward position. This is especially true when licensing foreign fishing concerns, an area of great economic importance to the Republic, and one overseen by the Ministry of Foreign Affairs as well as MIMRA.

**Marshall Islands Development Authority (MIDA)**

Established as an independent statutory authority by Act in 1984, MIDA functions as the business arm of the RMI Government in relation to fishing, as well as other business activities. Its Board of Directors include the Minister of Resources and Development, Finance, Interior and Outer Islands Affairs, Public Works, the Chief Secretary, the Chief Planner and three private sector members. MIDA develops and implements social and economic development programmes and project alone or in conjunction with other government or private agencies. It also conducts business enterprises for the RMI government as the Cabinet directs.

Some examples of MIDA's business activities include partnerships in two joint ventures with American counterparts each venture operating one purse seine vessel employing Marshallese crew and offloading their catch in American Samoa.

**National Environmental Protection Authority (RMIEPA)**

The National Environmental Protection Authority (commonly referred to as the RMIEPA) created by statute in 1984, is an independent authority legislatively linked to the Ministry of Health Services and fully-funded by the RMI government. It is the preeminent agency responsible for environmental protection and management.

The day-to-day management of RMIEPA is overseen by the General Manager. More than twelve employees are responsible for numerous programme activities, including public education, laboratory analyses, pollution control, nature conservation and regulatory oversight of solid wastes, earthmoving, water quality, toilet facilities, and pesticides activities. Broad policy directions are provided by five "Members of the Authority" who function as a Board of Directors. The Members of the Authority include four representatives from Majuro Atoll and one representative from Ebeye, Kwajalein Atoll. The Chairperson of the Authority is also the current Secretary of Foreign Affairs for the Republic.

RMIEPA has been given expansive objects, powers, functions and duties. The breadth of its mission requires RMIEPA to interact with all government Ministries, and public and private bodies on a national and international basis. This requirement for an interdisciplinary, multilevel approach to environmental management often stretches RMIEPA's resources beyond their fiscal and technical limits.

### D.3.3 Resource Management and Conservation in the Jaluit Atoll

**The Local Government Council**

The RMI Constitution (Art IX Section 1 and 2) gives atoll people the right to a system of local government with jurisdiction over all atoll land and the sea and seabed of the internal waters of the atoll and the surrounding sea and seabed to a distance of 5 miles.

The local government, in the form of a Local Government Council, is empowered by the Constitution to make ordinances for the area under its jurisdiction. These ordinances have the force of law provided that they are not inconsistent with any Act or with any other legislative instrument (other than a municipal ordinance) or any executive instrument. In accordance with the above limitations, the Councils have the power to levy taxes and to appropriate funds for local purposes.

The power to manage and develop natural resources are governed by the other national legislation. One such Act is the Marine Resources Act 1997.

**The Marine Resources Act 1997 and its implication for Atoll fisheries**

The Marine Resources Act 1997 delegates to the Local Government Council the duty and the power to adopt Ordinances for fisheries management, development and sustainable use. This must be done in accordance with the procedures set out in the Act. The intent of the procedures is to "…ensure that the resource 'is managed effectively, allows the Local Government Council control over the resource in a climate of cooperation and encourages fisheries investment which could otherwise be driven away by two levels of law." (ANZDEC Ltd.. 1998).

The procedures require certain consultations before introducing a fisheries management ordinance. The procedures also require that the Director of MIMRA and the Attorney General recommend that the Ordinance be adopted. It also requires that for all designated local fisheries, a fishery management plan is formulated and approved. The underlying principle of co-operation between the two levels of Government in the management of all fisheries is evident in the legal arrangements.

### *D.3.4. Traditional institutional arrangements*

Ownership and control of land resources

The land resources of Jaluit Atoll are traditionally owned and controlled. This traditional land tenure system, in its purest form, has the following structure. Land is owned by the *'leroij'* (female chief) or '*iroij*' (male chief). The right to use land however is transferable subject to the landowners' consent. Land is usually subdivided into household lots or '*wetos*' and is allocated in this unit to tenant families called '*dri jerbal'*. These tenants have virtually unlimited right of use within its allocated *weto*. The management of lands on behalf of the *iroij/leroij* is vested in the '*alap*'. The *alap* conveys to tenant families the wishes of the *leroij/iroij* and in general ensure that there is harmony amongst tenants. An *alap* would normally have several *weto* under his/her responsibility. The a*lap* is therefore a position of some status in the community and forms the second tier of authority within the traditional land tenure system. The land use rights cannot be transferred outside the *dri jerbal* without the *iroij/leroij's* consent.

This traditional system, while essentially intact, has also evolved over time as a result of many factors. One of the most influential is the country's Constitution. The Constitution recognize the right of 'all persons having an interest in (that) land' occupied under traditional tenure – this include the *leroij/iroij*, *alap* and the senior *dri jerbal* (representing the tenant families) – and prohibits any alienation or disposition of customary land without the approval of these people. This provision of the Constitution encourages a consultative and democratic resolution of matters relating to land rights within the traditional system and grant all 'interested parties' a right of appeal to the Court if this right is deemed to have been violated.

The respect for the traditional landowners remains very strong amongst the *dri jerbal* and while the Constitution discourages the unilateral exercise of traditional authority on lands, traditional landowners remain a powerful force yielding considerable influence in the polity of local communities.

***Traditional ownership and use of marine resources:***

The same traditional authority of *leroij/iroijs* extends to the coastal areas albeit with no legal power but the force of the respect people have for their traditional status. Traditionally, *leroij/iroij* use to designate any part of the sea within their respective traditional areas of control a 'reserve' or 'mo', with public access strictly prohibited and limiting only to the *leroij/iroij*. Today while this practice is not known to have been exercised in recent times, the power and influence of traditional landowners over marine areas remain considerable.

Legally, Local Government Councils are empowered to manage coastal marine resources within a 5 miles zone from the high-water mark. However in practice without the support and consent of traditional landowners, many development initiatives are not allowed to proceed. A recent example is the Live-reef trade proposal in Jaluit in 1998, which failed to eventuate after the traditional landowners expressed their disapproval.

### D.3.5. Current resource management and development activities in Jaluit and nearby atolls

(i) The Project for the Development of Fishing Communities in Jaluit Atoll

At the time of writing, a proposal under the above title was submitted by the Government of the Marshall Islands to the Overseas Fisheries Cooperation Foundation, a Japanese government agency. The proposal involves a project costing US$3.282M for a two year period (1997 study year and 1998 implementation). The objectives are (1) activation of fish production with sustainable development; (2) establishment of a system for periodical shipment of fish catches, and (3) construction of a community center which will serve the local people. The major activities of the Project include the (1) construction of facilities in Jabor Ward, (2) development of the fishing communities, (3) collection of fish catches from villages to Jabwor (4) fish sorting and processing and (5) shipment of fish catches to Majuro by boat.

(ii) The Live Fish Trade Projects

There are two live fish trade operations in the Marshall Islands. These are joint ventures between foreign operators and local shareholders and both use Majuro as their base of operation. Marshall Islands Ocean Development (MIOD) just started operation in 1997, while Pacific Marine Resources Development (PMRD) has been operating for three years now. Both operations are licensed by MIMRA and also have approvals from the local governments from Aur, Ailuk and Enewetak atolls where the fishing actually occurs. Their catches are held in floating cages before the mother ship arrives to ship them to Hong Kong.

MIOD is operating at Aur atoll and was fishing in Maloelap until recently when that fishery was closed down due to declining catch and fish being too small. PMRD also tried to start operation in Jaluit Atoll and Namu Atoll, but the local Iroij(s) did not support the venture. The local governments earn only 6% of the value of the live fish transshipment.

The targeted species of the trade are marbled cod, coral trout, and humphead wrasse. Reports indicate that the marbled cod comprise the majority of the fish caught by about 60%, followed by coral-trout, which constitute 30%, and few humphead wrasses. The first two species are caught by the use of hook and line while the humphead wrasse is caught at night. Both operators acknowledge the concern about use of cyanide, a chemical commonly used to catch wrasse in other locations near Papua New Guinea and Indonesia.

Both companies claim to be concerned about the sustainablity of their operations and blame the other company for over-exploitation. They claim not to take small fish for sale, but to use as bait or feed to the fish held in the cages.

(iii) Coastal Fisheries Project

On Arno Atoll, a Japanese funded coastal fisheries project was established in 1989 in which two small fishing bases were constructed with docks, ice-making equipment and cold storage. Boats and gear were supplied, training was undertaken in fish handling and management. Also a transport boat was provided to supply fish to Majuro from Arno. MIMRA provides the management and marketing of the catch while staff salaries are financed by the project.

The Arno project involves about 200 fishermen whose catches are shipped from Arno three times a week. The main species are reef fish and lagoon bottom fish. There was no fish stock survey undertaken at the beginning of the project and now fish catches are showing declines (both the size and quantity of fish).

Similar projects were established in Namu, Ailinglaplap, and Likiep that market their catch in Ebeye. Export of fish to Ebeye started in 1994. This project has suffered many logistical problems, partly due to the relatively long distance between the fishing atolls and Ebeye. There have not been any sustained operations since 1994. The total annual fish catch has gone from 31,000 lbs. to 5,900 lbs. The fish transport boat has grounded twice. There is a problem with the lack of local participation and the price of fish is perceived to be too low.

Like the Arno Atoll Project, there was no stock assessment done for the Ebeye project. There has been some management response to the declining catches. Likiep has put limits on the types of fish that can be exported. For example, the rabbit fish can not be shipped from the atoll. It is reserved for subsistence fishers. The people on these outer islands have seen the benefit of the project in inter-island transportation, not the revenue from selling fish.

### D.3.6. Key stakeholders in resource management in Jaluit Atoll

The community as resource users

The entire Jaluit community depends on the lagoon for subsistence and cash income. Fish and other marine delicacies provide the main source of protein and forms the stable diet of all families. An important recent addition to the local community is the local boarding high school. One of two such educational institutions in the RMI, it has an enrolment of about 200 students and their main source of protein is fish from the artisanal fishery.

Fishermen's Cooperative

A fishermen's cooperative was recently set up to assist the development of fisheries in Jaluit, and to provide support to local fishermen in processing and marketing. This group now operates an ice plant that is providing inexpensive ice for all its members.

Jaluit Atoll Development Association (JADA)

The Jaluit Atoll Development Association is a non-governmental organization and the only one of its kind in the RMI. It is an association of Majuro-based Jaluit people whose objective is to assist and facilitate the socio-economic development of the Atoll community and to preserve their cultural values. JADA's basic concern is the sustainable development of the Atoll and the need for it to be as self-reliant as possible in anticipation of the Compact Agreement ending in 2001, and its possible adverse impacts on national and outer atolls development.

JADA has a membership of about 50 and count among its members many well-positioned public servants, politicians and business people in the Republic. And while its

objective is socio-economic development of Jaluit, recently it has been a strong advocate of marine resource conservation and sustainable management. The Fisheries Cooperative is an initiative of JADA and is a JADA subsidiary within Jaluit. JADA thus have considerable support within Jaluit itself and is increasingly seen as a major player not only in the development of Jaluit but also in the political life of the Atoll.

The Jaluit Local Government Council

The Local Government Council is the constitutional body responsible for administrating all state affairs within the Atoll. It consists of a Mayor who is the Chairperson of the Council and a Council of 9 members elected from the 9 electoral wards of Jaluit. The Mayor is a popularly elected office holder having a term of 4 years. Council members are likewise popularly elected by their electoral wards for a fixed term of 4 years.

In the area of coastal resource management, recent government policy as well as the passing of the Marine Resources Act 1997 by the Nitejela (Parliament) now delegate the responsibility for managing and developing coastal marine resources to Local Government Councils. Coastal marine resources are resources within an area of 5 miles from the high-water mark. This effectively places the area designated for the Jaluit Atoll Conservation Area Project under the legal jurisdiction of the Council. The national government continues to have jurisdiction over the rest of the nation's Exclusive Economic Zones outside of this coastal delineation.

The Local Government Council has the power to pass by-laws for regulating the use and development of coastal resources. This includes the granting of licenses for commercial operations to harvest coastal resources.

The capacity of the Local Government Council to enforce its own by-laws is very limited. So is its capacity to administer. Thus in effect, its involvement in the management and development of coastal resources is limited to its law-making and authorizing role for licenses.

Private Businessmen

A number of businessmen unconnected to the fisheries cooperative buy from local fishermen and ship out cartons of fish, lobsters, clams and trochus either for reselling in Majuro or for export. Other operators (principally one large company) concentrate on oysters, collecting spats from the area for reseeding in oyster farms already established in another atoll. All these operators are well connected to the Local Government Council and are influential within the community.

Landowners

There are four major landowners in Jaluit. All of them have been consulted in the planning phase of the Jaluit Conservation Area Project, and all have given their full support and consent to the Project. A further expression of this support was their opposition to the proposed Live Reef Fishing Project that the Jaluit Local Government Council had entertained approving. The landowners' opposition directly led to this proposal's rejection.

The significance of this stakeholder to the conservation and sustainable management of Jaluit's terrestrial and marine resources lies in the considerable power it still yields over the Jaluit community. The landowners command considerable respect and their endorsement and support for any development initiative is an essential requirement.

RMI-Environmental Protection Agency and MIMRA

Details of the mandates and functions of the above two agencies have been elaborated on in an earlier section. RMIEPA as the selected Lead Agency for the Project is responsible for the overall management of Project funds and the implementation of planned activities.

MIMRA, on the other hand, has a statutory role in the management and development of the country's marine resources. It is also a direct source of technical information, advice and possibly technical assistance, and a possible conduit for requests for such assistance from external donors.

## D.4 Current Issues/Problems in Resource Management

### *C.4.1 Unsustainable harvesting of marine resources*

No resource issue concerns the Jaluit community more than the dwindling stocks of giant clams. Over-harvesting or subsistence, bartering and for commercial operations combine to push stocks beyond sustainable limits. The same trends are reported on other marine species including many finfish species, oysters and turtles. The catch per unit of effort for clams and many other fishes have increased significantly as locals travel longer distances and spending more time in harvesting than in the past. The lack of scientific data and baselines is an urgent need in monitoring these trends.

### *D.4.2 Population pressures*

As in all parts of the Marshall Islands, rapid population growth is a concern for the Jaluit Atoll. Two important factors have direct implications for resource management: the high school with its 200 plus enrolment is a major user of the Jaluit's resources. The high level of migration to Majuro of employable age groups and others of younger ages for educational purposes strengthens and reinforces the inter-island dependency that is fuelling the barter trade in marine clams, oysters, and finfishes.

### *D.4.3 Impact of a cash-driven and barter economy*

The increasing barter trade is a phenomenom which cause (at the Jaluit end) is both social and economic. This observation is made based on the fact that the clams and fish are not so much bartered for food items and other subsistence consumables but for items such as cigarettes, liquor and spirits. Containers of iced clams and fish being loaded onto the twice weekly flight to Majuro is a regular sight at the airstrip. A regular-sized family cooler full of clam meat is known to regularly exchanged for two 26 ounce bottles of liquor. Clam meat from Jaluit is sold on Majuro marinated in vinegar/lime/salt for US$2.50/lb, and a 1.8 liter bottle of marinated clam sells for about US$5.00. (Smith, 1992).

### D.4.4 Lack of technical and organizational capacity for resource management

The problem of over-harvesting of marine resources was a self-realization as harvests dropped and the cost of the expended effort markedly increased. Yet the lack of technical and organizational capacity (and resources) to organize and set in motion a systematic management response to this problem delayed action. The Jaluit Atoll Development Association (JADA) and the Jaluit Atoll Local Government Council suffer from this lack of capacity despite an awareness of the problems and a strong desire to address it decisively.

It is essential that appropriate management structures be set up to support project implementation and management. This include partnerships with JADA, the Local Government Council and the local fisheries cooperative. Likewise the capacity of the community to implement activities and monitor project impacts be strengthened through the provision of training and information.

### D.4.5 Impact of commercial operations on the resources

The impact of commercial operations have been mentioned previously. Commercial operators are in the form of local businessmen who pay locals for clams, trochus shells and fish for reselling in Majuro. There are also threats are from larger operators. At this stage, these are in the planning stages and their operations include deep-sea fishing and processing. A recent proposal for a live-reef fishing project was approved by the Local Council then turned down after some pressure from the traditional landowners.

### D.4.6 Lack of reliable information for decision-making

The lack of reliable information for sound resource management decision-making hampers planning and monitoring. Adequately detailed surveys of different key resources remain to be done and needs to be supported as a basis for planning and management. Resource maps for planning purposes needs to be developed.

# E. THE JALUIT ATOLL CONSERVATION AREA PROJECT

## E.1. The Project Goal and Objectives:

***Goal***

To conserve and sustainably manage the biodiversity of the Jaluit Atoll for the subsistence and the socio-economic development needs of its present and future generations.

***Specific Objectives***

- To formulate and implement a resource management plan to facilitate the replenishment and the sustainable management of Jaluit Atoll's marine resources.
- To strengthen the capacity of the Jaluit community to implement the resource management plan via the establishment of appropriate local management structures and the provision of training, information, technical expertise and financial assistance.
- To diffuse the dependence for income on the exploitation of marine resources by encouraging, facilitating and supporting the development of viable income generating alternatives that are compatible and complementary to the conservation of Jaluit's biodiversity.

## E.2. Overall strategy for achieving the Project goal and objectives

*Conceptual Framework:*

The following basic principles provide the framework for the proposed strategy for the Jaluit Atoll Conservation Area Project. They are based and build on the guiding philosophy of the SPBCP:

1. The natural resources' capacity for self-renewal and self-replenishment must be enhanced and protected.
2. The level and the manner of resource exploitation need to be properly managed and regulated to facilitate the maintenance of sustainable resource levels.

3. Limiting the community's dependence on and use of resources will be futile and ineffective if it is not offset by some other source of benefits. Other alternative income generation activities that are sustainable and beneficial must be developed.
4. Community support is essential for the success of the Project. It must be cultivated and nurtured by facilitating their participation in decision-making and implementation, by being fully informed about the project plans and by sharing equitably in the costs and benefits.
5. The sustainability of the Project will ultimately depend on the capacity of the community to manage it in the long-term. Their technical and management capacity should be developed and the appropriate organizational structures for community management should be set up and strengthened.
6. To rebuild depleted populations of the marine biodiversity and to effectively regulate its use within sustainable levels, a systematic and integrated approach to resource management is necessary. The Project will focus on the formulation of a resource management plan as the means by which this will be achieved.

*Resource Management Planning*

The process for formulating the plan is vital to its implementation success. It has to be based on sound and up-to-date information on the status of the resources and a good understanding of its life cycle characteristics and ecology. At the same time, the plan must reflect and take into account the impacts it would have on the community and must provide mitigating measures for these impacts that are acceptable to them. To do so, the community must become an integral player in the planning process. They must participate in its formulation in a meaningful way and must endorsed and support it fully. The planning process is therefore as important as the planning output (i.e. the resource management plan) itself. A process for formulating the resource management plan is proposed in Annex 3. This process is a refinement of an idealized model based on the experience of SPBCP in other conservation area projects (specifically the Uafato Project in Samoa).

*Other components*

The proposed framework (above) provides linkages and points of integration between the resource management plan and other components of the Project. All project components are complementary and reinforcing in design and intended effects. Together they will contribute to achieving the stated goal. Details of these components and how they interlinked are provided below.

## E.3. Project components

The Jaluit Atoll Conservation Area Project will have the following six components:

- Project administration and management
- Conservation area management
- Sustainable development activities
- Awareness raising and community education
- Capacity building and training

### *E.3.1. Component 1: Project Administration and Management*

This component will involve the setting up of the necessary administrative and management structures, project office and the recruitment of personnel. Financial input will be provided for setting up the Project Office and will include funds for office furniture, such as a desk and chairs, filing cabinet, a computer where this can be justified, stationery, and a VHF radio. Funds will also be provided under this component for the salaries Project personnel and for meeting expenses of the CACC. The expected outputs include (1) the formalization of a lead agency (2) the setting up of a Project Office, (3) the recruitment of Project personnel (4) the setting up of a Jaluit Conservation Area Coordinating Committee (CACC).

Thus the following structures will be set up to administer and manage project activities:

- Project Lead Agency
- Coordinating Committee.
- Project Office with the appropriate project personnel.

This structure will ensure the involvement of an appropriate agency at the national level which will provide the official links with SPREP, and a similar forum of representatives at the local level who will connect the Project with the local government and traditional authorities, the local community and other key stakeholders.

### *Lead Agency:*

The national level agency which will be the official link with SPREP shall be the designated the Lead Agency for the Jaluit Atoll Conservation Area Project. This agency will be the RMI Environment Protection Authority (EPA), the national agency responsible for environment protection and conservation.

The role of the Lead Agency is to have overall responsibility for the efficient management of the Project. It will ensure that approved project procurement and financial procedures and standards are used and upheld, project funds are received and properly accounted for, project reports are compiled using the approved format and submitted timely, and project resources are requested on time and made available for project purposes without delay.

The responsibilities of the Lead Agency shall be carried out by a Project Manager who, in this case, shall be the General Manager of the RMI-EPA.. The Project Manager shall also coordinate the implementation of project activities and the involvement of other donor and government agencies and shall be the official point of contact between the Government of the Marshall Islands and the South Pacific Biodiversity Conservation Programme (SPBCP). He will also ensure that qualified and experienced personnel are recruited and are performing to acceptable professional standards.

The remoteness of Jaluit and the lack of direct communication links between SPBCP and the Jaluit-based Project Office demand that the Lead Agency become a reliable conduit of information between the Project site and SPBCP Secretariat. The Lead Agency’s role as coordinator is therefore vital and requiring reliable communication facilities.

### *The Conservation Area Coordinating Committee (CACC):*

The Project will have a Conservation Area Coordinating Committee (CACC). Its role will be to advise and assist the Project in planning quarterly project activities by making sure activities to be implemented are consistent with the Project objectives and the priorities of the community. The CACC members shall also ensure that the communities they represent are properly informed of Project plans and that support for the implementation of these activities is forthcoming from their communities when required. The detailed responsibilities of the CACC are annexed.

The CACC shall consist of the following members:

1. Jaluit Mayor (Chairperson)
2. Six (6) Alaps on the Local Government Council representing the 9 electoral wards
3. EPA representative
4. Fishermen cooperative's representative
5. Business sector representative
6. Education sector representative (Jaluit High School Principal)

The CACC is shall work closely with the Project Manager and the CASO in ensuring the timely implementation of project activities. The number of members may increase, in the future, to include the representatives of the three remaining electoral wards who currently are not represented in the Council. This decision will be made by the CACC at the appropriate time.

The CACC may also appoint a deputy Chairperson to assist and deputize should the Chairperson be indisposed. The Chairperson is responsible for convening CACC meetings on a schedule the CACC shall determined during its first meeting. The Project Manager shall ensure that the CACC meetings are convened as required.

The composition of the CACC will ensure that the electoral wards and other key stakeholders are represented. Ward representatives (alaps) are to ensure that the communities they represent are properly informed of the Project and its planned activities following every meeting. They must consult with their wards regarding biodiversity or

resource related issues of priority interest to them and must ensure that those priorities are considered in the CACC meetings. Furthermore the special traditional links between ‘alaps’ and ‘iroij/leroij’ will be counted on to ensure that traditional landowners are indirectly represented and have a way of keeping informed of the Project’s activities.

### *Project Office and CASO:*

The Project will occupy an office to be provided for it in Jabor, Jaluit. This office will house the Conservation Area Support Officer (CASO), office furniture and essential equipment and other personnel the Project may employ.

The CASO will have direct responsibility for the day-to-day implementation of approved work plans, liaison with the community and the Coordinating Committee, the preparation of quarterly work plans and budgets and the preparation of progress reports. He/She will ultimately report to the Project Manager but is required to work closely and cooperatively with the CACC members in particular its Chairperson. The CASO’s detailed term of reference is annexed.

### *E.3.2 Conservation Area Management*

This component will focus on biodiversity and resource conservation activities. This includes the gathering of essential resource information, community consultations for planning, the formulation of resource management plans, the implementation of management plans and the monitoring and evaluation of progress. Inputs will include funds for resource information gathering, technical assistance for information gathering and planning and implementation of key activities emanating from the plans. Expected outputs include (1) baseline information (2) an integrated resource management plan (3) outputs from key activities that will be implemented, and (4) community-based monitoring systems and monitoring outputs.

The resource management planning process will be participatory and consultative of all key stakeholders. A planning model reflecting this process is annexed.

### *E.3.3 Sustainable Development Activities*

This component will focus on the development of community-based tourism for which two thorough studies have been undertaken (D. Miller, 1998 & E.Thomas, 1998). It will also investigate the feasibility of other potential income generating activities and their subsequent implementation. These other activities include handicraft (carving and weaving), 'makoon' (pandanus extract) processing and marketing, and other coconut based productions such as candies and syrup production.

The studies completed on community-based tourism recommended (ibid.) the construction of low-cost guest houses made from traditional building materials. The Project will contribute to the partial funding of a limited number of these (possibly the minimum of 4 recommended by Miller) and to the completion of a community-based tourism strategy to guide long term tourism development.

The implementation of the recommended guest houses will fully engage the CACC who will be required to undertake the selection of local entreprenuers to collaborate with (refer to E.Thomas, page v). Criteria for selection should be developed by the Project staff in consultation with the CACC and finalized through a consultation process - one such criteria should be the entrepreneur's ability to contribute to financing a substantial cost of house construction with Project assistance.

Other feasible income generating options will be supported under this component with training, marketing, and depending on the level of initial capitalization, seed funding for setting up.

### *E.3.4 Awareness Raising and Community Education*

The ultimate success of the Project lies in the extent to which it is embraced and supported by the community. To realize this, the community must understand the Project objectives and activities. They must be made to feel a part of it by participating in the planning and decision making. They must also understand the nature of the problem being addressed, how their own actions are contributing to the problem and how they

may contribute to solving it. The community must feel that the Project is theirs and must take responsibility for making it successful.

This component will contribute to achieving the above aims in the following ways. A series of community workshops will be conducted wherein the community will be explained the goals and objectives of the Project, where issues and problems being addressed are discussed and analyzed collectively and where the roles for everyone including the Project are defined and clarified. Workshops will target all sectors, including women, men, schools, and youth groups. Other approaches to be used involve the production of educational material and information products in the local language and for these to be distributed for use in schools or at the community level. The experiences of similar communities under SPBCP will also be shared. Also important is the documentation of traditional knowledge and sustainable marine management practices that are still useful and environmentally sustainable, which can be encouraged.

The inputs will be in the form of the trainer-expert (CASO), information and logistical support. The outputs will be a series of community workshops, and information products such as a regular newsletter that will inform the community of what is happening, a visitors tour guide and project posters and leaflets.

### *E.3.5 Capacity building and training*

A key indicator of the sustainability of the Project will be when the community is able to take fully over its management. To achieve this, the Project will develop and strengthen the capacity of the community and project personnel to better manage the project and its activities. Training will target the broadest cross section of the Jaluit community. Some specific training will also be provided for the CASO to enable him to perform his assigned duties. In some cases, other training will target selected members of the CACC.

The focus of training will include project management, project financial reporting procedures, planning and management of specific income generating activities, resource management and monitoring methods. Developing skills required for approved income generating activities (e.g. weaving, handicraft, etc.) will be targeted. Training may be in-

country, sub-regional or regional. To the extent possible, skills training will be held in-country both in a formal and informal format to benefit as many community people as possible. Local trainers will also be used where available for these types of training.

The Project will fund all training logistics, cost of trainers and where necessary local travel. Likewise, SPBCP approved sub-regional and regional training will be fully funded.

## E.4 Project Activities by component

### *E.4.1 Component 1: Project Administration and Management*

1. Formalize the Lead Agency and the appointment of the Project Manager.
2. Set up and convene the Conservation Area Coordinating Committee.
3. Put in place the necessary arrangements for the transfer of Project funds.
4. Recruit the CASO.
5. Set up the Project Office – procure office furniture, equipment etc..

### *E.4.2 Conservation Area Management*

1. Conduct marine resource baseline surveys.
2. Collect socio-economic information for resource management planning.
3. Conduct community workshops to determine community issues and priorities for management planning.
4. Formulate and finalize resource management plan with adequate community review and comment.
5. Implement the resource management plan.
6. Develop funding proposals for specific components of the management plans for other donors.
7. Set up biodiversity monitoring systems and initiate regular monitoring.
8. Review and refine plans according to monitoring results.

### *E.4.3 Sustainable Development Activities*

1. Based on studies conducted by D. Miller 1998 and E.Thomas 1998, complete the Jaluit Atoll community-based tourism strategy.

2. Identify local partners and sites and initiate the construction of traditional guesthouses for tourist accommodation.
3. Establish a local tourism committee as a subcommittee of the CACC with additional members drawn from other stakeholders in the tourism sub-sector including guesthouse owners, local business owners, traditional leaders and others.
4. Solicit funding from other donors for funding other components of the Tourism Plan, where necessary.
5. Develop ecotourism attractions including signage and interpretation strategy.
6. Produce a marketing and promotion kit for tourism promotion including brochures, posters, design logos for the CA.
7. Conduct feasibility studies for other potential options – 'makoon' production and marketing, handicraft production, coconut-based processed products marketing.
8. Based on the outcomes of the feasibility studies, initiate the implementation of other feasible income generating activities.
9. Set up financial arrangements to ensure the transparent and equitable sharing of communally generated income, and to achieve self-funding of income generating activities.

### *E.4.4 Awareness Raising and Community Education*

1. Conduct community workshops to brief communities about how the Project, its goal, objectives, philosophy, the Project management structure and project plans.
2. Conduct educational programmes for schools and youth groups on resource conservation principles, the impact of unsustainable harvesting practices and the unique features of Jaluit's biodiversity.
3. Produce educational material and other products such as information leaflets, posters.
4. Develop and print a visitors guide to promote and support community-based tourism development.
5. CA quarterly newsletter to keep the community informed of progress in the Project, of planned activities, upcoming events and other community news.

### *E.4.5 Component 5: Capacity building and training*

1. Project Manager and CASO to attend briefing in project reporting and financial procedures, SPBCP guidelines.
2. Train selected community members in resource monitoring.
3. Conduct training for selected community members in tour guiding and in other aspects of ecotourism.
4. Conduct training in the skills required for planning and managing feasible income generating activities.

## E.5. Indicative Project Budget

| | | | | | | |
|---|---|---|---|---|---|---|
| **JALUIT CONSERVATION AREA PROJECT: PROJECT BUDGET** | | | | | | |
| Project Component | Year 1999 | Year 2000 | Year 2001 | TOTALS | | |
| **CA Administration:** | | | | | | |
| - Project Officer (CASO) | 2,500.00 | 15,000.00 | 15,000.00 | 32,500.00 | | |
| -office equipment | 10,000.00 | - | - | 10,000.00 | | |
| -office furniture | 3,000.00 | - | - | 3,000.00 | | |
| - office supplies | 2,000.00 | 2,000.00 | 2,000.00 | 6,000.00 | | |
| -office upgrading | 4,000.00 | - | - | 4,000.00 | | |
| - office utilities | 2,000.00 | 2,000.00 | 2,000.00 | 6,000.00 | | |
| - VHF radio | 5,000.00 | - | - | 5,000.00 | | |
| - tranportation hire (boat) | 1,000.00 | 2,500.00 | 2,000.00 | 5,500.00 | | |
| | | | | | | |
| CACC support costs | | | | | | |
| - travel expenses | 2,000.00 | 5,000.00 | 5,000.00 | 12,000.00 | | |
| - meeting expenses | 1,000.00 | 2,000.00 | 2,000.00 | 5,000.00 | | |
| | | | | | | |
| | | | | | | |
| **CA Management** | | | | | | |
| - TA for resource surveys | - | 15,000.00 | - | 15,000.00 | | |
| - TA for management planning | - | 15,000.00 | - | 15,000.00 | | |
| - resource monitoring | - | 4,000.00 | 5,000.00 | 9,000.00 | | |
| - community consultation | 1,000.00 | 3,000.00 | 2,000.00 | 6,000.00 | | |
| - Plan implementation | - | - | 40,000.00 | 40,000.00 | | |
| | 1,000.00 | 37,000.00 | 47,000.00 | | | |
| | | | | | | |
| **CA Sustainable Development** | | | | | | |
| -community-based tourism | | | | | | |
| - completion of strategy | - | 7,000.00 | - | 7,000.00 | | |
| - guest house development | - | 20,000.00 | - | 20,000.00 | | |
| - promotion and marketing | - | 3,000.00 | - | 3,000.00 | | |
| - signs, panels, etc.. | | 6,000.00 | - | 6,000.00 | | |
| - water catchment and tanks | - | - | 2,250.00 | 2,250.00 | | |
| - produce promotion kit | - | - | 5,000.00 | 5,000.00 | | |
| | | | | | | |
| Feasibility studies for other options | - | 15,000.00 | - | 15,000.00 | | |
| Seed funds for feasible options | - | - | 25,000.00 | 25,000.00 | | |
| | | 51,000.00 | 32,250.00 | | | |
| **CA Awareness & Information** | | | | | | |
| - community workshops for | 1,500.00 | 1,500.00 | - | 3,000.00 | | |
| project awareness | | | | | | |
| | | | | | | |
| - CA newsletter production | - | 1,500.00 | 1,000.00 | 2,500.00 | | |
| | | | | | | |
| **CA Training** | | | | | | |
| -in-country training | | 14,500.00 | - | 14,500.00 | | |
| tour guide workshop | | 10,000.00 | - | 10,000.00 | | |
| | | | | | | |
| | **$ 36,000.00** | **$ 232,000.00** | **$ 187,500.00** | **$ 455,500.00** | | |

## E.6. Risks to Project and risk management strategies (Logframe)

***Risk 1: Poor Communication:***

Jaluit is relatively isolated with communication links to Majuro and the outside world very limited. There are no telecommunication facilities (telephones, faxes).

Communication to Majuro is only via VHF radios and through the twice-weekly Air Marshall flights to Jabor. All communication to the outside world goes to Majuro from where it can be relayed. This means a Project Office located in Jaluit will not be directly accessible by SPBCP.

***Risk Management Strategy:***

The Project office needs to have reliable VHF or HF radio links with the Lead Agency. It is possible that the Project office will share an existing radio communication set with one of several Jabor based agencies. Failing this, an appropriate HF/VHF radio set will be procured and installed in the Lead Agency's office in Majuro and in the Project Office in Jaluit. All communications with SPBCP will be through the Lead Agency.

The Lead Agency must also develop clear communication protocols for receiving and transmitting information specifically the staff who will monitor communication at the Majuro office, and relay information onwards in the absence on duty travel of the Project Manager. For this reason, the coordinating role of the Lead Agency needs special attention. The Lead Agency must define clear and unambiguous arrangements for coordination and communication with SPBCP to ensure timely and reliable contact.

For internal communications in Jaluit outside the Project office in Jabor, the CASO is expected to make use of existing Ward radios to keep in contact when he/she is in the field.

For transportation, the Project budget makes provision for the hire of an outboard motor boat from the community. Boat hire should be spread out to benefit as many community boat owners as possible.

***Risk 2: Lack of Capacity:***

The Lead Agency has no presence at all on Jaluit Atoll. At the Mayor and the Local Government Council have neither the administrative nor technical capacity to execute directives and enforce ordinances other than those involving areas already employing

public servants such as the public schools and the dispensaries. This situation requires that any new initiative must, at least at the early stages, be as self-supporting as possible.

***Risk Management Strategy:***

The Project will employ a full time CASO and for technical activities, will draw on hired consultants/specialists to undertake specific activities. Local consultants will also be used as much as possible to assist outside technical experts or for independent assignment. It is expected that the services of other personnel in the Lead Agency will be made available when needed to support the CASO, such as the Environment Education Officer, and the Finance personnel in the compilation of financial statements. The Lead Agency is also encourage to work closely with other technical agencies such as MIMRA, Marshall Islands Visitors Authority (MIVA) and other agencies for technical support.

***Risk 3: Political relationship between the Local Government Council and JADA***

The relationship between the incumbent Mayor and the President of JADA is known to be difficult, with differences over their respective roles as legitimate stakeholders in the Project. This poses a real risk to the unity of the CACC and its effectiveness to perform its assigned role under the Project. It is also likely to complicate the implementation of a number of activities.

***Risk Management Strategy:***

A strong and supportive community is the key to the management of this risk, noting that elected officials have limited tenure, and the upcoming election in November 1999 may lead to a change of officials hence also to the resolution of this issue. The Jaluit community needs to understand clearly that the Project is an externally funded response to a national initiative. But it cannot be implemented successfully but through the collaboration of all key stakeholders including the national government, RMI-EPA, the Local Government Council, JADA and the community. The task of clarifying this situation lies with the Lead Agency. It is important in this regard that the choice of CASO is prudent and impartial and not be seen as one or the other of the two opposing personalities' choice. The appointment needs to be made in full consultation with the CACC. It is important that a technically competent person more than a politically

expedience choice is appointed. SPBCP will retain the discretion to review this appointment on this basis. Transparency in the recruitment of this Project officer is vital and the Lead Agency will ensure this.

***Risk 4: Traditional authority versus government authority***

Like most societies wherein land and natural resources are traditionally owned, there are possible complications where traditional and government authorities overlap and come into conflict. This is especially evident with respect to marine resources. Legally, all land under the high-water mark come under the jurisdiction of the Local Government up to 5 miles. On the other hand, the authority of traditional landowners is widely accepted as extending into the lagoon and reefs. Testament to this is the fact that *leroij/iroij* can designate any part of the sea within their respective traditional areas of control a 'reserve' or '*mo*', with public access strictly prohibited and limiting only to the leroij/iroij. The potential for conflict between these two sources of authority is a risk that needs managing. On the other hand, the joint support and commitment of both to an undertaking such as the CA constitute a significant advantage.

***Risk Management Strategy - Consent of Traditional Landowners:***

The proposal for the Jaluit Atoll CAP has received the blessing of all the 'leroij' of Jaluit. It is important that these landowners are kept informed on major developments in the Project, and be consulted on issues wherein there is a clear infringement on their rights and interest. Keeping the *leroijs* informed should be the responsibility of the Chairperson of the CACC. However, the Project Manager and CASO should be accessible to them whenever appropriate.

***Risk 5: CACC management of community based tourism project***

The Project calls for the development of low-cost traditional guesthouses as part of the community-based project. The CACC will play a pivotal role in identifying appropriate local partners who will co-share in the funding of these initiatives. It is necessary that this selection is carried out openly and fairly. The risk is in community disenchantment over unfair allocation of such development opportunities which may undermine wider

community support. The same need to be fair in the apportioning of opportunities to benefit from the Project applies to other similar project initiatives.

***Risk Management Strategy***

The identification of eligible participants and their final selection should be based on a set of criteria that is developed with input from a broad range of perspectives including the Lead Agency, the Local Government Council and JADA. Selection should be fair and open.

## E.7. Logical Framework

| Project Structure | Indicators of Achievements | How quantified or assessed | Assumptions/ constraints |
|---|---|---|---|
| **Broad Objectives** | | | |
| To sustainably manage and conserve the biodiversity of the Jaluit Atoll. | Monitoring data shows increasing population of indicator species. | Baseline benchmarks will be defined, and regular monitoring will be maintained. | The capacity of the community to monitor resource levels will be developed.<br><br>The community is committed to the proper monitoring of resources. |
| **Immediate Objectives** | | | |
| To formulate a resource management plan for the Jaluit Atoll. | A management plan will be formulated and accepted by the community. | Progress reports, minutes of meetings, and number of participatory planning exercises conducted. | Sound and up-to-date technical and socio-economic information will be available.<br><br>The community will embrace the participatory approach to planning to be used and will actively take part in the exercise. |
| To develop the capacity of the Jaluit people to implement the resource management plan through the creation of appropriate management structures, and the provision of training, information and other essential in-puts. | Establishment of CACC; enhanced level of understanding of the Project, and the acquisition of new skills. | Existence of a CACC; number of training work-shops conducted or attended; number of community members trained; number of technical tasks being performed by community representatives. | Commitment of landowners and community to conservation.<br><br>Interest in and availability of community members for training workshops.<br><br>The ability of community members to learn and retain new skills. |

| | | | |
|---|---|---|---|
| To assess and facilitate the development of other compatible and complementary income generating activities. | Reports on alternatives completed; alternative activities implemented and providing benefits. | Amount of income, employment and other benefits derived from alternative activities. | Other viable alternatives exist.<br><br>There is interest and commitment in the community to pursue them fully.<br><br>The community will acquire the capacity to effectively pursue them.<br><br>The necessary supporting infrastructure and marketing requirements will be available. |

## Annex 1: Bibliography


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## Annex 2: *Terms of Reference of the CA Coordinating Committee:*

***General***

The Conservation Area Coordinating Committee shall meet at least once every quarter to review progress in the planning and implementation of Project activities and to coordinate future activities. Their specific functions are as outlined below:

***Specific***

***Administrative functions:***

- Appoint a Deputy Chairperson to deputize in the absence of the Chairperson.
- Determine a schedule for meetings on its inaugural meeting.
- Determine an appropriate quorum.

***Coordinating and management functions***

The Coordinating Committee will

- advise the Project Manager and CASO on relevant issues that are of priority interest to the Jaluit community that the Project should take into account.
- support the implementation of the Project by using its ordinance making powers to facilitate and expedite the implementation of the resource management plan, and other Project activities.
- review proposed plans, request for funds and quarterly progress reports (including financial reports) compiled by the CASO and the Lead Agency before they are submitted to SPREP, to ensure that they are accurate and correct.
- ensure that Project funds, equipment and other assets are properly and efficiently used and consistent with approved Project plans and guidelines.
- ensure that their respective communities are properly informed of Project plans and that communities support Project activities.
- endorse the work plan and budget before they are submitted to SPREP.

The CASO shall serve as the Secretary of the CACC and shall be responsible for ensuring that CACC meeting logistics and secretarial support are provided for. He/She must also ensure that all reports, proposed work plans, financial reports are made available to the CACC in time for the Meetings.

## Annex 3: *Terms of Reference of the CASO*

### General:

The Conservation Area Support Officer (CASO) will be responsible directly to the Project Manager for the coordination of the day-to-day implementation of approved project activities in Jaluit. He/she will be based on Jaluit Atoll.

### Specifics:

The CASO shall have the following specific responsibilities:

1. Ensure the timely and effective implementation of approved project activities within the Conservation Area Project consistent with established SPBCP guidelines.
2. Counterpart consultants who will from time to time be commissioned to undertake technical work for the CAP.
3. Act as the Secretary for the Conservation Area Coordinating Committee, and as such, keep records of meetings' proceedings, and compile and distribute CACC meeting reports to members, Lead Agency and SPBCP Secretariat as may be requested.
4. Make the necessary logistical arrangements for the CACC meetings including venues, transportation, refreshments, preparation and distribution in advance of meeting documentation and following up and reporting to CACC on the implementation of previous CACC meetings' recommendations.
5. Provide technical support and advice to the CACC and coordinate CACC involvement in the implementation of project activities.
6. Compile quarterly progress report on the physical implementation of approved work and of the Projects' financial expenditures for the review of the CACC and for onward transmission to SPBCP through the Project Manager's Office. Ensure that the reports to SPBCP use approved format.
7. Represent the CA Project in the absence of the Project Manager in relevant local and national events.
8. Compile quarterly project plans and budgets based on the Project Preparatory Document (PPD) for the review of the CACC during Meetings and ensure that CACC

recommendations and advice are reflected in the work plans and budget. Where CACC advice and views are deemed inconsistent with the PPD, ensure that these differences are clearly and timely communicated to the Project Manager and the SPBCP Secretariat.

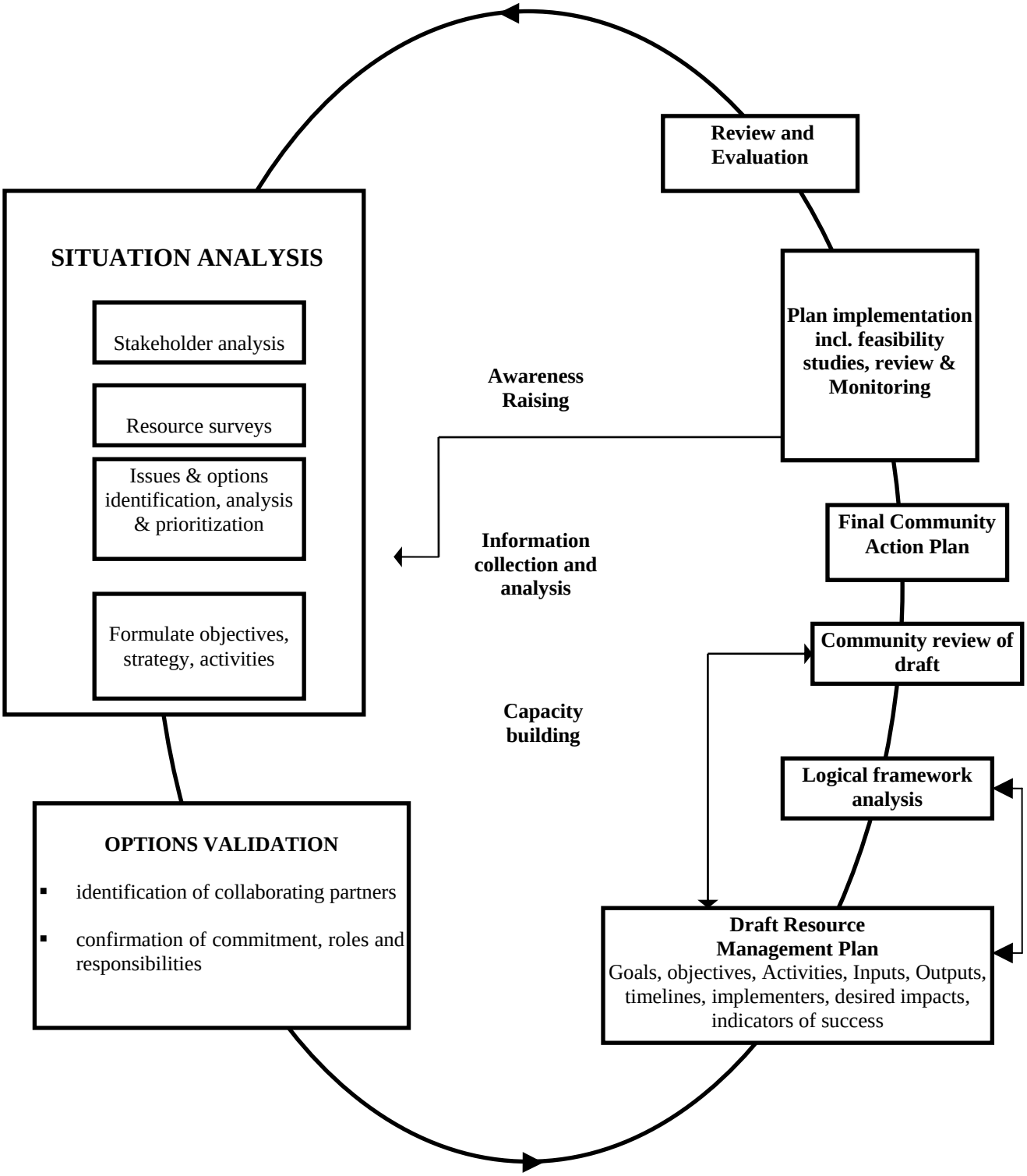
9. Other duties as may be directed by the Project Manager from time to time.

## Annex 4: People Consulted during the PPD formulation

1. Jorelick Tibon, General Manager, RMI-Environment Protection Agency
2. Simon Tiller, Fishery Specialist, Consultant to the MIMRA
3. Lynne Vassalo, Coordinator, Canada Fund, Canberra Australia
4. Danny S. Wase, Director, Marshall Islands Marine Resources Authority (MIMRA)
5. John Bungitak, National Banking Commissioner, RMI
6. Yumi Crisostomo, PICAAP Coordinator, RMI
7. Steven Eke, AVA RMI
8. Sam Leon, Adviser to the Mayor Jaluit
9. Foua Toloa, Consultant, SQVAMA Divers, Samoa.
10. Abraham Hicking, Acting General Manager, RMI-EPA
11. Nella Nashua, RMI-EPA
12. Minus, Jaluit Atoll
13. Danny Miller, Technical Assistant, University of Oregon, Micronesia and South Pacific Programme.
14. Mayor Neritha Jacklin, Jaluit Atoll Government Council
15. Leroij Neimata Kabua, Leroij, Jaluit Atoll
16. Alden Jacklin, Jaluit Atoll

NB. Two evening community gatherings were also held in Jaluit Atoll in July 1997 wherein general discussion of issues were held in addition to a similar meeting with members of the Jaluit Atoll Fisheries Cooperative.

## Annex 5: The proposed Jaluit Atoll CA Resource Management Planning Process



## Annex 6: Commercial fin fish of Jaluit Atoll

| No | Local Name | Common Name | Scientific Name |
|---|---|---|---|
| 1 | Awool | Blue sprat | *Spratelloides delicatulus* |
| 2 | Mamu | Goldspot herring | *Herklotsichthys quadrimaculatus* |
| 3 | Mamu | Herring | *Sardinella albella* |
| 4 | Ettou | Bigeye scad | *Selar crumenophthalmus* |
| 5 | Bati | Scad | *Selar sp.* |
| 6 | Molmol | Scad mackeral | *Selar sp.* |
| 7 | Akwole | Chub mackeral | *Rastrelliger kanagurta* |
| 8 | Kibu | Garfish | *Hyporhamphus dussumiere* |
| 9 | Ettak | Neddlefish | *Platybelone platyura* |
| 10 | Audrelio | Longtom | *Tylosurus crocodilus* |
| 11 | Jure | Seapike | *Sphyraena forsteri* |
| 12 | Iool | Bluetail mullet | *Valamugil seheli* |
| 13 | Autak | Diamondscale mullet | *Liza vaigiensis* |
| 14 | Bejrok | Longfined drummer | *Kyphosus verigiensis* |
| 15 | Bejrok | Sea chub or drummer | *Kyphosus cinerascens* |
| 16 | Dribab | Butterfly fish sp. | *Chaetondon sp.* |
| 17 | angel fish | Angelfish sp. | *Pomacanthus sp.* |
| 18 | Aelmej | Yellofin surgeonfish | *Acanthurus xanthopterus* |
| 19 | Aelmej | Achilles tang | *Achilles* |
| 20 | Aelmej buroro | Olive Tang | *A. olivaceus* |
| 21 | Kuban | Convict surgeonfish | *Acanthurus triostegus* |
| 22 | Kobat | While-barred Surgeonfish | *Acanthurus nigricauda* |
| 23 | Ael iallo | Whitecheck surgeonfish | *Acanthurus Nigricans* |
| 24 | Kwi | Blueline surgeonfish | *Acanthurus linnaetus* |
| 25 | Droeb | Whitspotted surgeonfish | *A. guttatus* |
| 26 | Kobat | Elongate surgeonfish | *A. Mata* |
| 27 | Ekmouj | Candelamoa parrotfish | *Hipposcarus harid* |
| 28 | Ekmouj | Five banded parrotfish | *Scarus ghobban* |
| 29 | Nangao | Snubnose dart | *Trachinotus blochii* |
| 30 | Mao | Filament-finned parrotfish | *Scarus brevifilis* |
| 31 | Mao | Emper parrotfish | *Scarus ruboviolaceus* |
| 32 | Mao | Common parrotfish | *S. psittacus* |
| 33 | Mao | Multicolor parrotfish | *S. sordidsu* |
| 34 | Mao | Eclipse parrotfish | *S russelii* |
| 35 | Mao | Dusky parrotfish | *S. niger* |
| 36 | Udram | Gibbus parrotfish | *S. gibbus* |
| 37 | Kajlo | Filamenfinned parrotfish | *S. altipinnis* |
| 38 | Mem | humphead parrotfish | *Bolbometyopon muricatum* |
| 39 | Lo | Five-banded surge wrasse | *Thalassoma Purpurium* |
| 40 | Jerot | Flagtail | *Kuhlia mugil* |
| 41 | belleo | Milkfish | *Chanos chanos* |
| 42 | Ilmok | Silver biddy | *Gerres Sp.* |
| 43 | Ellok | Silver spinefoot | *Siganus argenteus* |
| 44 | Ellok in japan | Scribbled rabbitfish | *S. spinus* |
| 45 | Muramor | Brownspotted spinefoot | *S. stellatus* |
| 46 | Muramor | Spinefood | *S. vermiculatus* |
| 47 | Ellok iallo | Masked rabbitfish | *S. puellus* |
| 48 | Jo | Yellowfin goatfish | *Mulloidichthys flavolineatus* |
| 46 | Jome | Goatfish | *Mulloidichthys vanicolensis* |
| 49 | Jolemor | Goatfish | *Upeneus taeniopterus* |
| 50 | Motal | Dash-and-dot goatfish | *Parupeneus barberinus* |
| 51 | Motal | Yellow-saddled goatfish | *Parupeneus chryserydros* |

| | | | |
|---|---|---|---|
| 52 | Motal buroro | Multibarred goatfish | *Parupaneus Multifasciatus* |
| 53 | Motal iallo | Yellow goatfish | *P. cyclustomus* |
| 54 | Beikidu | Whitemargin unicornfish | *A. annulatus* |
| 55 | Bataklaj | Spotted unicornfish | *Naso brevirostris* |
| 56 | Bulak | Orangespine unicornfish | *Naso lituratus* |
| 57 | Mone | Bluespine unicornfish | *N. unicornis* |
| 58 | Ek in Ae | Black tounge | *N. hexancanthus* |
| 59 | Mojanir | Spotted porcupinefish | *Diodon hystrix* |
| 60 | Kur | Bloodspot squirrelfish | *Fammeo sammara* |
| 61 | Kur | Blackfin squirrelfish | *Neoniphor opercularis* |
| 62 | Kurlaj | Darkstriped squirrelfish | *Sangocentron praslin* |
| 63 | Jera | Scarlet squarrelfish | *Adioryx spinifer* |
| 64 | Mon | Orangefinned soldierfish | *Mypristis kuntee* |
| 65 | Mon | Pearly soldierfish | *Myripristis berndti* |
| 66 | Mon Kidren | Bronze soldierfish | *Mypristis adjustus* |
| 67 | Lool | Glasseye | *Priacanthus cruentatus* |
| 68 | Tinad | Goldline bream | *Gnathodentex aurolineatus* |
| 69 | Kolej | Blk & White Monocle bream | *Scolopsis cancellatus* |
| 70 | Kie | Large-eye bream (sub adult) | *Scolopsis margaritifera* |
| 71 | Mejakwit | Large-eye bream | *Monotaxis grandoculis* |
| 72 | Mijmij | Large-eye bream | *Gymnocranius euanus* |
| 73 | Jeblo | Onespot snapper | *Lutjanus monostigma* |
| 74 | Jej | Redtail snapper | *L. fulvus* |
| 75 | Jaab | Paddletail | *L. gibbus* |
| 76 | Jetaar | Blueline snapper | *L. kasmira* |
| 77 | Baan | Red bass | *L. bohar* |
| 78 | Net | Spotcheck emperor | *Lethrinus. rubrioperculatus* |
| 79 | Jetak | Stripped emperor | *L. harak* |
| 80 | Net | Blackbloch emperor | *L. semicinctus* |
| 81 | Drijin | Variegated emperor | *L. variegatus* |
| 82 | Neli | Redgilled emperor | *L. Xanthocchilus* |
| 83 | Jalia | Longnose emperor | *L. elongatus* |
| 84 | Berak | Yellowspot emperor | *L. Kloptrus* |
| 85 | Labbo | Barlipped wrasse | *Cheilinus undulatus* |
| 86 | Iumium | Picassofish | *Rhinecantthus aculeatus* |
| 87 | Bub Kilmej | Black triggerfish | *Melichthys indicus* |
| 88 | Bub yellow | Clown triggerfish | *Balistoides conspicillum* |
| 89 | Bub monaknak | Undulate triggerfish | *Balistapus undulattus* |
| 90 | Lele | Spotted triggerfish | *Blistoides Viridescens* |
| 91 | Bel | Filefish | *Gantherhines dumerili* |
| 92 | Bel bok | Trunkfish | *Gantherhines sp.* |
| 93 | Momo | Honeycomb rock cod | *Epinephelus merra* |
| 94 | Kaburo | Hexagon grouper | *E. hexagonatus* |
| 95 | Kaburo blu | Bluespotted grouper | *Cephalopholis argus* |
| 96 | Kaburo | Greasy grouper | *Epinephelus tauvina* |
| 97 | Kiro | Marbled cod | *E. microdon* |
| 98 | Lejebjeb | Starspotted grouper | *E. maculatus* |
| 99 | Walalo | Whiteedge lyretail | *Variola albimarginata* |
| 100 | Kolenni | flagtail rock cod | *Cephalopholis urodelus* |
| 101 | Booklim | Speckled grouper | *Ephinephelus cyanopodus* |
| 1102 | Kanbok | Lyretail coral trout | *Variola louti* |
| 103 | Jonurong | Roving coral grouper | *Plcetropomus pesuliferus* |
| 104 | Aleak | Purple grouper | *Anypendon leucogrammicus* |
| 105 | Jawe | Blacksaddle coral grouper | *Plectropomus leavis* |
| 106 | Kidreij | Jew fish | Ephinephelus tukula |
| 107 | Kubkub | Bigeye trevally | *Caranx Sexfasciatus* |
| 108 | Rewa | Golden trevally | *Gnathanodon speciosus* |

| | | | |
|---|---|---|---|
| 109 | Lane | Bluefin trevally | *Caranx melamppygus* |
| 110 | Lojinarinmwin | Amber jack | *Seriola rivoliana* |
| 111 | Ikbwij | Black trevally | *Caranx sexfasciatus* |
| 112 | Aarong | Great trevally | *C. ignobilis* |
| 113 | Manel | Goldspot trevally | *C. orthogrammus* |
| 114 | Aaron | Dusky trevally | *C. lugubris* |
| 115 | Aulot | Queenfish | *Scomberoides lysan* |
| 116 | Kauwe | Blackspotted swallowtail | *Trachinotus bailloni* |
| 117 | Bobeer | Darkbanded fuselier | *Pterocaesio tile* |
| 118 | Bobeer | Blue & gold fuselier | *Casio caerulaurea* |
| 119 | Ekaidrik | Rainbow runner | *Elagtis binipinnulatus* |
| 200 | Laum | Green jobfish | *Aprion virescens* |
| 201 | Jojo | Flying fish | *Cypselurus poecilopterus* |
| 202 | Looj | Mackerel tuna | *Euthynnus affinis* |
| 203 | Lejabwil | Skipjack tuna | *Katsuwonus pelamis* |
| 204 | Koko | Dolphin fish | *Coryphaena hippurus* |
| 205 | Bwebwe | Yellowfin tuna | *Thunnus albacares* |
| 206 | Bwebwe | Bigeye tuna | *Thunnus obesus* |
| 207 | Jilo | Dogtooth tuna | *Gymnosarda unicolor* |
| 208 | ikabwe | Scad | *Gramnatorcynus bilineatus* |
| 209 | Al | Wahoo | *Acanthocybium solandri* |
| 210 | Ujelleb | sailfish | *Istophorus platypterus* |
| 211 | Lejkan | Marlin | *Makaira nigricans* |
| 212 | Bako in bedbed | Reef blacktip | *Carcharhinus melanopterus* |
| 213 | Bako | Whitetip reef shark | *Carcharhinus albimarginatus* |
| 214 | Adrinpe | Grayreef shark | *C. amnlyrhyrchos* |
| 215 | Lejebbetaktak | Smalltoothed jobfish | *Aphareus furca* |
| 216 | Iroij in kur | Ruby snapper | *Etelis coruscans* |
| 217 | Iroij in kurlaj | flame snapper | *Etelis carbunculus* |
| 218 | Ek in Mulal | Yellowtail snapper | *Pristipomoides auricillia* |
| 219 | Ek in Mulal | Rose banded snapper | *P. zonatus* |
| 220 | Ek in Mulal | Jobfish | *Aphareus rutilans* |
| 221 | Ek in Mulal | Crimson jobfish | *Pristipmoides filamentosus* |
| 222 | Ek in Mulal | | |

## Annex 7: Commercial Non-finfish of Jaluit Atoll

| No. | Local Name | Common Name | Scientific Names |
|---|---|---|---|
| 1 | Konet | sand bivalve spp. | *Asaphis sp.* |
| 2 | Jukkwe | Beach bivalve | *Asaphis violascens* |
| 3 | Mejenwor | clam | *Tridacna maxima* |
| 4 | Drimuj | clam | *Hippo hippopus* |
| 5 | Tonale | Fluted clam | *T. squamosa* |
| 6 | Kabor | Giant clam | *T. gigas* |
| 7 | Jidrul | Turbun shell | *Turbo argyrostoma* |
| 8 | Jidrul in amimono | Tapestry turban | *Turbo petholatus* |
| 9 | Jibunboranbob | Thaididae spp. | *Drupa ricina* |
| 10 | Kadrol | Turban spp. | *Turbo sp.* |
| 11 | Drekeil | Blood mouth conch | *Strombus luhuanus* |
| 13 | Likalbwij | Californian vermetids | *Petaloconchus keenae* |
| 14 | Drikalboulul | Trochus shell | *Trochus niloticus* |
| 15 | Likaib | Triphoridae spp. | *Conus sp.* |
| 16 | Libuke Tiltil | lyns cowery | *Cyprea lynx* |
| 17 | Libuke in lik | eglantine cowry | *cyprea elantina* |
| 18 | Libuke in bar | reticulated cowry | *cypraea maculifera* |
| 19 | Libuke in lik | Arabian cowry | *cypraca arabica* |
| 20 | Libuke | deer cowry | *cypraca vitellus* |
| 21 | Libuke | eye cowry | *Cypraea argus* |
| 22 | Libuke in lik | Cone shell | *cypraa scurra* |
| 23 | Libuke | tortoise cowry | *cyprae testudinaria* |
| 24 | Libuke tiltil | tiger cowry | *cypraea tigris* |
| 25 | Libuke in ar | map cowry | *cyprea mappa* |
| 26 | Libuke in ar | mole cowry | *cypraea talpa* |
| 27 | Likajir libuke | snake head cowry | *cypraea caputserpentis* |
| 28 | Likajir buroro | honey cowry | *cypraea helvolva* |
| 29 | Likajir gold | Goldring cowery | *cyprea annulus* |
| 30 | Likajir | Money cowery | *cypraea moneta* |
| 31 | Di | blacklip pearl | *Pinctada margaritifera* |
| 32 | Aorak | Finger shell | *Lambis truncata* |
| 33 | Bukbuk | Helmet shell | *Cassis Cormuta* |
| 34 | Jilel | Triton's trumpet | *Charonia tritonis* |
| 35 | Wor | Lobester | *Panulirus penicillatus* |
| 36 | Wor in iar | Painted grayfish | *Panulirus versicolor* |
| 37 | Bokijbedbed | Slipper lobester | *Parribacus antarcticus* |
| 38 | Jebarbar | Red-eye crab | *Eriphia sebana* |
| 39 | Maeo | Shore crab | *Grasus albolineatus* |
| 40 | Likorkor | blue crab | *Portunus pelagicus* |
| 41 | Barulep | Coconut crab | *Birgus latro* |
| 42 | Jibenben | blackteat fish | *Holothuria nobilis* |
| 43 | Biebe in iar | Whiteteat fish | *Holothuria scabra* |
| 44 | Biebe in Lik | Redsurf fish | *Actinopyga mauritiana* |
| 45 | Kwet | Octobus | *Octopus vulgaris* |
| 46 | Net | Squid | *Loligo duvauceli* |
| 47 | Net | Bigfin reef squid | *Sepiotenthis lessoniana* |
| 48 | Won wan | Green turtle | *Chelonia mydas* |
| 49 | Jabake | Hawbill turtle | *Eretmochelys imbricata* |
| 50 | Matmat | Sponge | *Spongia* |