

TERMS OF REFERENCE

PROVISION OF SERVICES FOR THE FINAL DISPOSAL OF PCB CONTAINING WASTE FROM THE MALDIVES



1. Introduction

The Government of Maldives (GoM) has received funding from the Global Environment Facility (GEF) for the project “*Eliminating Persistent Organic Pollutants through the Sound Management of Chemicals*”. The Government intends to, with support of the United Nations Development Programme (UNDP) in Maldives, apply part of the proceeds towards disposal of PCB-containing waste from the Maldives through re-export for final disposal.

The main objective of this service is (1) preparation of relevant ESMP documentation and training of relevant staff, (2) packing of approximately 24 tonnes of PCB-containing wastes, (3) obtaining required permits for transboundary movement, (4) transportation and (5) re-exporting for final disposal of approximately 24 tonnes of PCB-containing equipment.

2. Project Background

The Republic of Maldives is a Small Island Developing State (SIDS) which faces sustainable development challenges such as small but growing populations, land scarcity, vulnerability to climate change impacts (and other natural disasters) as well as economic development problems due to high transportation costs, lack of adequate infrastructure and lack of industrial development incentives. The Maldives is an archipelago comprised of 1,190 coral islands in 26 atolls over an area of about 750 km on a North-south axis and 120 km on an east-west axis. The land area of the Maldives accounts for about 1% of the Country’s territory. The Maldives islands are low lying land areas with an average height above sea level of 1.8 metres (m).

The country’s population of approximately 400,000 people dispersed across 187 inhabited islands. An additional more than 166 islands have tourist resorts. Waste generation is estimated to be 324,000 tonnes annually with consisting of approximately 0.5 to 11% of hazardous chemicals and of approximately 3-9% of plastics depending on location and size of the island. The fact that (chemical) waste is being generated on 278 island presents the country with an incredible challenge, as land is very scarce, low lying and transportation of chemicals and waste from island to island is costly and complicated. The inadequate storage options and current disposal practices of hazardous chemicals and waste, especially open burning of waste at dumpsites or disposal near the coastline, make it very likely that these toxic chemicals and waste will end up in the soil, groundwater aquifers and oceans. In the Republic of Maldives, the tourism sector accounts for more than 28% percent of the Gross Domestic Product (GDP) of the economy. Tourism in the Maldives relies on the nation’s pristine environment, not one with polluted waters, degraded coral reefs, waste dumps which are openly burning or waste floating in the ocean. Therefore, the Sound Management of Chemicals and waste, especially the environmentally sound management of Persistent Organic Pollutants (hereinafter referred to as POPs) and hazardous waste, is an important element to achieving environmental sustainability. Further, given the economic importance of tourism to the Maldives, implementing

environmentally sound chemical and waste management systems would help decouple growth in the tourism sector from environmental degradation.

To tackle these environmental and human health risks, the Government through the Ministry of Environment, Climate Change and Technology (MECCT) has already taken some steps to try to manage its growing chemicals and waste management problems. Maldives has ratified the Stockholm Convention (SC) on 17 October 2006 and in accordance with Article 7 of the Convention has submitted its National Implementation Plan (NIP) to the Stockholm Convention Secretariat (SCS) on 18 July 2017, which covers the initial POPs as well as the new POPs added at the 4th and the 5th Conference of the Parties.

According to this NIP the highest-ranking national Priorities are the following:

- a) First Priority: The Implementation of measures to strengthen the institutional and regulatory framework; which includes the (i) developing legislation for chemicals management; (ii) strengthening institutional capacity; (iii) improving data collection and management systems and (iv) conducting research on the effects of POPs;
- b) Second Priority: Developing an action plan to eliminate Polychlorinated Bi-Phenyls(PCB) -containing equipment and its wastes by 2025, which includes the (i) identification, labelling and mapping where PCBs and equipment potentially-containing PCBs are located in the country; (ii) putting in place labelling mechanism for all PCB-containing equipment; (iii) establishing adequate storage facilities for replaced equipment containing PCBs; (iv) formulating guidelines for disposal of equipment-containing PCBs; and (v) disposing safely of equipment containing PCBs.
- c) Reducing the incineration and open burning of wastes (including medical and hazardous waste), which is the source of 98.6% of U-POPs releases in the country- totalling 153.4 g-TEQ/year;
- d) Raising awareness through the development of education curricula and targeted awareness campaigns;
- e) Establishing a standard Chemical Management System, including chemical labelling in multiple languages.

In order to address the above-mentioned barriers the project will focus on addressing regulatory/policy barriers, technical and capacity and knowledge barriers so that the Maldives has a) a better foundation to establish a nationwide environmentally sound Management system to address POPs and highly hazardous chemicals, with b) the adequate coordination of key public, private and community stakeholders, regulatory departments, and centres of expertise, and c) the enhanced capacity of all involved, for the Environmentally Sound Management of Chemicals.

The project is implemented by United Nations Development Programme (UNDP) as GEF's Implementing Agency and MECCT as the national executing agency.

The project will also support implementation of the developmental targets and priorities of the Government set out in the Strategic Action Plan (SAP) for five-year period 2019-2023.

3. Objectives and Scope of work

As per NIP of the Maldives, potentially PCB-containing equipment i.e., transformers and switchgears are present in the country and their environmentally sound disposal will be completed with this GEF-funded project. Currently, there is no proper destruction/elimination option for POPs wastes within the country, therefore, potentially PCB-containing equipment will

be packed and labelled for re-exporting for their sound disposal. In this context, the transformers distributed in several spots of Fuvahmulah island have been collected, weighed, packaged and temporarily stored in a secure place to make them ready for re-export for environmentally sound disposal. A Site Assessment Report and sampling results are available in Annex 1 and 2 for understanding the conditions of the equipment and site conditions.

Within the aforementioned GEF POPs Project under “Output 2.1.2 Facilitate the environmentally sound management and disposal of approximately 24 tonnes of potentially PCB containing equipment and waste abroad”, the following activities will be conducted:

- Obtaining and preparing necessary environmental clearance documentation, and provide on the job training of relevant staff on packaging, transportation, and residual contamination clean-up for PCB wastes.
 - Packaging of PCB-containing wastes as per the Technical guidelines on the environmentally sound management of wastes consisting of, containing or contaminated with polychlorinated biphenyls, polychlorinated terphenyls, polychlorinated naphthalenes or polybrominated biphenyls including hexabromobiphenyl adopted by the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.
- Obtaining necessary permits for transboundary movement as per relevant international legal instruments
- Transportation of PCB-containing oil, equipment and waste oil to an internationally recognized disposal facility, and
- Re-exporting for final disposal in a qualified facility.

4. Duties and Responsibilities

Based on the above-described general scope of work for this assignment, under the direct supervision of UNDP in close coordination/communication with MECCT, the Contractor shall be responsible for carrying out the following tasks:

Task 1a: Mobilization on site and work initiation

This task includes the following specific activities, as a minimum:

- a) Setting up an inception meeting, where UNDP, MECCT and the Contractor are required to discuss and finalize the approach for the execution of the activities and work plan based on the provided version with proposal. (UNDP and MECCT will provide all available information regarding the assignment, so the Contractor can start their activities). The execution of activities must be in line with the applicable health, safety and environmental laws, regulations, standards and planning permissions including environmental impact assessments and other legal/statutory approvals. Ensure compliance to the necessary laws and procedures prior to execution of the work.
- b) Mobilize all necessary equipment and raw materials to the site required to commence the work

- c) Preparation of ESMP and disposal plan for PCBs-containing oil, equipment and waste oil developed, including cost-effective disposal options¹
- d) Preparation of a risk assessment matrix prior to the movement/transport of PCB containing-oil, equipment, and waste oil from the various islands to a centralized interim storage facility(ies)

Task 1b. Provide on the job training to the relevant staff at Ministry and local authorities on packaging, transportation and residual contamination clean-up for potentially PCB-contaminated wastes.

Task 2. Packaging of PCB-containing wastes as per the Technical guidelines on the environmentally sound management of wastes consisting of, containing or contaminated with polychlorinated biphenyls, polychlorinated terphenyls, polychlorinated naphthalenes or polybrominated biphenyls including hexabromobiphenyl adopted by the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.

This task should include the following specific activities, as a minimum:

- a) Arrange for, either directly or through a sub-contractor, the procurement of UN-approved packaging transportation of the potentially PCB-contaminated transformers and the associated wastes, labels, then personal protective equipment, safety equipment, cleaning materials, absorbents, disposables, associated packaging and stowing materials (pallets, drip trays, transit bins, wooden boards, slats, airbags) etc and their shipment to the Maldives; or procurement in the Maldives.
- b) Arrange for handling and lifting equipment (crane, forklift, scale, etc.).
- c) At least one month prior to the packaging operation, the Contractor shall submit to the Project Management Unit (PMU) at MECCT and UNDP the following information:
 - i. the intended date of the operations
 - ii. the contact person in charge of the operations
 - iii. number of employees to be involved for each operation
 - iv. the intended method for ensuring safety on site as well as during handling, transport and storage
 - v. estimated duration of operations
- d) Accomplish the decommissioning/dismantling and the packing of the potentially PCB-contaminated transformers into UN-approved packaging, including the associated potentially PCB-contaminated equipment, labelling and weighing of the packages using appropriate health and safety equipment, preparation of the sites for the packing and storage activities.
- e) Safe storage of the packaged material in interim hazardous waste storage area established in Addu City

¹ ESMP developed under this task is to be based on the ESIA and subsequent ESMP developed therein, incorporating any suggestions/changes recommended by UNDP.

- f) The equipment will be temporarily stored until the completion of the exporting procedure.

Where applicable, the Contractor may consider engaging local subcontractor(s) with proper license/permit to perform the specific activities in the interest of time and cost efficiency.

Task 3. Obtaining necessary permits for transboundary movement as per the relevant international legal instruments

This task should include the following specific activities, as a minimum:

- a) Obtain relevant permits for the transboundary transfer of hazardous (potentially PCB-containing) wastes;
- b) At least one month prior to the planned shipment of the packed PCB waste for transportation, the Contractor shall submit to the Project Management Unit (PMU) at MECCT the following information:
 - vi. the intended date of the operations
 - vii. the contact person in charge of the operations
 - viii. number of employees to be involved for each operation
 - ix. the intended method for ensuring safety on site as well as during handling, transport and storage
 - x. estimated duration of operations

Task 4. Transportation of potentially PCB-containing oil, equipment and waste oil to an internationally recognized disposal facility

This task should include the following specific activities, as a minimum:

- a) Prepare all transport documents needed for air/sea transportation including:
 - Movement document for trans-boundary movements/shipments of waste,
 - Customs clearance,
 - Air/Sea Waybill,
 - Invoice,
 - Hazardous waste declaration,
 - Packing list,
 - Certificate of origin
- b) Arrange for, the completion of all Maldivian and international regulations including customs, EC Directive No. 1013/2006 of the European Council concerning the shipments of waste, ADR/RID/IMDG and IATA regulations, the Basel and Stockholm Convention documentations for transboundary movement of the potentially PCB contaminated wastes from the Maldives to the destination country including all handling, air/sea transportation, and disposal according to BAT/BEP standards and including any provisions for insurances and financial guarantees and including preparation all transport documents, which will be required by the export and import countries.
- c) The Contractor shall ensure that:
 - The selected carrier is financially sound and known for providing swift, reliable and secure services. Payment issues between the Contractor and the Carrier shall not cause any delay in transportation.
 - There are no restrictions to either the nominated carrier or intended aircraft type to perform shipment of hazardous waste as requested.

- Wastes are received and prepared for loading in due time at departure point
 - the carrier has obtained all necessary landing permissions and overflight rights to carry out the operation.
 - The hazardous waste can be received at the destination with due consideration to airport/seaport access, capacity, handling capacity and equipment at the destination airport/seaport, and the general situation in receiving country.
- d) Provide a sufficient number of cargo vehicles of sufficient capacity ratings for international carriage of shipping containers, packing materials, tools and equipment to avoid interruptions in the work performance due to the lack of vehicles and other media.
 - e) Ensure the necessary cargo insurance during transportation, which shall include environmental liabilities for the transport of PCBs and any emergency situations resulting from inappropriate handling of cargo, inclusive of force majeure.
 - f) At least one month prior to the air/sea transportation operation, contact the PMU in order to confirm the transportation date, transportation company, estimated length of operation, and shall provide information about the personnel in charge of the transportation operation (name, contact details, etc.).
 - g) Upon transportation of the potentially PCB-containing equipment to the disposal site, submit to PMU a verification of the withdrawal of the PCB waste, carried out in compliance with legislative requirements and pursuant to conditions stated in respective permits.
 - h) Upon delivery of the potentially PCB-containing wastes at the disposal site and safe storage until disposal in an environmentally sound manner, submit to PMU a verification from the disposal site on acceptance of the cargo/shipment of potentially PCB-containing wastes, carried out in compliance with legislative requirements and pursuant to conditions stated in respective permits (Basel Notification is also acceptable).

Task 5. Re-exporting for final disposal in a qualified facility

This task should include the following specific activities, as a minimum:

- a) Apply an accepted final disposal method (including technology, emission and residue control equipment, compliance with emission/releases standards in a country of disposal, annual capacity for general hazardous waste, and separately for chlorinated PCBs/wastes), full description of intermediate PCB capacitor/switchgear carcass recycling steps involved, if opted for., and selection of a well-established and licensed partners with long-history of operations in this area, description of the quality systems (and quality control) applied during disposal operations. The selected disposal option should be one the applicable disposal technologies listed under Technical Guidance on ESM of POPs and GEF STAP Document entitled: [Selection of Persistent Organic Pollutant Disposal Technology for the GEF](#).
- b) Receive and destroy, through an internationally recognized and licensed PCB waste disposal technology, an indicated amount of PCB wastes which is expected to be 24 tonnes.
- c) Issued to the owners of the PCB, the Certificate of disposal confirming disposal of the PCB in compliance with internationally recognized and mandated (for instance, EU serving as a benchmark) emissions standards including official confirmation and stamps of the appropriate Environmental entity of the receiving country and pursuant to the requirements of the Council regulation (EEC) No. 259/93 or other similar legislation if equally stringent.

- d) The PCB waste will be destroyed by the technology provided by the supplier, to a level that destroys 99.99 % (DE) and 99.9999 % (DRE) of the original PCB content of processed waste. The transformer carcasses should be either destroyed or decontaminated and disposed of in an environmentally safe manner. In case of treatment of the transformer/switchgear carcasses, the PCB concentration of the decontaminated metal parts should be $\leq 10\mu\text{g}/100\text{cm}^2$ and for the porous materials <50 ppm.
- e) Emissions must be within the limits set by international bodies for destruction of POPs chemicals (such as the Stockholm Convention), or the country hosting the destruction facility, whichever is more stringent. Such details of limits shall be provided in the proposal. Relevant stakeholders, statutory authorities and other third parties should be consulted during the execution of above tasks.

UNDP and MECCT together with the PMU will be responsible for environmentally sound execution of waste-related works through conducting site supervision during the execution phase. Additionally, PMU shall complete EIA-related approvals prior to initiation of the works by the Contractor.

Main Deliverables

It is expected to complete the operation in 10 months with the below timeline starting from the contract signature.

| Activities | Deliverables | Submission Date | Approval Date | Target Delivery Time |
|--|---|---|-----------------------|-----------------------|
| Task 1a: Mobilization on site and work initiation | <ul style="list-style-type: none"> - An updated Project Schedule and timeline for execution of the tasks outlined in the TOR. The schedule narrative shall define the primary assumptions made, skilled labour requirements for critical works and important milestones. - Inception meeting minutes - Inception report containing relevant applicable laws and regulations - Site record on completion of mobilization | 4 th Week from the signing of contract | 6 th Week | 7 th Week |
| Task 1b. Preparation of necessary ESMP documentation and training of relevant staff | <ul style="list-style-type: none"> - ESMP and Disposal Plan - Risk Assessment report | 10 th week | 12 th week | 13 th week |

| | | | | |
|--|---|-----------------------|---|-----------------------|
| | - Completion of training to WAMCO and FENAKA staff | | | |
| Task 2. Packing of PCB-containing wastes with UN-approved packaging materials | <ul style="list-style-type: none"> - Weekly activity reports by the contractor - Completion of packaging by 18th week - | 18 th Week | 20 th Week | 21 st Week |
| | | | Site supervision report by PMU on completion of packaging | |
| Task 3. Obtaining necessary permits for transboundary movement as per relevant international legal instruments | - Transboundary movement documents and approved permits from importing country | 24 th Week | 26 th Week | 27 th Week |
| Task 4. Transportation of potentially PCB containing oil, equipment and waste oil to internationally recognized disposal facility | <ul style="list-style-type: none"> - Movement documents - Customs clearance, - Air/Sea Waybill, - Invoice, - Hazardous waste declaration, - Packing list, - Certificate of origin (form A) - Waste Acceptance documents by final destination - Weekly activity reports by the contractor | 32 nd Week | 34 th Week | 35 th Week |
| Task 5. Re-exporting for final disposal in a qualified facility | <ul style="list-style-type: none"> - The Certificate of disposal - Emission reports for the destruction period | 40 th Week | 41 st Week | 42 nd Week |

5. Governance and Accountability

The contract shall be managed by UNDP in the Maldives whereas the beneficiary shall be MECCT. No facilities shall be provided by either UNDP or MECCT. The Contractor shall ensure that staff assigned for this project are adequately supported and equipped and shall ensure that the service is in accordance with the provisions of the national and international legislations. It shall also transfer funds as necessary to support its activities under this contract and ensure that its employees are paid regularly and in a timely manner.

All expenditures related to travel to the interim hazardous waste storage area in Addu City shall be borne by the Contractor.

6. Professional Qualifications of the Successful Contractor

Bidders shall have experience in the following areas:

- At least 3 (three) years of experience in PCB management issues related with international agencies (UN or similar) projects and governments (with indication of 3 successfully implemented projects with information - name of the project, export country, amount of waste, kind of waste and etc.)
- At least 3 years of experience in handling PCB wastes, especially packing/repacking of PCB transformers/switchgears (with indication about the amount of waste, type and location).
- Experience in hazardous waste export (experience in SIDS is an added advantage). At least three satisfactory performance statements by previous Clients should be provided.
- Experience with transboundary transportation of hazardous waste (especially PCB wastes) with at least 3 successfully implemented Project within last 3 years. (Please note: if a subcontractor, as indicated in the proposal, will provide the transportation, the experience of the subcontractor will be evaluated.
- Experience in disposal of PCB containing equipment and waste for last 3 years (Please note: if a subcontractor, as indicated in the proposal, will provide the disposal, the experience of the subcontractor will be evaluated.

Demonstration of audited financial capacity (i.e., income statement and balance sheets) for the past 3 years to demonstrate: (a) a minimum average annual turnover of US\$500,000 and (b) capacity to have a cash flow amount equivalent to US\$40,000.

7. Payment Terms

Payment for the work in this assignment shall be disbursed in the following manner:

- 20% of the contract amount after completion of mobilization phase
- 20% of the contract amount after completion of packaging
- 60% of the contract amount after completion of disposal

8. Key Experts

The scope of work for this assignment requires a team of skilled professionals with previous experience in similar projects.

It is expected that the contractor shall provide a team of key experts with experience in similar activities and work under similar conditions and constraints, with specific professional certifications and authorizations for the services provided in the project, required by the legal framework.

8.1 First Key Expert: Team Leader

The roles and responsibilities of the Team Leader are as follows:

- Representing the project team against UNDP, Ministry of Environment, Climate Change and Technology and PMU, and managing the project staff
- Monitoring the project schedule and being responsible for the quality of the outputs
- Coordinating the planning, implementation of the studies and ensuring that the work is conducted to the highest professional standards.

Qualifications and Skills

- Minimum University in Project Management, Engineering, or social sciences and other relevant fields
- Good command of English

General Professional Experience

- At least 7 years of general working experience in waste management or in a related field at international level.

Specific Professional Experience

- At least 5 years of relevant work experience in hazardous waste management
- Experience in packaging hazardous waste preferably PCB wastes
- Experience in preparation of waste transportation documents preferable sea/air transport
- Proven experience in team or project management in at least 1 project as a project manager/team leader or equivalent positions.
- Experience in the Asia and Pacific region is an asset

8.2 Second Key Expert: Site Coordinator

Qualifications and Skills

- Minimum university ° in engineering, or social sciences and other relevant fields
- Good command of English

General Professional Experience

- At least 6 years of general working experience in waste management or in a related field at international/national level.

Specific Professional Experience

- At least 3 years of relevant work experience in hazardous waste management
- Experience in packaging hazardous waste preferably PCB wastes
- Experience in the Asia and Pacific region is a strong asset

Additional team members may be included by the offeror which would strengthen their overall proposal.

9. Required Documents for Bid Submission

- Annex 2: Quotation Submission Form duly completed and signed
- Annex 3: Technical and Financial Offer duly completed and signed and in accordance with the Schedule of Requirements in Annex 1
- Company Profile.

- Registration certificate; including articles of incorporation, or equivalent document with the most updated information if bidder is not a corporation.
- List and value of projects performed for the last 3 years plus client's contact details who may be contacted for further information on those contracts;
- List and value of ongoing Projects with UNDP and other national/multi-national organization with contact details of clients and current completion ratio of each ongoing project;
- Statement of satisfactory Performance (Certificates) from the top 03 clients in terms of Contract value in similar field;
- Completed and signed CVs for the proposed key Personnel;
- Power of Attorney. In case proposal is signed by another person who is not indicated in this power of attorney, an official letter of appointment shall be submitted along with power of attorney.
- Environmental Permits for waste treatment/disposal
- Audited financial capacity for the past three years to demonstrate annual turnover of \$500,000
- Capacity to have a cash flow amount equivalent to \$40,000
- Proposed disposal technologies for the PCB equipment in line with the Technical Guidance on ESM of POPs and GEF STAP Document.

Reviewed by:

Name: Ahmed Shifaz

Designation: Asst. Resident Representative (RCC)

Date:

Approved by:

Name: Enrico Gaveglia

Designation: Resident Representative

Date:

Annex 1. Evaluation Criteria

- At least three years of experience in PCB management issues related with international agencies (UN or similar) projects and governments (with indication of five successfully implemented projects with information - name of the project, export country, amount of waste, kind of waste and etc.)
- At least three years of experience in handling PCB wastes, especially packing/repacking of PCB transformers/switchgears (with indication about the amount of waste, type and location).
- Experience in hazardous waste export (experience in SIDS is an added advantage). At least three satisfactory performance statements by previous Clients should be provided.
- Experience with transboundary transportation of hazardous waste (especially PCB wastes) with at least two successfully implemented project within last three years. (N.B. if a subcontractor, as indicated in the proposal, will provide the transportation, the experience of the subcontractor will be evaluated.
- Experience in disposal of PCB containing equipment and waste for last three years (Please note: if a subcontractor, as indicated in the proposal, will provide the disposal, the experience of the subcontractor will be evaluated.
- Demonstration of audited financial capacity (i.e., income statement and balance sheets) for the past three years to demonstrate: (a) a minimum average annual turnover of US\$500,000 and (b) capacity to have a cash flow amount equivalent to US\$40,000.
- Disposal methodology proposed is in line with the methods/technologies approved by the Scientific and Technological Advisory Panel of the GEF.

The contractor must information of two key personnel with the following qualifications:

Key Expert 1: Team Leader

The roles and responsibilities of the Team Leader are as follows:

- Representing the project team against UNDP, Ministry of Environment, Climate Change and Technology and PMU, and managing the project staff
- Monitoring the project schedule and being responsible for the quality of the outputs
- Coordinating the planning, implementation of the studies and ensuring that the work is conducted to the highest professional standards.

Qualifications and Skills

- Minimum University degree in Project Management, Engineering, or social sciences and other relevant fields
- Good command of English
- General Professional Experience
- At least seven years of general working experience in waste management or in a related field at international level.

Specific Professional Experience

- At least five years of relevant work experience in hazardous waste management
- Experience in packaging hazardous waste preferably PCB wastes

- Experience in preparation of waste transportation documents preferable sea/air transport
- Proven experience in team or project management in at least 1 project as a project manager/team leader or equivalent position.
- Experience in the Asia and Pacific region is an asset

Key Expert 2: Site Coordinator

Qualifications and Skills

- Minimum university degree in engineering, or social sciences and other relevant fields
- Good command of English
- General Professional Experience
- At least six years of general working experience in waste management or in a related field at international/national level.

Specific Professional Experience

- At least three years of relevant work experience in hazardous waste management
- Experience in packaging hazardous waste preferably PCB wastes
- Experience in the Asia and Pacific region is a strong asset

Annex 2. PCB-containing Equipment List

The results from the screening process are summarized below:

| ID | Oil sample/ Type of equipment | | Soil sample |
|--------|----------------------------------|-------------|-------------|
| | Transformer | Switch gear | |
| FVM 01 | negative | | |
| FVM 02 | negative | | positive |
| FVM 03 | unclear | | unclear |
| FVM 04 | negative | | positive |
| FVM 05 | | not sampled | |
| FVM 06 | negative | | positive |
| FVM 07 | | not sampled | |
| FVM 08 | negative | | |
| FVM 09 | | not sampled | |
| FVM 10 | negative | | negative |
| FVM 11 | | not sampled | |
| FVM 12 | positive | | negative |
| FVM 13 | | not sampled | unclear |
| FVM 14 | positive | | negative |
| FVM 15 | | not sampled | negative |
| FVM 16 | | not sampled | |
| FVM 17 | positive | | positive |
| FVM 18 | | not sampled | |
| FVM 19 | negative | | |
| FVM 20 | unclear | | |
| FVM 21 | | not sampled | |
| FVM 22 | negative | | |

Annex 2. Inventory and Data Sheets

FVM 01



Figure 1: FVM 01, Transformer



Figure 2: FVM 01, Oil test results

| | |
|---|------------------------------|
| Description | Fuvahmulah 1 |
| Type of equipment | Transformer |
| Address | Fenaka head office (HV room) |
| GPS coordinates | 0°17'47" S, 73°25'24"E |
| Manufacturer | Foster |
| Serial Number | ITB 446 |
| Current Range (KVA) | 315 |
| Year of Manufacture | 1961 |
| Weight (kg) oil reported on MFCG plate | 1350lb |
| Volume (litres) oil reported of MFCG plate | 270 litres |
| Weight (kg) oil calculated if not on MFCG plate | N/A |
| weight (kg) housing | Total weight: 1.338 tonnes |
| Appearance | |

| | |
|--|--------------------|
| Visible leaking | Yes |
| Visible leak in soil | Yes |
| name of oil | |
| range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | Yes |
| Method of Analysis | US EPA method 9079 |
| Date of Analysis | 4/29/2018 |
| Information Source | |
| operational status | Operational |
| filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | FVM 1 |
| Name of the PCB owner | Fenaka |
| Specification number | IS : 2026 |

FVM 02



Figure 3: FVM 02. Transformer



Figure 4: FVM 02 oil test results

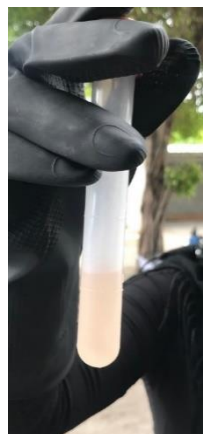


Figure 5: FVM 02 Soil test result

| | |
|--|------------------------------|
| Description | Fuvahmulah 2 |
| Type of equipment | Transformer |
| Address | Fenaka head office (HV room) |
| GPS coordinates | 0°17'47" S, 73°25'24"E |
| Manufacturer | Foster |
| Serial Number | 2TB 446 |
| Current Range (KVA) | |
| Year of Manufacture | 1961 |
| Weight (Kg)oil reported on MFCG plate | |
| Volume (litres) oil reported of MFCG plate | |
| Weight (Kg)oil calculated if not on MFCG plate | |
| Weight (kg) housing | |
| Appearance | |
| Visible leaking | Yes |
| Visible leak in soil | Yes |
| Name of oil | |
| Range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | Yes |
| Method of Analysis | US EPA method 9079 |

| | |
|--|-------------|
| Date of Analysis | 4/29/2018 |
| Information Source | |
| Operational status | Operational |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | FVM 2 |
| Name of the PCB owner | Fenaka |
| Specification number | |

FVM 03

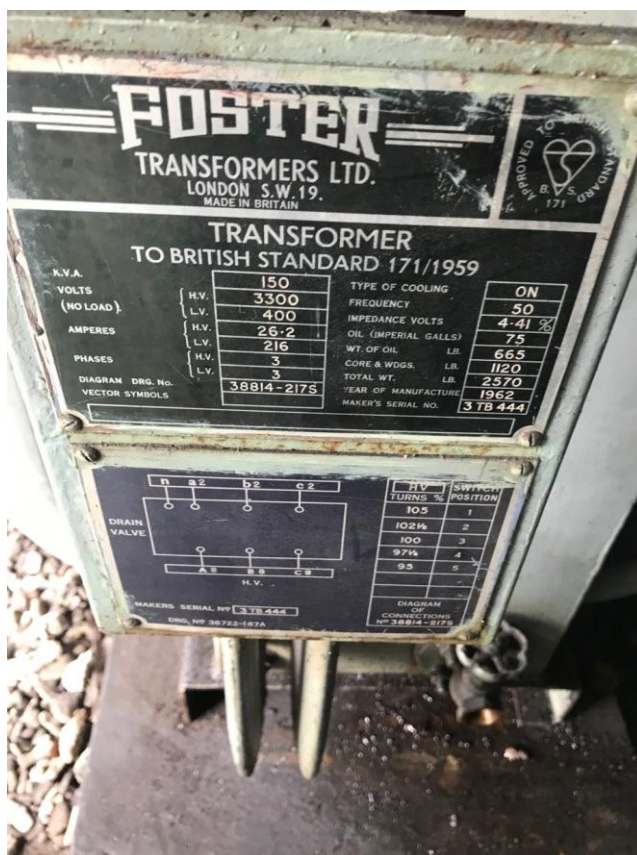


Figure 6: FVM 03 Transformer



Figure 7: FVM 03 Oil test results



Figure 8: FVM 03 Oil test results



Figure 9: FVM 03 soil test result

| | |
|--|------------------------------|
| Description | Fuvahmulah 3 |
| Type of equipment | Transformer |
| Address | Fenaka head office (HV room) |
| GPS coordinates | 0°17'47" S, 73°25'24"E |
| Manufacturer | Foster |
| Serial Number | 3TB444 |
| Current Range (KVA) | |
| Year of Manufacture | 1962 |
| Weight (Kg)oil reported on MFCG plate | 665 LB |
| Volume (litres) oil reported of MFCG plate | |
| weight (Kg)oil calculated if not on MFCG plate | |
| Weight (kg) housing | |
| Appearance | |
| Visible leaking | Yes |
| Visible leak in soil | Yes |
| Name of oil | |
| Range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | Yes |

| | |
|--|-------------------------------|
| Method of Analysis | US EPA method 9079 |
| Date of Analysis | 4/29/2018 |
| Information Source | Inventory |
| operational status | Not operational |
| filled (yes/no) | |
| date when became waste (take out of use) | |
| next maintenance service date | |
| equipment identification number | FVM 3 |
| Name of the PCB owner | Fenaka |
| specification number | |
| Remarks: | 8 years since not in use |
| Soil: | Uncertain results |
| | Oil and water didn't separate |
| | Colour pinkish |
| | Refer to the photo |
| | Repeated 3 times |
| | The 3rd time result |

FVM 04

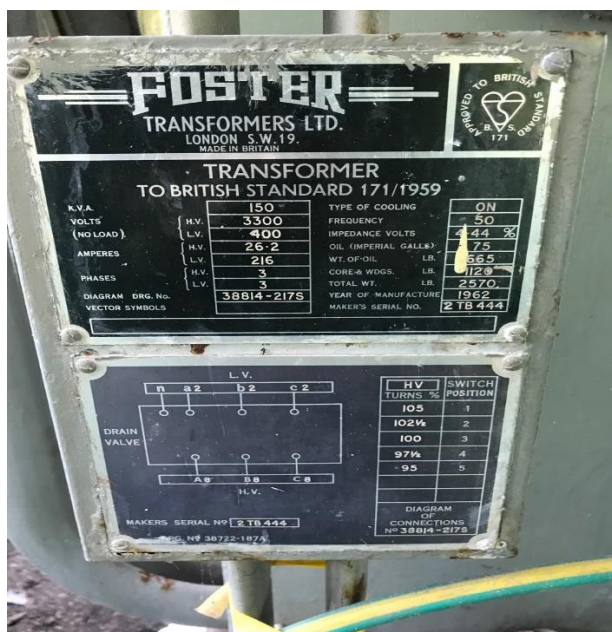


Figure 10: FVM 04 Transformer



Figure 11: FVM 04 oil test results



Figure 12: FVM 04 soil test results

| | |
|--|--------------------|
| Description | Fuvahmulah 4 |
| Type of equipment | Transformer |
| Address | Substation no.2 |
| GPS coordinates | 0°8'4"S, 73°26'2"E |
| Manufacturer | |
| Serial Number | 2TB444 |
| Current Range (KVA) | |
| Year of Manufacture | |
| Weight (Kg)oil reported on MFCG plate | 663 LB |
| Volume (litres) oil reported of MFCG plate | |
| Weight (Kg)oil calculated if not on MFCG plate | |
| Weight (kg) housing | 2570 LB |
| Appearance | |
| Visible leaking | Yes |
| Visible leak in soil | Yes |
| Name of oil | |
| Range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | Yes |
| Method of Analysis | US EPA method 9079 |
| Date of Analysis | 4/29/2018 |

| Information Source | Inventory |
|--|-----------------|
| Operational status | Not Operational |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | FVM 4 |
| Name of the PCB owner | Fenaka |
| Specification number | |

FVM 05



Figure 13:FVM 05 Switchgear

| | |
|--|---|
| Description | Fuvahmulah 5 |
| Type of equipment | Switch Gear |
| Address | Substation No.2 |
| GPS coordinates | 0 ° `8'4"S, 73 °26'2"E |
| Manufacturer | ERSTEIN HEAP AND CO LTD |
| Serial Number | |
| Current Range (KVA) | |
| Year of Manufacture | 1987 Above, could not find date |
| Weight (Kg)oil reported on MFCG plate | |
| Volume (litres) oil reported of MFCG plate | |
| Weight (Kg)oil calculated if not on MFCG plate | |
| Weight (kg) housing | |
| Appearance | |
| Visible leaking | Yes |
| Visible leak in soil | Yes |
| Name of oil | |
| Range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | No |
| Method of Analysis | |
| Date of Analysis | 4/29/2018 |
| Information Source | Maintenance |
| Operational status | In Operation |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | FVM 5 |
| Name of the PCB owner | Fenaka |
| Specification number | |
| Remarks: | Couldn't test because it was in operation |

FVM 06

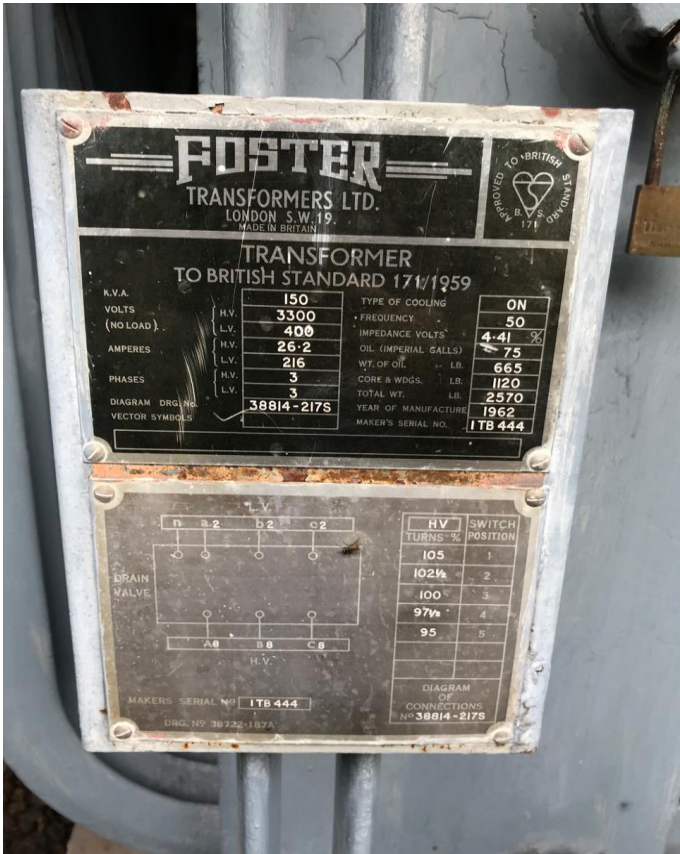


Figure 14:FVM 06 Transformer



Figure 15: FVM 06 oil test results



Figure 16: FVM 06 soil test results

| | |
|-------------------|--------------|
| Description | Fuvahmulah 6 |
| Type of equipment | Transformer |

| | |
|---|-----------------------|
| Address | Substation no.5 |
| GPS coordinates | 0°18'40"S, 73°26'13"E |
| Manufacturer | Foster |
| Serial Number | 1TB444 |
| Current Range (KVA) | 150 |
| Year of Manufacture | 1962 |
| Weight (Kg) oil reported on MFCG plate | 665 LB |
| Volume (litres) oil reported of MFCG plate | |
| Weight (Kg) oil calculated if not on MFCG plate | |
| Weight (kg) housing | 2570 |
| Appearance | |
| Visible leaking | Yes |
| Visible leak in soil | Yes |
| Name of oil | |
| Range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | Yes |
| Method of Analysis | US EPA method 9079 |
| Date of Analysis | 4/29/2018 |
| Information Source | Inventory |
| Operational status | Operational |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | FVM 6 |
| Name of the PCB owner | Fenaka |
| Specification number | |

FVM 07



Figure 17: FVM 07 Switchgear

| | |
|-------------------|--------------|
| Description | Fuvahmulah 7 |
| Type of equipment | Switch gear |

| | |
|--|---|
| Address | Substation no.5 |
| GPS coordinates | 0 ° 18'40"S, 73 °26'13"E |
| Manufacturer | Reyrolle, England |
| Serial Number | 20JSS 210 |
| Current Range (KVA) | 11000 V- COULDN'T FIND KVA |
| Year of Manufacture | Year of Supply 1658 |
| Weight (Kg)oil reported on MFCG plate | |
| Volume (litres) oil reported of MFCG plate | |
| Weight (Kg)oil calculated if not on MFCG plate | |
| Weight (kg) housing | |
| Appearance | |
| Visible leaking | Yes |
| Visible leak in soil | Yes |
| Name of oil | |
| Range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | No |
| Method of Analysis | |
| Date of Analysis | 4/29/2018 |
| Information Source | Maintenance |
| Operational status | Operational |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | FVM 7 |
| Name of the PCB owner | Fenaka |
| Specification number | |
| Remarks: | Year of Manufacture not there |
| | Couldn't test because it was in operation |

FVM 08



Figure 18: FVM 08 Transformer



Figure 19: FVM 08 oil test results

| | |
|--|-------------------------|
| Description | Fuvahmulah 8 |
| Type of equipment | Transformer |
| Address | Substance no.4 |
| GPS coordinates | 0 °18'12"S, 73 °25'41"E |
| Manufacturer | HACKBRIDGE |
| Serial Number | |
| Current Range (KVA) | |
| Year of Manufacture | |
| Weight (Kg)oil reported on MFCG plate | |
| Volume (litres) oil reported of MFCG plate | |
| Weight (Kg)oil calculated if not on MFCG plate | |
| Weight (kg) housing | |

| | |
|--|---|
| Appearance | |
| Visible leaking | No |
| Visible leak in soil | No |
| Name of oil | |
| Range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | Yes |
| Method of Analysis | US EPA method 9079 |
| Date of Analysis | 4/29/2018 |
| Information Source | |
| operational status | Operational |
| filled (yes/no) | |
| date when became waste (take out of use) | |
| next maintenance service date | |
| equipment identification number | FVM 8 |
| Name of the PCB owner | Fenaka |
| Specification number | |
| Remarks: | No information available on the transformer |
| | Assumption: Engineer says it's from before 1989 |
| | Assumption: Brought from Addu |
| | No soil test due to no oil leakage |

FVM 09

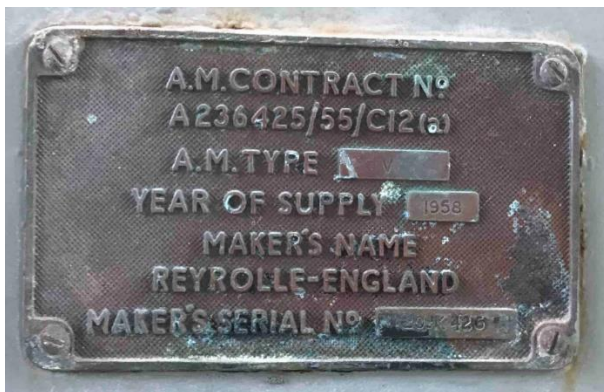


Figure 20: FVM 09 Switchgear

| | |
|--|---|
| Description | Fuvahmulah 9 |
| Type of equipment | Switch Gear |
| Address | Substation no.4 |
| GPS coordinates | 0 °18'12"S, 73 °25'41"E |
| Manufacturer | Reyrolle, England |
| Serial Number | 20 JK 426 |
| Current Range (KVA) | |
| Year of Manufacture | Year of Supply 1958 |
| Weight (Kg)oil reported on MFCG plate | |
| Volume (litres) oil reported of MFCG plate | |
| Weight (Kg)oil calculated if not on MFCG plate | |
| Weight (Kg) housing | |
| Appearance | |
| Visible leaking | Yes |
| Visible leak in soil | Yes |
| Name of oil | |
| Range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | No |
| Method of Analysis | |
| Date of Analysis | 4/29/2018 |
| Information Source | |
| Operational status | Operational |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | FVM 9 |
| Name of the PCB owner | Fenaka |
| Specification number | |
| Remarks: | Couldn't test because it was in operation |

FVM 10



Figure 21: FVM 10 Transformer



Figure 21: FVM 10 oil test results



Figure 22: FVM 10 soil test results

| | |
|-------------------|-----------------|
| Description | Fuvahmulah 10 |
| Type of equipment | Transformer |
| Address | Substation no.2 |

| | |
|--|--|
| GPS coordinates | 0 °17'40"S, 73 °25'44"E |
| Manufacturer | JOHNSON AND PHILIP LTD |
| Serial Number | 43483 |
| Current Range (KVA) | |
| Year of Manufacture | |
| Weight (Kg)oil reported on MFCG plate | 1030 LB |
| Volume (litres) oil reported of MFCG plate | |
| Weight (Kg)oil calculated if not on MFCG plate | |
| Weight (Kg) housing | |
| Appearance | |
| Visible leaking | No |
| Visible leak in soil | No |
| Name of oil | |
| Range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | Yes |
| Method of Analysis | US EPA method 9079 |
| Date of Analysis | 4/29/2018 |
| Information Source | |
| Operational status | |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | FVM 10 |
| Name of the PCB owner | Fenaka |
| Specification number | 1953 |
| Remarks: | Assumption: manufactured Before 1989 |
| | Leaks in the past |
| | Couldn't test cause a pile of soil was put in the area |

FVM 11



Figure 23: FVM 11 Switchgear

| | |
|--|------------------------|
| Description | Fuvahmulah 11 |
| Type of equipment | Switch Gear |
| Address | |
| GPS coordinates | Substation No 2 |
| Manufacturer | Erskine Heap & Co. LTD |
| Serial Number | |
| Current Range (KVA) | 321377 |
| Year of Manufacture | 200 |
| Weight (Kg)oil reported on MFCG plate | |
| Volume (litres) oil reported of MFCG plate | |
| Weight (Kg)oil calculated if not on MFCG plate | |
| Weight (Kg) housing | |
| Appearance | |
| Visible leaking | |
| Visible leak in soil | |
| Name of oil | |

| | |
|--|-------------------------------|
| Range of liquid pcb content (mg/kg) | |
| Analysis performed (yes/no) | |
| Method of Analysis | No - Cause it was operating |
| Date of Analysis | US EPA method 9079 |
| Information Source | 4/30/2018 |
| Operational status | |
| Filled (yes/no) | Operational |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | |
| Name of the PCB owner | FVM 11 |
| Specification number | Fenaka |
| Remarks: | Not tested cause in operation |

FVM 12

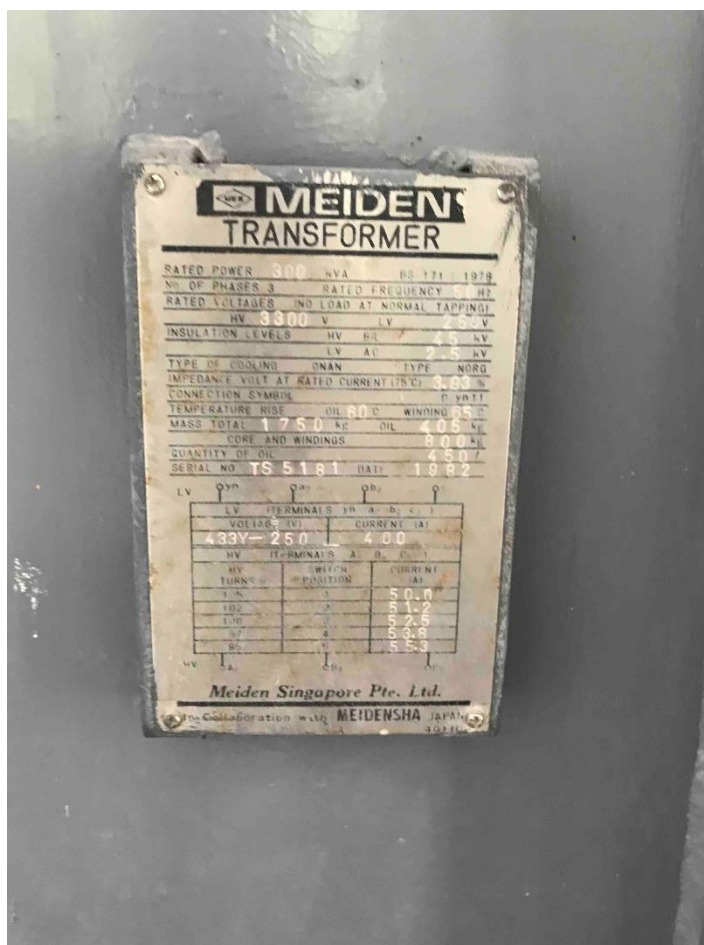


Figure 24:FVM 12 Transformer



Figure 25: Fvm 12 oil test 1 results



Figure 26: FVM 12 Oil test 2 results



Figure 27: FVM 12 Soil test results

| | |
|--|------------------------|
| Description | Fuvahmulah 12 |
| Type of equipment | Transformer |
| Address | SUBSTATION NO 3 |
| GPS coordinates | 0 °17'23"S, 73 °25'3"E |
| Manufacturer | MEIDEN |
| Serial Number | TS 5181 |
| Current Range (KVA) | |
| Year of Manufacture | 1982 |
| Weight (Kg)oil reported on MFCG plate | 405 KG |
| Volume (litres) oil reported of MFCG plate | |
| weight (Kg)oil calculated if not on MFCG plate | |
| Weight (kg) housing | 1750 KG |
| Appearance | |
| Visible leaking | No |
| Visible leak in soil | No |
| Name of oil | |
| Range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | Yes |
| Method of Analysis | US EPA method 9079 |
| Date of Analysis | 4/30/2018 |
| Information Source | |

| | |
|--|---|
| Operational status | Operational |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | |
| Name of the PCB owner | FVM 12 |
| Specification number | Fenaka |
| Remarks: | Oil test repeated- as positive results |
| | One of the first transformers in Fuvahmulah |
| | Test 2 positive |

FVM 13

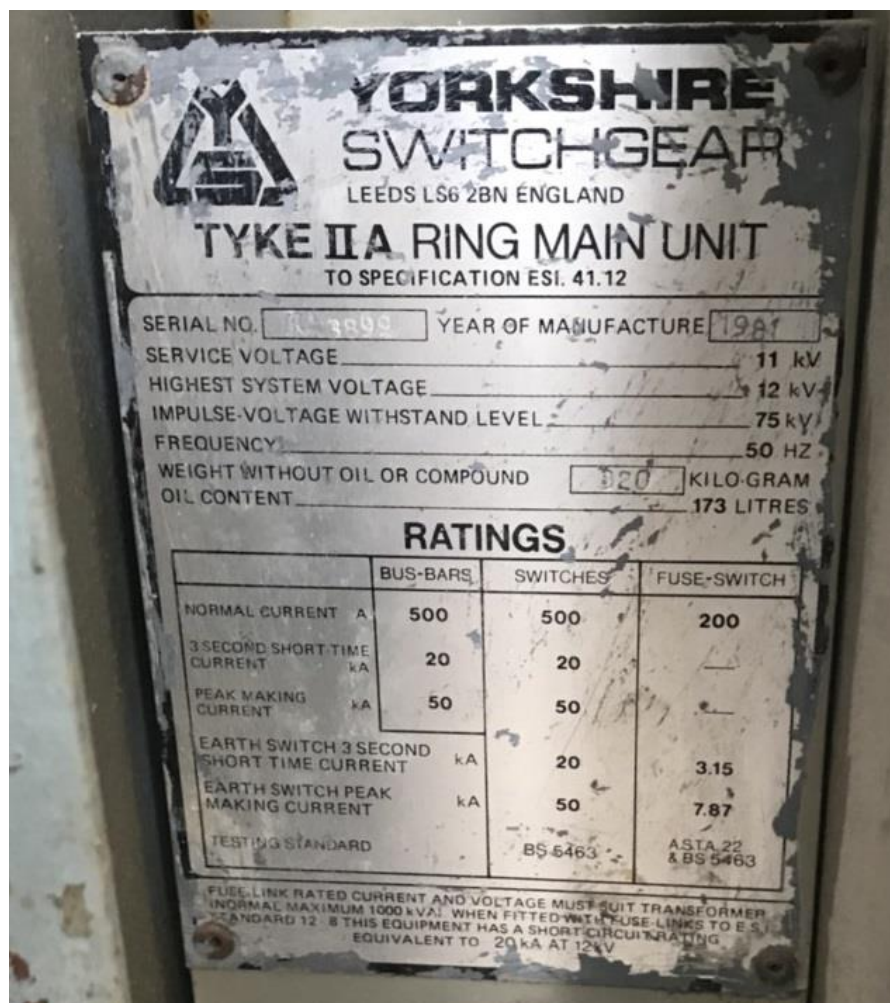


Figure 28: FVM 13 Switch gear

| | |
|--|---|
| Description | Fuvahmulah 13 |
| Type of equipment | Switch Gear |
| Address | Substation no.3 |
| GPS coordinates | 0 ° 17'23"S, 73 ° 25'3"E |
| Manufacturer | Yorkshire |
| Serial Number | RA 3899 |
| Current Range (KVA) | |
| Year of Manufacture | 1981 |
| Weight (Kg)oil reported on MFCG plate | 320 kg |
| Volume (litres) oil reported of MFCG plate | |
| Weight (Kg)oil calculated if not on MFCG plate | |
| weight (kg) housing | |
| Appearance | |
| Visible leaking | Yes |
| Visible leak in soil | Yes |
| Name of oil | |
| Range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | Only Soil test done. Could not take oil cause it was in operation |
| Method of Analysis | US EPA method 9079 |
| Date of Analysis | 4/30/2018 |
| Information Source | |
| Operational status | Operational |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | |
| Name of the PCB owner | FVM 13 |
| Specification number | Fenaka |

| | |
|----------|----------------------|
| Remarks: | Visible leak in soil |
| | Soil test done |

FVM 14



Figure 29: FVM 14 Transformer



Figure 31:FVM 14 oil test 1 results



Figure 32: FVM 14 Oil test 2 results



Figure 33: FVM 14 soil test results

| | |
|--|--|
| Description | Fuvahmulah 14 |
| Type of equipment | Transformer |
| Address | Substation no.6 |
| GPS coordinates | 0 ° 17'8" S, 73 ° 24'37"E |
| Manufacturer | Boliwin Transformers |
| Serial Number | 23824 |
| Current Range (KVA) | 100 |
| Year of Manufacture | Not there - assumed to be before 1989 |
| Weight (Kg)oil reported on MFCG plate | |
| Volume (litres) oil reported of MFCG plate | 235 |
| Weight (Kg)oil calculated if not on MFCG plate | |
| Weight (Kg) housing | 930 KG |
| Appearance | |
| Visible leaking | Yes |
| Visible leak in soil | Yes |
| Name of oil | AS - 1/67 - Type of oil |
| Range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | Yes |
| Method of Analysis | US EPA method 9079 |
| Date of Analysis | 4/30/2018 |
| Information Source | |
| Operational status | Operational |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | |
| Name of the PCB owner | FVM 14 |
| Specification number | Fenaka |
| Remarks: | Oil test repeated- as positive results |

| | |
|--|---|
| | One of the first transformers in Fuvahmulah |
| | Test1 and 2 positive |

FVM 15 and FVM 16



Figure 30: FVM 15 Switchgear



Figure 31: FVM 16 Switch gear



Figure 36: FVM 15 and 16 soil test 1 result



Figure 32: FVM 15 and 16 Soil test 2 result

| | |
|-------------------|---------------------------|
| Description | Fuvahmulah 15 |
| Type of equipment | Switch Gear |
| Address | Substation no.6 |
| GPS coordinates | 0 ° 17'8" S, 73 ° 24'37"E |
| Manufacturer | Reyrolle |

| | |
|--|---|
| Serial Number | 20JK 417 |
| Current Range (KVA) | |
| Year of Manufacture | Year of Supply (1958) |
| Weight (Kg)oil reported on MFCG plate | |
| Volume (litres) oil reported of MFCG plate | |
| Weight (Kg)oil calculated if not on MFCG plate | |
| Weight (kg) housing | |
| Appearance | |
| Visible leaking | Yes |
| Visible leak in soil | Yes |
| Name of oil | |
| range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | Yes - Only soil |
| Method of Analysis | US EPA method 9079 |
| Date of Analysis | 4/30/2018 |
| Information Source | |
| Operational status | Operational |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | |
| Name of the PCB owner | FVM 15 |
| Specification number | Fenaka |
| Remarks: | Soil tested together, as it was next to each other, soil test was repeated. |
| | Soil test for FVM 15 and 16 |

| | |
|--|---------------------------------------|
| Description | Fuvahmulah 16 |
| Type of equipment | Switch Gear |
| Address | Substation no.6 |
| GPS coordinates | 0 ° 17'8" S, 73 ° 24'37"E |
| Manufacturer | |
| Serial Number | 20JSS 213 |
| Current Range (KVA) | |
| Year of Manufacture | Not there - assumed to be before 1989 |
| Weight (Kg)oil reported on MFCG plate | |
| Volume (litres) oil reported of MFCG plate | |
| Weight (Kg)oil calculated if not on MFCG plate | |
| Weight (Kg) housing | |
| Appearance | Yes |
| Visible leaking | Yes |
| Visible leak in soil | |
| name of oil | |
| range of liquid pcb content (mg/kg) | Yes - only soil |
| Analysis performed (yes/no) | |
| Method of Analysis | US EPA method 9079 |
| Date of Analysis | 4/30/2018 |
| Information Source | |
| Operational status | Operational |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | |
| Name of the PCB owner | Fenaka |

| | |
|----------------------|-------------------------------|
| Specification number | FVM 16 |
| Remarks: | Soil tested along with FVM 15 |

FVM 17

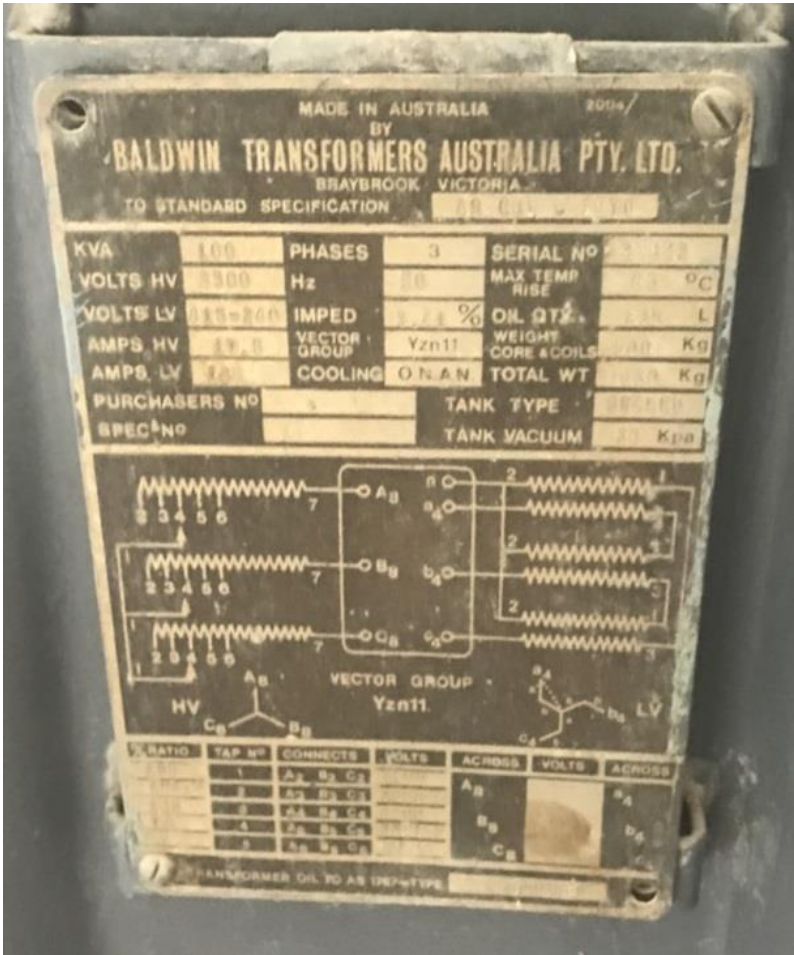


Figure 38: FVM 17 Transformer



Figure 39: FVM 17 oil test 1 result



Figure 40: FVM 17 oil test 2 result



Figure 41:FVM 17 soil test 1 result



Figure 42:FVM 17 soil test 2 result

| | |
|-------------------|--------------------------|
| Description | Fuvahmulah 17 |
| Type of equipment | Transformer |
| Address | Substation 7 |
| GPS coordinates | 0 ° 17'8"S, 73 ° 25'15"E |

| | |
|--|---------------------------------------|
| Manufacturer | Baldwin |
| Serial Number | 23823 |
| Current Range (KVA) | 100 |
| Year of Manufacture | not there - assumed to be before 1989 |
| Weight (Kg)oil reported on MFCG plate | |
| Volume (litres) oil reported of MFCG plate | |
| Weight (Kg)oil calculated if not on MFCG plate | |
| Weight (Kg) housing | |
| Appearance | |
| Visible leaking | Yes |
| Visible leak in soil | Yes |
| Name of oil | Type of oil - AS1767 |
| Range of liquid pcb content (mg/kg) | |
| Analysis performed (yes/no) | Yes |
| Method of Analysis | US EPA method 9079 |
| Date of Analysis | 4/30/2018 |
| Information Source | |
| Operational status | Operational |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | |
| Name of the PCB owner | Fenaka |
| Specification number | FVM 17 |

FVM 18



Figure 33: FVM 18 Switchgear

FVM 19



Figure 44:FVM 19 Transformer



Figure 34: FVM 19 oil test result

| Description | Fuvahmulah 18 | Fuvahmulah 19 |
|-------------------|--------------------------|----------------------------|
| Type of equipment | Switch Gear | Transformer |
| Address | Substation 7 | HV Room |
| GPS coordinates | 0 ° 17'8"S, 73 ° 25'15"E | 0 ° 17'35" S, 73 ° 25'13"E |

| | | |
|--|---------------------------------|--|
| Manufacturer | Erskine Heap and Co | Johnson and Philips |
| Serial Number | | 43482 |
| Current Range (KVA) | 200 | 200 |
| Year of Manufacture | | Year of supply 1949 |
| Weight (Kg)oil reported on MFCG plate | | 1030 lb |
| Volume (litres) oil reported of MFCG plate | | 120 gallons |
| weight (Kg)oil calculated if not on MFCG plate | | |
| weight (kg) housing | | 3700 lb |
| Appearance | | |
| Visible leaking | No | No |
| Visible leak in soil | No | No |
| Name of oil | | |
| Range of liquid PCB content (mg/kg) | | |
| Analysis performed (yes/no) | No - as operational and no leak | Yes |
| Method of Analysis | US EPA method 9079 | US EPA method 9079 |
| Date of Analysis | 4/30/2018 | 4/30/2018 |
| Information Source | | |
| Operational status | Operational | Decommissioned |
| Filled (yes/no) | | |
| Date when became waste (take out of use) | | |
| Next maintenance service date | | Not used since brought - been like 10-12 years |
| Equipment identification number | | |
| Name of the PCB owner | Fenaka | Fenaka |
| Specification number | FVM 18 | FVM 19 |

| | |
|----------|---|
| Remarks: | Oil replaced around in 2000. but haven't been using |
|----------|---|

FVM 20



Figure 46: FVM 20 oil test 1 result



Figure 47: FVM 20 oil test 2 result

| | |
|--|----------------------------|
| Description | Fuvahmulah 20 |
| Type of equipment | Transformer |
| Address | HV Room |
| GPS coordinates | 0 ° 17'35" S, 73 ° 25'13"E |
| Manufacturer | Foster |
| Serial Number | UB 650 |
| Current Range (KVA) | 30 |
| Year of Manufacture | 1969 |
| Weight (Kg)oil reported on MFCG plate | 292 kg |
| Volume (litres) oil reported of MFCG plate | 33 gallons |
| Weight (Kg)oil calculated if not on MFCG plate | |
| Weight (Kg) housing | 988 kg |
| Appearance | |

| | |
|--|--|
| Visible leaking | No |
| Visible leak in soil | No |
| Name of oil | |
| Range of liquid PCB content (mg/kg) | |
| Analysis performed (yes/no) | Yes |
| Method of Analysis | US EPA method 9079 |
| Date of Analysis | 4/30/2018 |
| Information Source | |
| Operational status | Decommissioned |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | Not used since brought - been like 10-12 years |
| equipment identification number | |
| Name of the PCB owner | FVM 20 |
| Specification number | Fenaka |
| Remarks: | Test 1 showing pink colour |
| | Test 2 showing pink colour |
| | Colour changes after 2 mins; suspected of possible contamination |



Figure 35: FVM 21 Switchgear



Figure 36: FVM 19, 20, 21 soil test result

FVM 22



Figure 37: FVM 22 Transformer



Figure 38: FVM 22 oil test result

| Description | Fuvahmulah 21 | Fuvahmulah 22 |
|-------------------|----------------------------|--------------------------|
| Type of equipment | Switch Gear | Transformer |
| Address | HV Room | HV Room |
| GPS coordinates | 0 ° 17'35" S, 73 ° 25'13"E | 0 ° 18'1"S, 73 ° 25'36"E |
| Manufacturer | Reyrolle | Suspected to be foster? |
| Serial Number | 2AJK 1462 | |

| | | |
|--|--|--|
| Current Range (KVA) | | |
| Year of Manufacture | | |
| Weight (Kg)oil reported on MFCG plate | | |
| Volume (litres) oil reported of MFCG plate | | |
| Weight (Kg)oil calculated if not on MFCG plate | | |
| Weight (Kg) housing | | |
| Appearance | | |
| Visible leaking | No | No |
| Visible leak in soil | No | No |
| Name of oil | | |
| Range of liquid pcb content (mg/kg) | | |
| Analysis performed (yes/no) | No | Only Oil test as no leak |
| Method of Analysis | US EPA method 9079 | US EPA method 9079 |
| Date of Analysis | 4/30/2018 | 4/30/2018 |
| Information Source | | |
| Operational status | Decommissioned | Decommissioned |
| Filled (yes/no) | | |
| Date when became waste (take out of use) | | |
| Next maintenance service date | Not used since brought - been like 10-12 years | Not been used since brought- been like na year |
| Equipment identification number | | |
| Name of the PCB owner | Fenaka | Fenaka |
| Specification number | FVM 21 | FVM 22 |
| Remarks: | Could not test as it was filled with water | |

ADDU 01

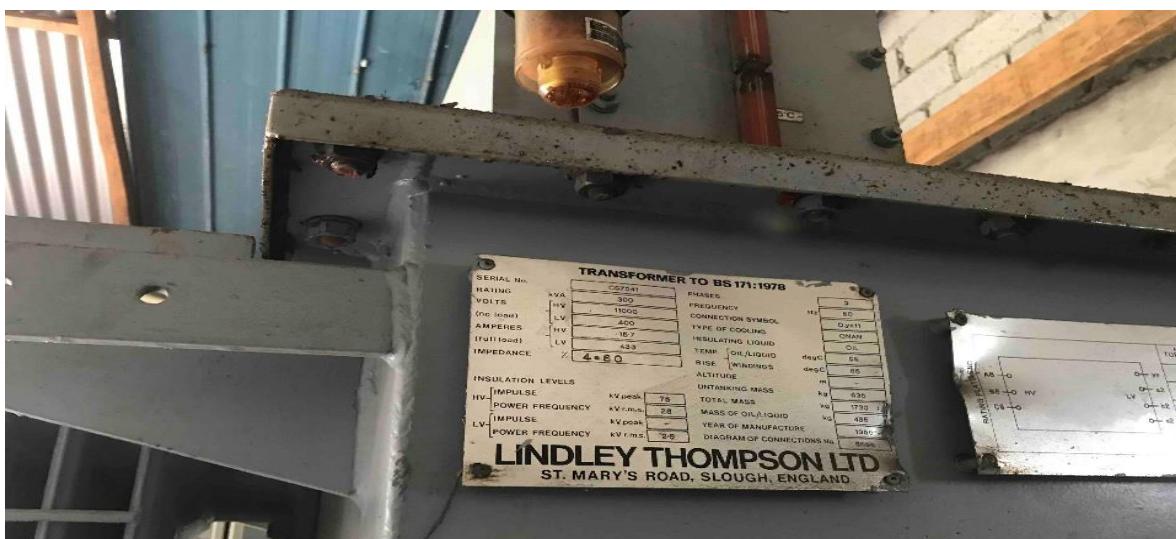


Figure 25.1. Addu Transformer 1 MFCG Plate



Figure 25.2. Addu Transformer 3 Soil test

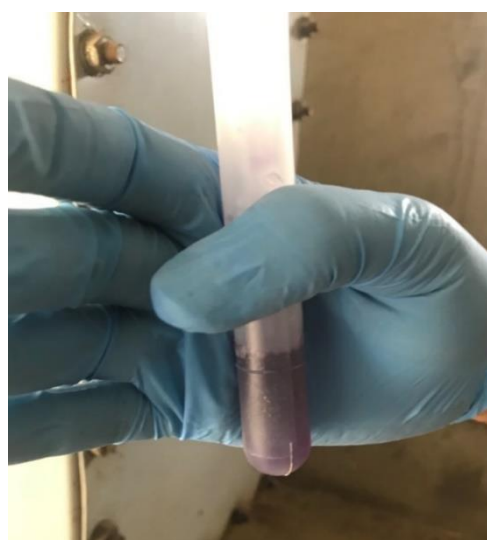


Figure 25.3. Addu Transformer 3 Oil Test

| | |
|---------------------|----------------------|
| Description | Addu 1 |
| Type of equipment | Transformer |
| Address | Substation 50 |
| GPS coordinates | 0°22"S 73°9'9"E |
| Manufacturer | Lindley Thompson Ltd |
| Serial Number | C57541 |
| Current Range (KVA) | 300 |
| Year of Manufacture | 1986 |

| | |
|---|--------------|
| Weight (Kg)oil reported on MFCG plate | 495kg |
| Volume (litres) oil reported of MFCG plate | |
| Weight (Kg) oil calculated if not on MFCG plate | |
| Weight (Kg) housing | 1730kg |
| Appearance | |
| Visible leaking | No |
| Visible leak in soil | No |
| Name of oil | |
| Range of liquid pcb content (mg/kg) | |
| Analysis performed (yes/no) | Yes |
| Method of Analysis | US EPA |
| Date of Analysis | 5 01 2018 |
| Information Source | |
| Operational status | Operational |
| Filled (yes/no) | |
| Date when became waste (take out of use) | |
| Next maintenance service date | |
| Equipment identification number | Addu 3 (Gan) |
| Name of the PCB owner | FENAKA ADDU |
| Specification number | |
| Remarks: | no leakage |