

# **Nauru Reconnaissance Report**

**20 - 22 October 1998**

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*SOPAC Miscellaneous Report 303*

## **Acknowledgments**

I would like to acknowledge the assistance of all the people met during the visit to Nauru especially Mrs Chitra Jeremiah for arranging the itinerary and for her hospitality.

## **Introduction**

Nauru is the newest member of SOPAC having joined on 28 September 1998. On returning from a week's work in Kiribati it seemed appropriate to visit Nauru to wave the SOPAC banner and to meet with various Government officials to see how best SOPAC may assist.

Before leaving Fiji, Mrs Chitra Jeremiah, Assistant Director of Ministry of External Affairs, prepared an itinerary for my visit focusing on the water and sanitation sector. The itinerary is attached along with a map of Nauru.

## **20 October 1998 Tuesday**

**Arrived** in Nauru at 13:00 travelling from Kiribati.

Was met by Mrs Chitra Jeremiah and given VIP treatment at the airport.

### **Ministry of External Affairs**

I met with Mr Matthew Batsiua, Acting Secretary for External Affairs and Mrs Jeremiah. They were both given a SOPAC information kit and we discussed the various programs and units available at SOPAC. Mr Batsiua was very interested in knowing about SOPAC and the services it may provide. I was told that there is a water problem on the island (Note no water in hotel room during the evening)

They were also interested in knowing more about the offshore surveys. I indicated that if the Japanese approve another extension to its current survey then Nauru may be included.

External Affairs is the ministry responsible for SOPAC and other regional organisations.

### **Department of Island Development & Industry (IDI)**

Met with Mr David Agir, Acting Secretary for Island Development & Industry and he was also given a SOPAC information kit. We discussed the various services that SOPAC may provide. He offered the assistance of his ministry to develop and implement potential projects.

IDI would be the ministry to assist SOPAC with implementing any projects.

### **21 October 1998 Wednesday**

Roxen Agadio, Environment Officer from IDI, who was assigned to accompany me throughout the day was most helpful in providing me with information that I requested.

#### **Nauru Phosphate Corporation (NPC)**

The NPC appears to be the driving economic force on Nauru regarding employment and providing services to the 10,600 residents of Nauru. However, most of the phosphate has been mined with only a small amount remaining. Much of the existing infrastructure is not in use and/or poorly maintained. Approximately half the population is employed by NPC in one way or another. Electric power and water are supplied to the entire country by NPC. Power is charged at \$A0.19 per unit and water at \$A6.00 per tanker load (between 10.5 to 12.5 m<sup>3</sup>) delivered to individual storage tanks.

#### **Water Supply**

In the past, water was imported by ship and stored in large reservoirs for distribution. Rainwater roof catchment and storage systems are still being used with most individual houses having 220 m<sup>3</sup> (10,000 gal) tanks with pressure pump reticulation. The main source of water comes from a custom built 5-year old desalination plant.

Bill McDonald, in charge of the operation and maintenance of both the diesel powered electrical generation plant plus the desalination plant, gave us a tour of his operation. The desalination plant basically uses spent heat from electric power generation to convert seawater into potable water. The plant capacity is about 1100 tonnes per day (approximately 1100 m<sup>3</sup>/d) but was currently operating at about 1000 m<sup>3</sup>/d due to lack of an opportunity to shut down the plant for maintenance. This is because it has not rained in Nauru since last February thus most of the rainwater supply has been used and most people are relying on NPC to provide water and current NPC storage is only for a day or two.

From the desalination plant the water is pumped into a 4800 m<sup>3</sup> steel reservoir and may be pumped to several other smaller reservoirs located within the NPC area. However, the steel reservoirs are in poor condition and thus their full capacities cannot be used. From the main 4800 m<sup>3</sup> reservoir tanker trucks are filled for delivery to individual storage tanks for \$A6.00 that must be paid in advance.

A well was dug on the NPC compound to assess the use of groundwater as an alternative use possibly for a second desalination plant. However, about 150 mm of fuel was found on top of the groundwater lens. This was believed to be the result of a German naval ship blowing up fuel storage tanks in the late 1800's. McDonald requested information on oil separation methods.

Met with Barry Brown, Power Station Supervisor who also looks after the distribution of water by tanker trucks. There are currently 5 tanker trucks (between 10.5 to 12.5 m<sup>3</sup>) available for deliveries with a total average of 50 deliveries per day. It is understood that there is a backlog of about 500 deliveries. Six deliveries per day are supposed to be made to the Menen Hotel.

Water is reticulated to housing for about 4-5000 NPC employees. Most housing provided by NPC have water tanks to store water. An extensive roof catchment system was once operational but is now in disrepair.

Mr Brown indicated that on average 3600 m<sup>3</sup> of water is delivered weekly with about 900 m<sup>3</sup> per week reticulated plus 300 m<sup>3</sup> per week delivered to NPC housing. This is equal to 4800 m<sup>3</sup> per week while the desalination plant is currently producing about 7000 m<sup>3</sup> weekly. The difference (2200 m<sup>3</sup> per week) maybe going into storage and/or lost through leakage in storage and/or reticulation facilities. This should be checked. It was mentioned to Mr Brown that SOPAC might be able to assist with checking on leakage. Mr Brown would like information on obtaining a portable pipe flow meter.

### **Sanitation Facilities**

NPC operates a seawater reticulation for flushing toilets in their housing facilities that saves on the use of freshwater. The system also supplies seawater for fire fighting needs. Sewerage from NPC facilities is collected through a piped system and discharged near the reef's edge through 5 pipeline outfalls. It is understood that the reef within area of the outfalls is in poor condition.

Most private homes use septic tanks that discharge into soakage pits to dispose of domestic sewerage. Often groundwater taken from shallow wells is used to flush toilets.

### **Water Resources**

There is no running surface water on Nauru, but there is a small land locked lagoon. (See map for location)

Rainwater is collected off roof catchments but dry periods, such as currently experienced, occur. Rainfall data should be obtained and analysed to develop a drought index for Nauru.

Groundwater is used to a small extent mainly to flush toilets. The Moqua Well was inspected. The well is actually a cave in the limestone formation of the island that appears to intercept the top of the groundwater lens and travels both inland and towards the sea. Water taken from the cave has been used for flushing toilets at the government buildings.

A literature review of existing reports on Nauru's water resources is required to assess possible future water sources to supplement the desalination plant.

### **Tropical Western Pacific Program**

Visited a site where equipment was being installed as part of a US-funded program to measure atmospheric radiation to provide information to assist the development of computer models to predict the weather and climate throughout the world. SPREP is involved with this program.

### **IDI**

Met with Joseph Cain, Senior Project Officer I, and Andrew Pitcher, Senior Project Officer II, and discussed possible water and sanitation projects that SOPAC may undertake. Water supply related projects were of high priority reinforced by the current drought conditions.

Mr Pitcher was keen for Nauru to join the Pacific Water Association (an association of Pacific Water and Wastewater utilities plus water sector private suppliers).

It was agreed that firstly a review of existing water resources information should be carried out so that there is no duplication of work. Water demand management and the feasibility of a reticulation pipeline around the island were possible projects discussed.

An electronic version of the Nauru draft NEMS was obtained from Mr Cain.

**22 October 1998 Thursday**

**Departed** Nauru at 0715.

**Arrived** in Suva at 14:30 via Nadi.

## **Follow up Actions**

### **NPC**

- Provide Bill McDonald with information about oil/water separators.
- Provide Berry Brown with information about the Portaflow 300 flow meter.
- Develop task profiles with NPC (leakage survey).

### **IDI**

- Review existing literature on the water resources of Nauru.
- On receipt of monthly rainfall data for Nauru from IDI develop drought index.
- Rough estimated cost for a pipeline water reticulation system to circle the island.
- Develop task profiles with IDI for above.