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IN NAURU

Contemporary Used Oil Audits

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Secretariat of the Pacific Regional Environment Programme
(SPREP)

RAPPORT

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Executive Summary

This report presents the findings of a contemporary used oil audit in Nauru. In-country visits, interviews and data collection that support this report were conducted by Golder in May 2014.

The key findings of this report are:

- The Republic of Nauru is an isolated island (21 km²) located in the central Pacific between the Solomon Islands and Kiribati. The estimated resident population is 10,500.
- Mining is the dominant industry(70% of GDP)
- Total imports of lubricating and hydraulic oil are estimated to 150,000 L per year.
- 2 major companies which are also the main consumers (Nauru Utilities Corporation and RonPhos) import lubricating and hydraulic oil.
- The main volume of waste oil is generated by these two companies, NUC power station : 16,000L/year and RonPHOS : 40,000L/year but RonPHOS recycles 20,000L/year in the process of phosphates plant.
- Considering the interviews, the total volume of waste oil to be potentially collected should be 50,000 L per year.
- The **National Sustainable Development Strategy (NSDS**) for 2005 to 2025 for Nauru is the instrument to better manage Energy, Environment, and Waste. Nauru has ratified Basel and Waigani Conventions.
- Waste Oil Management strategy could be a mix of the following options :
  - Assess the empty fuel tank at Tank Farm to store the waste oil collected in the Island;
  - Assess the equipment used by RonPHOS for burning waste oil;
  - Evaluate the feasibility of having only one recycling company for shipping all different wastes (Scrap, glass, batteries, waste oil, etc). It should be a more economic option if the contract is with a sole company;
  - Evaluate the potential for having one small-scale equipment in Nauru to recycle the waste oil.

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1.0 INTRODUCTION

1.1 Purpose

The Secretariat of the Pacific Regional Environment Programme (SPREP) retained Golder Associates New Caledonia Sarl (Golder) to perform contemporary used oil audits in Cook Islands, Kiribati, Nauru, Solomon Islands, Tonga, and Tuvalu to establish volumes of lubricating, hydraulic and transmissions oils imported into each country and the volume of used oil produced, and stored or otherwise disposed of.

The major sources of used oil are power generation and motor vehicles. Used oil contains high levels of heavy metals and some amounts of more toxic chemicals.

Oil spilled on the ground contaminates the soil and leaches into the water system, polluting water courses, groundwater, lagoons and the ocean.

This report presents the findings of a contemporary used oil audit in Nauru.

In-country visits, interviews and data collection that support this report were conducted by Golder in May 2014.

1.2 Scope of Services

The scope of services for this consisted of the following tasks:

- Establish and document national oil import/generation volumes and rates for the last 3 years ideally 2011, 2012 and 2013;
- Establish national used oil production rates for the last 3 years ideally 2011, 2012 and 2013;
- Oil Audit Balance for the last 3 years ideally 2011, 2012 and 2013;
- Document and summarize existing national used oil management procedures; and
- Document and summarize existing national used oil management instruments.

1.3 Interviews/Consultation

The Department of Foreign Affairs and Trade was the primary point of contact and they suggested the most appropriate people to talk to. The Table 1 lists the people interviewed or consulted visited, during the in-Country Visit (25 to 29 May).

Table 1: Stakeholders interviewed / consulted (25 to 29 May 2014)

Organisation	**Name**
Public institutions	
Department of Foreign Affairs and Trade (DFAT)	Michael Aroi (Secretary for Foreign Affairs and Trade) • David Etudamo
Ministry of Commerce Industry and Environment (CIE)	Elkoga Gadabu (Permanent Secretary for Commerce Industry and Environment) • Bryan Starr (director of projects)
Ministry of Finances National Statistics Bureau	Ramrakha Detenamo (statistics officer)
Nauru Rehabilitation Corporation (NRC)	Kahlua Agigo (procurement officer)
Power Authority	
Nauru Utilities Corporation (NUC)	Mohammed Ali (Manager of power Plant)
Mining company	
Republic Of Nauru Phosphates (RONPHOS)	Graeme J. Wiig (Manager)
Main retailer	
Capelle & Partners	Scott Jensen (Parts Manager)

1.4 General facts about Nauru

The Republic of Nauru is an isolated island (21 km²) located in the central Pacific between the Solomon Islands and Kiribati. Its nearest neighbor is Ocean Island (Banaba, part of Kiribati), 330km to the east.

The estimated resident population Nauru in 2011 was 10,500.

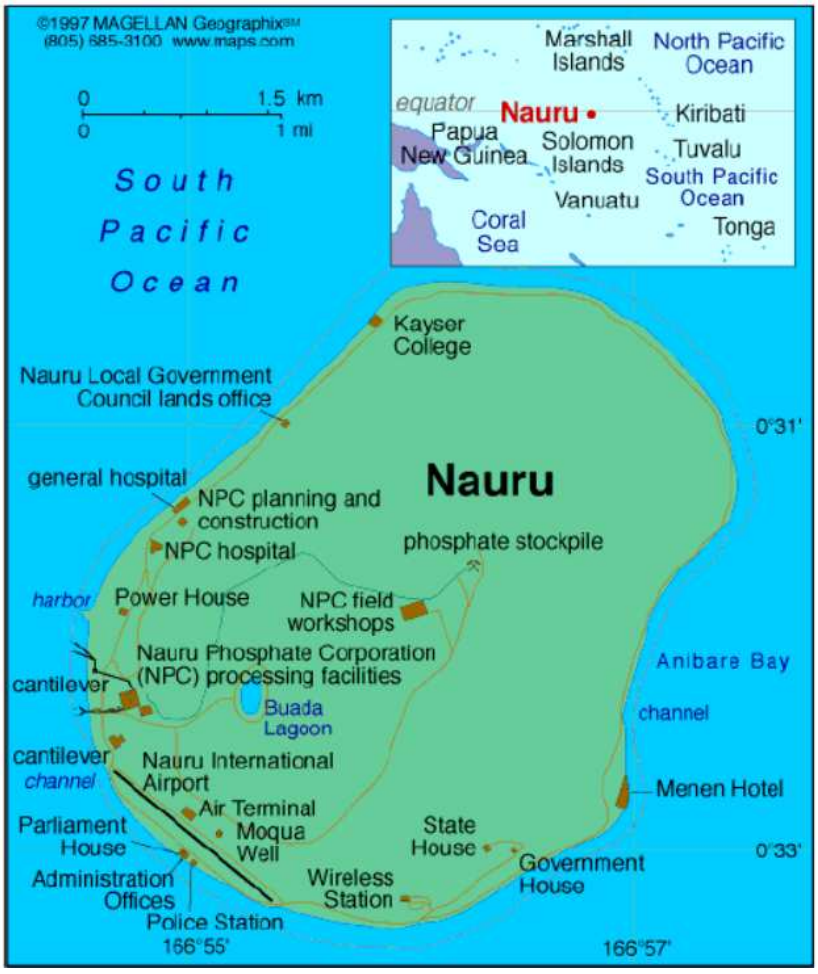

Figure 1: Nauru Map

Phosphate export earning still account for 70% of GDP.

The presence of tuna species in the Nauruan waters has increased receipts from fisheries licensing.

Infrastructure investments due to the extension of the regional processing center (RPC Australia's detention center for asylum seekers) have boosted economy activity, since 2012.

2.0 NAURU LUB OIL IMPORTS

2.1 National Statistics

National Statistics Bureau and Nauru rehabilitation Corporation, in charge of accounting national imports (state-owned entreprise) were not able to find the correct figures for Lub Oil imports.

2.2 Main Import Stakeholders

Nauru is dependent on fossil fuel to meet its energy demands. Due to the small population and isolation from markets it lacks economies of scale for importing fuel products.

Nauru is highly vulnerable to global fuel price increases and to global supply shortages.

There is high-level political support for improving energy sustainability. Nauru has developed a National Sustainable Development Strategy (NSDS 2005-2025) to promote and implement alternative energy sources and make best use of its energy and water resources.

There are two major consumers: Nauru Utilities Corporation (NUC, in charge of power generation) and RonPhos (mining company).

2.2.1 Nauru Utilities Corporation

Nauru Utilities Corporation (NUC) is the sole provider of utility services to Nauru, including electricity and water and services for bulk fuel supply.

NUC provides all energy services to Nauru except for the Australian refugee camp and the main processing plant of RonPhos which both generates their own power.

NUC has over 100 employees and operates with direct subsidy from the Nauru Government (in the form of fuel for the power station) and donor funding from AusAID and the European Union (EU).

NUC's Mission Statement provided in its Corporate Plan is 'to provide affordable, sustainable energy and water supplies at levels of reliability and quality that satisfies Nauru's customers. At present, Nauru is almost totally reliant for its energy on diesel-powered generators in a single facility, a mix of fixed machinery alongside container size portable generators. The overall efficiency of portable generation is relatively low, with the imminent introduction of several refurbished fixed-generators expected to provide a more reliable, efficient capacity. The fixed generators, when fully operational, are expected to have total capacity of around 7-8 MW.

We have met with M.,Mohammed Ali who started at NUC in February 2014. He has over 20 years experience in the power generation field, and has already started improving the quality of the power station. Upgrades are much needed and two new generators have been installed in 2014.

The Nauru power station fuel system is supplied from sea going vessels through a pipeline to a fuel tank referred to as the Tank Farm located about a kilometer from the power station. The fuel flows through a purifier and filters into a service tank using gravity feed. The service tank has a capacity of 9,600 liters.

Figure 2: The Power House

The current usage of Lube Oil at the power plant is around 200 L per day. The annual average should be 70,000 L.

The current cost for a drum of 200L of lube oil is AUD$700 excluding Freight.

Table 2: NUC Power Station 2013 (estimation).

Year	Lube Oils (usage)	Lube Oils estimation (annual)
2013	200 L / day	70,000 L

2.2.2 RonPHOS

Following the collapse of phosphate mining in 2002 due to the virtual exhaustion of minable resources, many foreign workers were repatriated. Between 2004 and 2005, the number of foreign workers went from 1,478 to 470. Most of the workers came from Kiribati and Tuvalu.

On 1st July 2005, during a managerial restructuring, the Nauru Phosphate Corporation formally changed its name to the Republic of Nauru Phosphate Corporation to signal change. Today, RonPHOS, a state-owned enterprise currently employs 20% of the working population of the Republic of Nauru.

Figure 3: Old phosphates treatment plant

The RONPHOS large mechanical equipment and drying kilns are powered by their own generators on an as-needed basis. RONPHOS has a 1.8MW generator for its production facility and a 0.8MW generator for primary crushing and screening (which runs at about 45% of capacity). Both run for 20 hrs /day, 12 days a fortnight.

The annual average volume of lube oil given by the Management for the last 3 years is 60,000 L/Y.

It has to be noted that RonPHOS is also a consumer of waste oil in their furnace and in 2013, they have used 20,000 L of their own waste oil

2.2.3 Regional Processing Centre (RPC)

This report does not include information on the Regional Processing Centre (RPC) as the centre currently caters for its energy requirements largely independently of the rest of the Nauru energy.

2.2.4 Nauru Rehabilitation Corporation

The objectives and functions of the NRC are elaborated in the Nauru Rehabilitation Corporation Act 1997 but in short NRC is the authority for implementing, initiating and coordinating Nauru government policy in regards to the rehabilitation and development of the worked-out phosphate lands of Nauru.

2.2.5 Retailers

There are some retailers in Nauru but Capelle & Partner is the main one. Opened in 1965, it is today a major retail department store and supermarket with staff levels in excess of 100 employees.

They also have a fully equipped motor vehicle workshop for servicing, repairs and maintenance.

We could not get detailed information for import as this information is commercially sensitive for Capelle & Partner.

But for example, the price of 15W40 (Castrol 5L) is AUD $ 55.00., Valvoline (Break Fluid 0.5 L) is AUD $12.00.

Figure 4: Main Shop in Nauru

The unofficial annual average imports of lubricating oils, based on the total usage given by NUC and RonPhos is about 130,000 liters. We can easily add 10,000 L. imported by retailers.

The total estimated volume of Lube Oil is about 140,000 L.

Table 3: Nauru Import of Lubricating oil –2013 (estimated)

Year	Description	Quantity (Liters)
2013	NUC	70 000
2013	RonPHOS	60 000
2013	Others	10 000

The annual average import of lubricating oils, based on the total imports over five years should be 140,000 liters.

3.0 NAURU WASTE OIL RECOVERY

It is generally recognised that only about 50% of the oil sold will end up as waste. Considering the consistency of the national import figures, the total volume of waste oil to be collected should be 70,000 L per year.

But RonPHOS is using 20,000L of waste oil in their process. So the estimate for Nauru is 50,000 L.

3.1 Power Station

The major source of used oil is the power generation. There is no obligation to collect or export the waste oil.

NUC power house generates 80 drums or 16,000 L of waste oil per year. They have also 150 drums to remove from previous years.

The waste oil is not very well stored on site.

Discussions are in progress to transfer all the waste oil into an empty tank at the Fuel Tank Farm.

The cost for shipping a container is regulated by the world market but the current price for 1 container (80 drums) shipped to Fiji is AUD $55,000.

Figure 5: Current storage on site (power house)

Figure 6: Potential storage in empty fuel tank

3.2 RonPHOS

We were not allowed to visit the process plant but the manager certifies that waste oil is mixed with diesel in the furnace and an annual average of 20,000 L of waste oil is used in the process.

3.3 Waste Landfill

Pollution and waste management is one of the major concerns of Nauru. The increase in pollution and the waste stream require strategies for prevention and management at all levels of the Nauruan society, from the individual, household and community levels to the national level.

Nauru also produces a lot of solid wastes, such as food, scraps, packaging, plastic, glass and metal containers, garden waster and garbage of all sorts.

The existing landfill is not designed to accept any liquid or hazardous waste.

Figure 7: Existing Landfill

3.4 Nauru Options for using waste oil

- First, the equipment for using waste oil at RonPhos treatment plant needs to be assessed and certainly improved (air emission). This should be a priority as the reuse of waste in the country appears crucial.
- The empty fuel tank needs to be assessed also in order to avoid leakage and be used correctly to store the waste oil until a solution is found before exporting.

- It is not possible to cover 100% of the cost of shipping the waste oil, as Nauru is a very isolated island in the Pacific. But the collection of other wastes such as scrap metals, packaging, plastic, glass (and there are a lot in Nauru) and waste oil and batteries by a recycling company should be more rentable.

4.0 REGULATION DRIVERS

There is no specific legislation on waste oil management but a real need for coordination in implementing or reinforcing a waste oil management programme.

There are too much State-owned entreprises or government department involved in waste management or energy.

Competencies exist but need to be managed in a focal point that will be accountable for the responsibilities.

The **National Sustainable Development Strategy (NSDS**) for 2005 to 2025 should be the main driver.

The NSDS includes specific national goals and milestones for tracking developmental progress: the report highlights a few key achievements and gaps for each sector. Although some sectors, such as land, energy and water, are presented separately, they do not exist in isolation. All sectors are part of a single ecosystem and the issues in each sector are intertwined with other sectors.

Nauru has also ratified two **International hazardous waste conventions**: Basel and Waigani.

- There are some obligations for the countries, members of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal :
  - Minimise generation of hazardous waste;
  - Ensure adequate disposal facilities are available;
  - Control and reduce international movements of hazardous waste;
  - Ensure environmentally sound management of wastes; and
  - Prevent and punish illegal traffic.
- The Waigani Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region.

5.0 DISCUSSION

- There is at least 50,000 L per year of potentially recoverable Oil in Nauru.
- Collecting, and storing the waste oil in the empty tank at Tank farm is the first priority as the current sway to store the drums is not acceptable.
- Exporting the waste oil out of the country seems to be not economically viable.
- Exporting all the “economic” wastes by a sole recycling company could be interesting.
- The equipment at the phosphates treatment plant has to be audited and assessed. It will also be in line with the waste management principles: recycling waste in the country whenever possible. But it is not a sustainable option at long-term as the mining operations should decline.

Some small equipment exists to filter and recycle the waste oil. A study should be done to evaluate the potential in Nauru considering the high cost of lube oil and the cost to export the waste oil.

Page signatures

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