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IN SOLOMON ISLANDS

Contemporary Used Oil Audits

Presented to:

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

The key findings of this report are:

The estimated resident population of the Solomon Islands is nearly 575,000, and Honiara, capital of Guadalcanal, is the largest urban area with 100,000 persons. Timber Industry is dominant (60% of GDP), most is still illegal.

Guadalcanal accounts for over 90% of the total electricity generation in the Solomon Islands.

The total imports of lubricating and hydraulic oil equal approximately 1,600,000 L per year.

- 2 major companies (SPOL, Markwarth Ltd) supply lubricating and hydraulic oil.
- The main consumer is the public power authority, SIEA, mining industry (Gold Ridge Mine), Timber Industry, Motor centres.
- Local customers and some logging companies are using the waste oil as a poor quality lube oil for chainsaw, and timber painting. It is the main common way to reuse the waste oil in Solomon Islands.
- Considering the consistency of the national import figures, the total volume of waste oil to be potentially collected should be 800,000 L per year.
- Waste Oil Management strategy could be a mix of the following options :
- There is a huge need to ensure that all stakeholders can see things in a more transparent and accountable way.
 - Develop transparency and accountability
 - Increase awareness campaigns to educate the public, or even the government
 - Obligation of take-back services for 2 major oil companies (with an incentive compensation)
 - With the volume of potential waste oil in Solomon Islands, strongly recommend studying the feasibility of reconditioning waste oil in Honiara.
 - Increase awareness campaigns to educate the public, or even the government
 - The common approach to fund a waste oil management programme is the introduction of a universal levy for all oil imports, which is the first principle of polluter-pays.



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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 Solomon Islands.

In-country visits, interviews and data collection that support this report were conducted by Golder in July-August 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 Ministry of Lands, Environment, Climate Change and Natural Resources 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 (24 to 30 July).

Table 1: Stakeholders interviewed / consulted (July 2014)

Organisation	Name
<u>Public institutions</u>	
Ministry of Environment Climate Change Disaster Management & Meteorology	Dr. Melchior Mataki (Permanent Secretary) Environment and Conservation Division <ul style="list-style-type: none">• Rosemary Apa (Senior Environment Officer)• Wendy Beti (Environment Officer)
Ministry of Finances (Bureau of Statistics)	Henry Risoni (Senior Statistician)
Ministry of Mines, Energy & Rural Electrification	John Korinihona (Director of Energy Division) Rinaldo Waletafisia
Solomon Islands Maritime Safety Administration (SIMSA)	Capt. Tim W. Harris (Director) Capt. Brian Aonima (Manager Maritime Operations Officer)
Solomon Islands Port Authority	Harbormaster
<u>Power Authority</u>	
Solomon Islands Electricity Authority (SIEA)	Dadily Posada (Power Generation Manager)
<u>Oil companies</u>	



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MARKWARTH OIL Ltd	Jim Blanking (General Manager)
SOUTH PACIFIC OIL LIMITED (SPOL)	Auda Nou (Chief operations Officer)
<i>Main retailers</i>	
ELA Motors (Toyota)	Milton Wate (Service Manager)
UNITED AUTO (Tongs Corporation)	Richard Carrick (General Manager) Freddy Koa Crocker (Manager – Parts & Operations)
DIDDS Service Station	Toata Molea

1.4 General facts about Solomon Islands

Solomon Islands comprise a double chain of six large islands (Choiseul, Santa Isabel, NewGeorgia, Guadalcanal, Malaita and Makira) with a total land area of 28,800 km².

The estimated resident population of the Solomon Islands is nearly 575,000, and Honiara, capital of Guadalcanal, is the largest urban area with 100,000 persons.

Guadalcanal accounts for over 90% of the total electricity generation in the Solomon Islands and it was therefore the primary target of the audit.



Figure 1: Solomon Islands Map

Solomon Islands have a natural resources based economy. They produce Gold, oil palm, coprah, canned tuna, fish, timber and logs. Australia is the single largest export partner while China is listed as the major import country.

More than 60% of total productions are exported with timber and logging as the leading commodities. The annual rate of extraction (logging) is more (2 to 3 times?) than the sustainable extraction level.

The links between illegal timber extraction, parallel economy and foreign logging companies seem to be complex in Solomon Islands. It has been estimated that 80% of the Solomon Islands' wood trade is illegal. The Environmental Investigation Agency estimated that China, globally the largest illegal timber trader, imported 1.5 million cubic metres of illicit logs from the country in 2011.



2.0 SOLOMON ISLANDS LUB OIL IMPORTS

2.1 National Statistics

Import data given by the Bureau of Statistics imports.

Table 2: Solomon Islands Import of Lubricating oil

Year	Description	Quantity (Liters)
2011	Lubricating oils	1 457 315
2012	Lubricating oils	1 292 633
2013	Lubricating oils	2 070 973

The annual average import of lubricating oils, based on the total imports over three years should be 1 606 974 liters.

2.2 Main Import Stakeholders

There is one major consumer, Solomon Islands Electricity Authority (SIEA) and two national oil suppliers operating in Solomon Islands, MARKWARTH OIL Ltd and SOUTH PACIFIC OIL LIMITED (SPOL).

Markwarth Oil Ltd and SPOL did not want to give detailed information as they claimed Customs already have the figures.

2.2.1 Solomon Islands Electricity Authority (SIEA).

SIEA is a state-owned enterprise which operates and maintains the power supplies to all the urban and provincial centers.

Guadalcanal accounts for over 90% of the total electricity generation in the Solomon Islands and much of the energy produced (80%) is in Honiara. The annual production is 74 GWh.

There are two power stations in Honiara city, namely Lungga and Honiara power stations. There was a recent improvement with the installation of 2 x 1.5 MW generators at Honiara Power Station and 4 x2.5 MW additional generators at Lungga Power Station.

That equipment will be commissioned in early 2015.



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Figure 2: SIEA and the main Power station at Lungga Power Station (near the Airport)

Data on Lube Oil have been given by the SIEA Management.

Table 3: SIEA Lube Oil usage in Litres. 2011 to 2013.

Year	Lube Oils (Purchased)	Lube Oils (Usage)
2011	77,689 L	67,951 L
2012	81,220 L	81,421 L
2013	79,011 L	69,616 L
Average	80,000 L/y	73,000 L/y

As shown in table 3, the annual Lube oil consumption is around 73,000 L at the Power station.

Recent improvement installations and the on-going energy efficiency program also explain the decrease of the demand in lube oil.

2.2.2 National Oil Companies: South Pacific Oil Ltd and Markwarth Oil Ltd

These two national oil companies supply the Solomon Islands with petroleum products using shipping containers, with the oil in drums and retail containers. Both companies have storage depots and tanks in central Honiara.

Like many people living outside Pacific capitals, people living in rural areas in Solomon Islands pay much more for their fuel than those living in Honiara. The disparity is so big that in some cases people are paying four times the Honiara price.



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SOUTH PACIFIC OIL LIMITED purchased Shell Pacific's business and assets in Solomon Islands in 2006 and is 100% owned by the Solomon Islands National Provident Fund. Over 85 million litres of petroleum is imported annually. SPO supplies Aviation and Marine Fuel, Petroleum, Oils and Lubricants. A locally owned company with more than 100 employees dedicated to servicing all aspects of the Petrochemical Industry throughout Solomon Islands. It also provides bunkering services at Honiara port to marine vessels and at Henderson International Airport to aircrafts.

South Pacific Oil Ltd has its main terminal on adjacent facilities just close to the Honiara Port (Figure 3).



Figure 3: SPOL Oil Company

There is no obligation to collect or export any waste oil, and SPOL does not offer any “take-back” service to their retailer consumers.

Markwarth Oil Ltd was the major oil supplier in Solomon Islands until SIEA decided to switch suppliers and source its fuel from South Pacific Oil Limited SPOL the Stated owned enterprise in 2011.



Figure 4: Markwarth Oil Ltd Company



There is also one competitor called Emerald Oil Limited who opened a fuel storage and distribution business at Butuburu Island, Choiseul in 2013. The facility consists of two tanks, drum filling shade, office, and floating wharf.

2.2.3 Prices

We have visited several major retailer companies in Honiara. The following table shows the retail prices given in one of the main station.

Table 4: examples of Lube Oil prices

Quantity	Lube Oils (Prices)
1.5 L	SBD \$ 92
4 L	SBD \$ 145
5 L	SBD \$ 195L
18 L	SBD \$ 870
200 L	SBD \$ 5,700

Price for 1L of Diesel Fuel is US\$0.99 (retail price).

3.0 SOLOMON ISLANDS 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 800,000 L per year.

3.1 Power Station

The major source of used oil is the power generation.

SIEA should annually generate 40 000 L of waste oil from power stations and generators. But it is not possible to get a book with figures as all the waste oil is “given” to individuals for their private re-using.

SIEA has an incinerator on site but they do not use it. SIEA has no stockpile of waste oil on their site.

The waste oil is re-used for logging companies or individuals mostly to lubricate chainsaw. We have advised the manager that it is not a viable solution (without treatment) as it could be a source of breakdown, engine failure and a source of pollution.



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Another common use is for painting and preserving the wood from ants / termites. On site the waste oil is stored in a few 208 L drums prior to being “given” to customers “(Figure 5).

This solution satisfies SIEA as they have not to manage any important stockpile on site.



Figure 5: Lungga Power station and Waste oil management



Currently, SPOL is the supplier for SIEA and both are country-owned.

SIEA is a State Owned Enterprise (SOE), and receives backings from the government, while the National Provident Fund (NPF), owned by local employees, holds 75% of the shares in SPOL.

SPOL is responsible for maintaining storage facilities in all SIEA stations. They also manage stock, assets and fuel control systems on all SIEA stations. As such, SPOL should be responsible for the collection and treatment of waste oil.

3.2 Motor Vehicle

Visits to Ela Motors (Toyota) and Tongs Corporation (main service stations) have been done in Honiara. The staff were very helpful and collaborative. They were well aware of avoiding any pollution and waste oil is collected in drums.



Figure 6: Tongs Corporation Service Station : new oil drums and bottles and drums of waste oil.

That service station produces approximately 18 x 208L drums of waste oil per year, and all the production goes to logging companies or individuals. They will be happy to have a better solution.

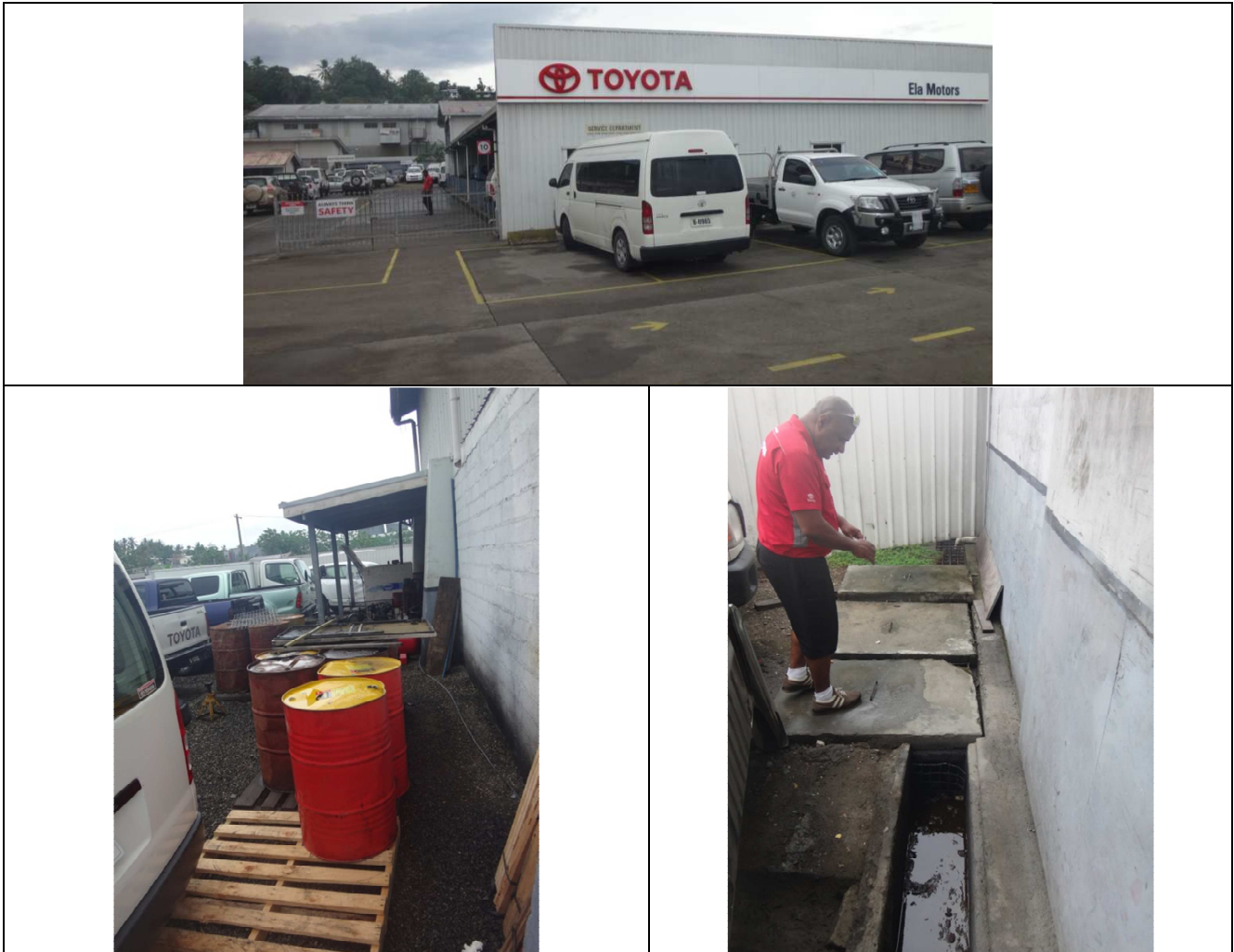


Figure 7: Ela motors

At Ela Motors (Toyota), maintenance activities produce annually about 20 drums (208L) of waste oil.

All the production goes to logging companies or individuals. They will also be happy to find a better solution.

3.3 Gold Ridge Mine

Gold ridge mine is the only operating mine in Solomon Islands. Open in 1998, this mine is now the property of St Barbara limited, an Australian-based gold mining company. Gold Ridge Mine has contributed approximately 20% of the Gross Domestic Product of the Solomon Islands economy.



Mining activities are a significant source of waste oil and it seems that Gold Ridge has contacted (or contracted) a company in New Zealand who could re-refine their waste oil. We have tried to book a meeting and get direct info from the Gold Ridge Management but they did not answer positively as they were facing several issues.

Operations at Gold Ridge were suspended in April 2014, due to torrential rainfall and flooding, damaging nearby infrastructures such as bridges and causing site instability. Then, they got a number of serious security incidents, and they decided to withdraw all workers from the site. They are currently studying one option that is handing of the operations back to Solomon Islands Government.

3.4 Waste Landfill

The Honiara City Council (HCC) Environmental Health Division is responsible for collecting household waste within Honiara City and transporting it to the Ranadi dump site.

The HCC Environmental Health Division is also responsible for managing the Ranadi dumpsite, which is located 6 kilometers from the city.

In 2013, upgrading works on the dumpsite began with assistance provided by the Japan International Cooperation Agency. New cells have been created and waste is now being compacted.

Currently, there is no existing site to store waste oil in Solomon Islands and it is common practice to dump rubbish anywhere. Due to poor public awareness and policy absence, there is a need to improve waste management in all the urban centres of Solomon.

3.5 Transport services

Meetings have been done with Solomon Islands Maritime Safety Administration (SIMSA) and Solomon Islands Port Authority. It appears that :

- Fuel imports into Solomon Islands travel from Singapore on foreign flag tankers. Voyage distribution is Port Moresby, Lae and Honiara; or Lae, Rabaul and Honiara. Import bulk fuels on foreign registered tankers.
- Within Solomon Islands, the products re distributed from Honiara in second hand 200 L drums.

So the preferable shipping route would be via PNG.

The shipping costs to PNG, is approximately US \$800 for a 20 Feet Container, US \$1,500 to Australia, US \$ 2,000 to New Zealand.



3.6 Solomon options for using waste oil

At the moment there are no existing options in Solomon.

Some private recycling companies operate in and around Honiara but they concentrate on metals.

Considering the potential volume of waste oil generated in the country (800,000 L) and the worst rate of recovery in the Pacific Islands Countries, the supplier companies have to be first responsible and to offer a take-back service. A tax should help to cover the cost.

At least a collection center should be built to accept these amounts of used oil and store it until enough is collected to ship for recycling. It could be a site that accepts all hazardous waste.

Because of the cost of the goods and especially fuel and oil products in Solomon, the reconditioning in the country is a pragmatic option: it involves removing impurities from the used oil and using it again. While this form of recycling might not restore the oil to its original condition, it does prolong its life.

4.0 REGULATION DRIVERS

There is no specific legislation on waste oil. Currently, the legislation seems to be ineffective

- The main legislation covering environmental issues in Solomon Islands is the **Environment Act (1998)** and subordinate Environmental Regulations (2008) which provides for an integrated system of development control, EIA and pollution control.
- At the national level the government's overarching development planning framework is the **Solomon Islands National Development Strategy: 2011-2020 (NDS)**. The NDS includes a range of Focus Areas and Objectives, Policies and Strategies that together can contribute to enhance adaptation, disaster risk management and mitigation capacity in Solomon Islands. Solid waste management is one of these items.
- About waste, Petroleum Act 1996, Shipping Act 1996, **Environmental health Act 1996** and subordinate regulations 2006, Marine Safety Administration Act 2009 are appropriate.
- The **Solomon Islands marine spill national contingency plan (October 2013)** directed by the Solomon Islands maritime Safety Administration is a complete document which integrates guidelines to manage marine oil pollution.

The **overlapping roles** of the environmental Health Division (Ministry of Health) and Conservation Division (Ministry of Environment Climate Change Disaster Management & Meteorology) with the same responsibility for pollution control and regulation of illegal dumping of wastes to reduce risks to human health, is a weakness point. Competences exist but need to be managed in a focal point that will take the responsibility.

Solomon Islands have also ratified the Waigani **International hazardous waste convention**.



- 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 should be 800,000 L per year of potentially recoverable Oil in Solomon Islands.
- There is a huge need to ensure that all stakeholders can see things in a more transparent and accountable way.
- Increase awareness campaigns to educate the public, or even the government, about the health consequences of dumping waste oil and of other improper waste oil management practices. Cultural aspects need to be changed as the waste oil is mainly used by local customers. The governmental company has to be exemplar, and the main producer of waste oil (Power station) has to store and well manage their production before sending to a recycling business. Selling rough waste oil to local customers is not a viable solution.
- Exporting the waste oil out of the country is also an option, but in accordance with the existing shipping routes (PNG for example).

Because of the cost of the goods and especially fuel and oil products in Solomon, **Reconditioning waste oil** in the country would be a pragmatic option.



Page signatures

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