FINAL ENVIRONMENTAL MANAGEMENT PLAN
(2017 - 2019)

Oil Palm Plantation Development
Brewaniase – Nkwanta South District
Volta Region

June, 2017
# List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AER</td>
<td>Annual Environmental Report</td>
</tr>
<tr>
<td>BOD</td>
<td>Biochemical Oxygen Demand</td>
</tr>
<tr>
<td>BOPs</td>
<td>Best Operating Practices</td>
</tr>
<tr>
<td>CCC</td>
<td>Community Consultative Committee</td>
</tr>
<tr>
<td>CBD</td>
<td>Convention on Biodiversity</td>
</tr>
<tr>
<td>CHPS</td>
<td>Community Health-based Planning and Services</td>
</tr>
<tr>
<td>COD</td>
<td>Chemical Oxygen Demand</td>
</tr>
<tr>
<td>EA</td>
<td>Environmental Assessment</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>EMP</td>
<td>Environmental Management Plan</td>
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<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
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<tr>
<td>FFB</td>
<td>Fresh Fruit Bunches</td>
</tr>
<tr>
<td>GNFS</td>
<td>Ghana National Fire Service</td>
</tr>
<tr>
<td>HCV</td>
<td>High Conservation Value</td>
</tr>
<tr>
<td>HSE</td>
<td>Health, safety and Environment</td>
</tr>
<tr>
<td>ILO</td>
<td>International Labour Organisation</td>
</tr>
<tr>
<td>LI</td>
<td>Legislative Instrument</td>
</tr>
<tr>
<td>NAAQG</td>
<td>National Ambient Air Quality Guidelines</td>
</tr>
<tr>
<td>NANLG</td>
<td>National Ambient Noise Level Guidelines</td>
</tr>
<tr>
<td>NEQG</td>
<td>National Effluent Quality Guidelines</td>
</tr>
<tr>
<td>NPP</td>
<td>New Planting Procedure</td>
</tr>
<tr>
<td>OH&amp;S</td>
<td>Occupational Health and Safety</td>
</tr>
<tr>
<td>PM$_{10}$</td>
<td>Respirable Particulate Matter (Less than 10 micrometer in diameter)</td>
</tr>
<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>PVC</td>
<td>Polyvinyl Chloride</td>
</tr>
<tr>
<td>PSI</td>
<td>Presidential Special Initiative</td>
</tr>
<tr>
<td>RSPO</td>
<td>Round Table on Sustainable Palm Oil</td>
</tr>
<tr>
<td>SGSOG</td>
<td>SG Sustainable Oil Ghana Ltd.</td>
</tr>
<tr>
<td>SOPs</td>
<td>Standard Operating Procedures</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>USD</td>
<td>United State Dollar</td>
</tr>
<tr>
<td>VRL</td>
<td>Volta Red Farm Limited</td>
</tr>
<tr>
<td>WC</td>
<td>Water Closet</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WRC</td>
<td>Water Resources Commission</td>
</tr>
<tr>
<td>Registered Name of Company</td>
<td>Volta Red Ghana Limited</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>--------------------------------------</td>
</tr>
<tr>
<td>Type of Undertaking</td>
<td>Plantation Agriculture</td>
</tr>
<tr>
<td>Region</td>
<td>Volta Region</td>
</tr>
<tr>
<td>District</td>
<td>Nkwanta South District</td>
</tr>
<tr>
<td>Community</td>
<td>Brewaniase</td>
</tr>
<tr>
<td>Total Land Take</td>
<td>3,715 Hectares</td>
</tr>
<tr>
<td>Category of EMP</td>
<td>Final Submission</td>
</tr>
<tr>
<td>Address for Correspondence</td>
<td>PO Box HN64, Hohoe, Ghana</td>
</tr>
<tr>
<td>Tel. No.</td>
<td>0244431002/0204753083</td>
</tr>
<tr>
<td>Head of Undertaking</td>
<td>General Manager</td>
</tr>
<tr>
<td>Contact Person</td>
<td>Mr. Daniel Nyame</td>
</tr>
<tr>
<td>Position</td>
<td>General manager</td>
</tr>
<tr>
<td>E-mail</td>
<td><a href="mailto:daniel@voltared.com">daniel@voltared.com</a></td>
</tr>
</tbody>
</table>
Executive Summary

Introduction
In accordance with the statutory requirements of the country, SG Sustainable Oils Ghana Ltd (SGSOG) obtained an Environment Certificate (Appendix 1) to operate a plantation approximately 3,716 hectares of palm oil near Brewaniase, in the Nkwanta South District of the Volta Region of Ghana, to produce crude palm oil for both the local and international markets. The certificate (CA 253/03/12) was issued by the Environmental Protection Agency (EPA) on 9th January 2013. The schedule to the permit required SGSOG, in section 6.13, to “submit an Environmental Management Plan (EMP) after 3 years of the issuance of the Environmental Certificate.”

This EMP has been prepared to review the company’s environmental performance and guide management towards more effective environmental, occupational health and safety actions in the next three years. This report will help heighten environmental awareness among all company staff and employees and ensure continuous improvement in environmental performance over the next three years.

SGSOG (a wholly owned subsidiary of Herakles Farms LLC) was incorporated in Ghana on 7th October 2008 and obtained certificate to commence Business on 10th November 2008. In August 2014, Volta Red Ltd (VRL) acquired the Brewaniase Estate from SGSOG, made up of 3,715ha of land, of which 2,168.57ha was under cultivation, 160ha as a High Conservation Value (HCV) forest and 22ha as nursery. The unplanted section made up of mountainous areas is 1,055ha (Figure 1.2). Planting took place over four years with 797.24ha planted in 2010, 1051.02 in 2011, 321.31ha planted in 2012 and 303.43ha in 2015 which includes the 22ha area for the nursery. All of the planting, excluding the Presidential Special Initiative (PSI) land, was approved through the Roundtable on Sustainable Palm Oil (RSPO) New Planting Procedures (NPP). VRL is a company registered with the Registrar-General’s Department of Ghana with Registration No. CS131972013 and was incorporated on 17th January 2013 as a limited liability company.

Products and Market
VRL is mainly engaged in the production of fresh fruit bunches from the plantation. The main species produced is Elais guineensis, and currently 100% of the species is utilized. VRL has no nursery. The company will develop a nursery as and when the need arises. Mature Fresh Fruit Bunches are harvested and sent to the Volta Red Mill for processing. The VRL Mill is registered separately and has shareholder different from the plantation.

Installed Capacity Utilisation
The plantation is 3,715ha accommodating up to 531,245 oil palm seedlings. About 2,168.57ha has been planted with oil palm seedlings while 160.9 has been reserved as High Conservation Value (HCV) forest to ensure that some amount of the original flora and fauna is preserved. The remaining 1,054.1ha is made of mountainous areas which will not be planted.

Corporate Commitments to Sustainability
VRL will continue to commit resources to maintain and enhance its stature as an environmentally and socially responsible entity. The company will also strive to become the leading palm oil producer in the country and also on the African continent.

SGSOG became a member of the Roundtable on Sustainable Palm Oil (RSPO) in March 2008. VRL after acquiring SGSOG continued with the membership. RSPO is a nonprofit association that unites stakeholders from the palm oil industry to develop and implement global standards for sustainable palm oil.

**Corporate Structure**
The policy-making body is a five (5) member Board of Directors. The Estate Manager oversees the day to day running of the Plantation. The Company is committed to the quality of its products and knows this can be achieved through a well-trained dedicated workforce. For example, the company’s policy on staff development aims at enhancing employee skills and effectiveness. This is achieved through local and regular on-the-job training programmes.

VRL has a work force of 387 persons made up of 205 females and 182 males. The categories of workers are as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management:</td>
<td>3</td>
</tr>
<tr>
<td>Senior Staff:</td>
<td>9</td>
</tr>
<tr>
<td>Junior Staff:</td>
<td>75</td>
</tr>
<tr>
<td>Casuals:</td>
<td>300</td>
</tr>
<tr>
<td>Total:</td>
<td>387</td>
</tr>
</tbody>
</table>

**Current Environmental Practices and Management of identified Impacts**
The Environmental and Social risks and adverse impacts associated with VRL’s operations include:

- Raw materials types, source and packaging forms and annual usage;
- General plantation activities;
- Plantation development;
- Equipment and machinery;
- Resource utilization;
- Releases into environmental media; and
- Hazards in the working environment.

**Raw Materials Handling**
The raw materials currently used by Volta Red include wire mesh and agrochemicals such as fertilisers, fungicides, herbicides and insecticides. The wire mesh is used for rodents control for young palm trees.

Management ensures that all agrochemicals used are neither categorised as Type 1A or 1B by the World Health Organisation, nor listed by the Stockholm or Rotterdam Conventions.

**General Plantation Activities**
The main plantation activities involved in VRL’s operations consist:
Pre-nursery Stage; 
Nursery Stage; and 
Plantation.

Currently VRL operates no pre-nursery and nursery. The plantation stage involves:

Land preparation; 
Transplanting; 
Planting; and 
Maintenance of plantation (field inspection, weed control, ablation or castration of initial flowers, pest control and disease control).

Plantation Development
About 303,740 seedlings were transplanted between 2010 and 2012, and 46,260 in 2015; all covering a total area of about 2,169ha and 330.43ha respectively. Of the seedlings that are transplanted, about 90% are able to survive in the field.

The equipment and machinery status of VRL is shown in the Table below.

List of Equipment and Machinery Operated by VRL

<table>
<thead>
<tr>
<th>No.</th>
<th>Type of Equipment</th>
<th>Quantity</th>
<th>Comments/Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pick-Up Trucks</td>
<td>4</td>
<td>Good condition</td>
</tr>
<tr>
<td>2.</td>
<td>Tractors</td>
<td>1</td>
<td>Good condition</td>
</tr>
<tr>
<td>3.</td>
<td>Stand-by Generator</td>
<td>3</td>
<td>Good condition</td>
</tr>
<tr>
<td>4.</td>
<td>Wheel barrows</td>
<td>20</td>
<td>Good condition</td>
</tr>
<tr>
<td>5.</td>
<td>Chainsaw</td>
<td>2</td>
<td>Good condition</td>
</tr>
<tr>
<td>6.</td>
<td>Motor Bikes</td>
<td>10</td>
<td>Good condition</td>
</tr>
<tr>
<td>7.</td>
<td>Boom Sprayer</td>
<td>1</td>
<td>Good condition</td>
</tr>
<tr>
<td>8.</td>
<td>Irrigation Infrastructure</td>
<td>1</td>
<td>Good condition</td>
</tr>
<tr>
<td>9.</td>
<td>Printers</td>
<td>2</td>
<td>Good condition</td>
</tr>
<tr>
<td>10.</td>
<td>Laptop Computers</td>
<td>6</td>
<td>Good condition</td>
</tr>
<tr>
<td>11.</td>
<td>Desktop Computer</td>
<td>1</td>
<td>Good condition</td>
</tr>
<tr>
<td>12.</td>
<td>Handpush Truck</td>
<td>4</td>
<td>Good condition</td>
</tr>
<tr>
<td>13.</td>
<td>Grass cutting machine</td>
<td>2</td>
<td>Good condition</td>
</tr>
<tr>
<td>14.</td>
<td>Knapsack spraying machine</td>
<td>50</td>
<td>Good condition</td>
</tr>
</tbody>
</table>

Resource Utilization
The company uses generator set for its electricity supply on the plantation. Water supply is from two main sources. Water used at the Manager’s residence is mainly from the Ghana Water Company Limited mains, while the plantation utilises the Asukokoo River as its source of water supply.

The average monthly water consumption of water pumped from the Asukokoo River recorded is 1,000m³ per day during the rainy season and 1,450m³ per day during the dry season. Boreholes have been provided for workers at the site camp for domestic water supply.

Fuels used are diesel, petrol, lube oil and fuel-wood. Diesel and petrol are stored in 0.208m³ drums at the fuel depot located onsite. Diesel consumption for Genset between January and July 2016 was 6,570 litres.
Logged tree branches are utilised as fuel wood by workers onsite for cooking. An estimated average of 4.85 m$^3$ of fuelwood is consumed monthly.

**Releases into Environmental Media**

A 30m wide buffer has been created between plots and the Asukokoo River. In addition to the buffer zone, pueraria (cover crop) has been planted to trap sediments that could be washed into the River during runoff.

The quality of the Asukokoo River after water quality test showed the following:

1. The general physicochemical parameters analysed were within the WHO water quality guidelines;
2. The bacteriological quality of the stream was however, above the WHO guidelines. This is to be expected as surface water systems are open and exposed to contamination, and are rarely without coliform organisms;
3. Both upstream and downstream portions had comparable quality indicating that there was very little anthropogenic effects between the two points; and
4. The quality of the stream is comparable to the baseline quality determined during the baseline quality determination during the baseline data collection for the EIA study.

Emissions into air are mainly from dust generated from the movement of vehicles within the plantation and the site camp. Exhaust fumes from vehicles and the standby generators is minimal due to relatively small quantity resulting in easy dispersion by air. The concentration of TSP, PM$_{10}$, CO and SO$_2$ within the plantation were within the EPA’s maximum permissible limits at all the monitoring sites. NO$_2$ was not in detectable concentrations for both periods.

The primary waste streams generated from the plantation activities are:

- Used polythene bags (pieces)
- Tree stumpage and felled trees;
- Empty chemical containers and other packaging materials;
- Waste paper;
- Wastewater from cleaning; and
- Domestic waste from site camp (mainly food waste and food packaging materials).

The estimated quantities of some of the waste generated are summarized in Table below.

**Estimated Quantities of Waste Generated on the Plantation**

<table>
<thead>
<tr>
<th>No.</th>
<th>Waste</th>
<th>Quantity in 2012</th>
<th>Quantity in 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Used polythene bags (pieces)</td>
<td>123,000</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Empty chemical containers / packaging materials (containers)</td>
<td>180</td>
<td>213</td>
</tr>
<tr>
<td>3.</td>
<td>Waste paper (tonnes)</td>
<td>0.60</td>
<td>0.50</td>
</tr>
<tr>
<td>4.</td>
<td>Domestic Waste (tonnes)</td>
<td>65kg</td>
<td>36kg</td>
</tr>
</tbody>
</table>

**Hazard in the Working Environment**

The industrial hazards associated with VRL’s plantation operations are summarized as follows:
- Noise generation;
- Occupational health and safety risks;
- Exposure to chemicals;
- Fire risks; and
- Exhaust and dust emissions.

The Table below summarizes the release into environmental media as well as hazards in the working environment.

**Summary of Hazards and Releases into Environmental Media**

<table>
<thead>
<tr>
<th>Activity/Workplace</th>
<th>Air</th>
<th>Water</th>
<th>Land</th>
<th>Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transplanting to field</td>
<td></td>
<td>Waste polythene</td>
<td>Injury from spikes on seedlings</td>
<td></td>
</tr>
<tr>
<td>Plantation development</td>
<td></td>
<td>Initial inflorescence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixing and application of agrochemicals</td>
<td>Spillage of mixed chemicals</td>
<td>Exposure to chemicals through contact and inhalation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equipment/machinery handling and movement of vehicles</td>
<td>Exhaust fumes, Dust, Noise</td>
<td>Inhalation of fumes and dust, noise nuisance, Injury from accidents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site camp activities</td>
<td></td>
<td>Sewage: domestic wastewater, garbage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel storage</td>
<td>Inhalation of VOCs</td>
<td></td>
<td>Fire outbreak</td>
<td></td>
</tr>
<tr>
<td>Stores/Warehouse</td>
<td></td>
<td>Chemical containers, packaging material, product spills, leakages</td>
<td>Occupational health risk, injury from accidents</td>
<td></td>
</tr>
<tr>
<td>Generator set</td>
<td>Noise, Fumes, Emissions</td>
<td></td>
<td>Noise nuisance, Inhalation of fumes</td>
<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td>Release of noxious gases from welding</td>
<td>Spills</td>
<td>Scrap, spills and leaks</td>
<td>Injury, inhalation of noxious emissions</td>
</tr>
</tbody>
</table>

The noise levels measured within the plantation area were below EPA NANLG threshold of 60 dB(A), for areas with some commercial or light industry. Noise levels outside the plantation however generally exceeded the guidelines mostly due to local influences such as movement of vehicles, etc. Noise generation is therefore not a significant hazard arising from the operations of VRL at present.

**Evaluation of Environmental and Social Performance**

Volta Red has so far carried out its operations with the intent of reducing, to a minimum, all adverse effects associated with the plantation activities while taking steps to ensure the sustainability of the entire project. The company has made strides in keeping with its commitments in the following areas:

- Raw material handling;
- Energy management;
- Water use efficiency;
- Emissions management;
- Diesel storage and supply;
- Biodiversity conservation;
- Waste management;
- Agro-chemical handling and usage;
• Land use management;
• Occupational and public health and safety; and
• Grievance redress.

Compliance with Statutory Requirements
VRL has applied for permit renewal for water abstraction from the Asukokoo River and is awaiting approval and issuance.

VRL has not been able to submit any Annual Environmental Report (AER) since taking over the operations of the plantation. This EMP is the first one that VRL is submitting to the EPA after taking over the operations of the plantation.

Water Resource Use Efficiency
VRL continues to put in steps to manage water resources available on the plantation. There are two water management methods in place. These are:

• Management of water consumption rate; and
• Management of water resources available.

Biodiversity Conservation Measures
VRL strictly prohibits illegal logging, hunting and other human-induced disturbances within its concession and also in the High Conservation Value (HCV) forest. There are also biodiversity plots within the plantation.

VRL has not been able to continue with the annual survey of the aquatic ecosystem of the Asukokoo River, and the terrestrial survey of Fauna and Flora within the plantation, surrounding communities and the HCV forest as set out in the permit condition.

Agrochemical Usage and Handling
The main fertilizers in use are NPK and Urea whereas herbicides, insecticides, and fungicides are used to control weeds and diseases. These chemicals are from certified brands whose products have been recommended for safe use in the environment. Agrochemicals are purchased from certified suppliers (Calli Ghana Limited and Greenshield Enterprise). Only the needed quantity of agrochemicals is purchased for each application session. In handling chemicals, it is ensured that good records are kept by store keepers at all times.

Between September 2015 and June 2016, VRL had purchased a sum total of 660 litres of EDUODZI herbicide from Greenshield Enterprise and 4,260 litres of kalach 360SL from Calli Ghana.

Storm Water/Run off Management
Volta Red maintains a no burning policy during land preparation. Land clearing is done in such a way that the top soil is not removed. Additionally, to minimise soil erosion and improve the fertility of the soil, leguminous cover crops (pueraria) are broadcasted as early as possible after land preparation. This is carried out to recycle plant nutrients whiles enhancing the soil’s organic and moisture content. The crop is also however, slashed down in areas where they seem over-grown either by manual slashing or by means of tractor mounted slasher.
**Waste Management**

Waste oil generated from the activities in the plantation is from water pumps, generator sets and farm machinery. Used oil is stored in oil-storage drums and given to Total Ghana Limited and a small scale oil dealer; who have useful need for it.

Wastewater generated from the plantation activities are limited to sewage from the use of sanitary facilities and are collected in septic pits. Wastewater generated from the use of water hose to fill gallons during chemical mixing is limited to the mixing shed. The wastewater from this process is very small and it seeps into the ground.

The main types of solid waste generated from the activities on the plantation include empty chemical contains/packaging materials, used polythene bags and solid domestic waste. About 118 empty containers and 3,000 fertilizer bags were generated in 2015. Chemical containers and fertilizer bags are returned to the suppliers (Calli Ghana and Greenshield Company limited) to be reused or disposed of. Chemicals stored or handled are not more than what is absolutely necessary.

Solid domestic waste, mainly styrofoam food packaging and plastic water containers as well as food leftovers generated in small quantities of about 25kg/week are disposed of at two (2) refuse dumpsite (16 feet deep) located 150m from the site camp.

**Maintenance of the Plantation**

Field maintenance schedules are carried out on daily basis with the supervision of headmen and departmental heads to ensure that the standard established is attained. Depending on field conditions, ring weeding (circles are slashed at a radius of 2m around the base of the palm tree) is carried out on daily basis. It is usually either by manual means or by herbicide application.

Maintenance or routine pruning is done two (2) times each year on well-maintained palms. The plantation is divided into 25 blocks and accessed by plantation roads. These roads which are not paved are cumbered by slush so as to prevent ponding and erosion during the rainy season. The roads are also scheduled to be maintained annually by the road maintenance team of the company.

**Gaseous Emission**

Fumes from trucks and gensets are minimal and are easily dispersed by air. They are therefore not a public nuisance. The access and internal feeder roads on the plantation are not paved but vehicular movements on these roads though not frequent are restricted to a maximum of 30km/hr. Generation of particulate matter is therefore very minimal.

Gensets are purchased from reliable sales outlets, who have trained personnel to provide expert service and parts support after sale service. Servicing and maintenance works on genset are scheduled and carried out by trained personnel certified to do so. Volta Red runs a routine preventive maintenance programme. The preventive maintenance consists of the following operations:

- General inspection;
- Lubrication service;
- Cooling system service;
- Fuel system service;
- Servicing and testing starting batteries; and
- Regular engine exercise.

**Occupational and Public Health and Safety**
The use of agro-chemicals, generation of noise from machinery, emission of dust from land preparation activities are the key sources of risk for occupational and public health and safety. Volta Red has a stock of PPE which are provided to all personnel once they undergo an initial orientation. The Plantation Manager, the Health and Safety/RSPO Manager and Field Supervisors conduct daily monitoring on the plantation to ensure that the right PPE are used by workers. Safety signs/boards have been erected at vantage points throughout the plantation to provide onsite education and directions to staff and visitors.

Overalls, gloves, goggles and nose masks are provided to all workers involved in the use of agro-chemicals. Operators of machinery such as water pumps are provided with nose masks and ear plugs to protect them from dust emissions and noise. First aid kits are provided on the Site camp. Additionally, all personnel are given adequate training for tasks that they perform to reduce any risks associated with their work activities.

**Grievance Redress Mechanisms**
Volta Red is committed to provide a transparent and open process for stakeholders to raise a grievance related to the implementation of its Sustainable Palm Oil policy.

A grievance to the company is a complaint or concern, associated with the implementation of Volta Red’s Sustainable Oil Palm Policy, which an individual or a group seeks to address with Volta Red Limited. A grievance must be raised either in writing or by email via Volta Red’s email address (enquiry@voltared.com).

**Action Plans**
Volta Red’s operations have been conducted in accordance with its commitment to run an environmentally sustainable development/project. This has been facilitated by the adoption and application of best operating practices (BOPs), improved technological methods and the efficient use and maintenance of machinery. The aspects of operations where environmental sustainability is emphasized are:

- Compliance with statutory requirements;
- Raw material handling and storage;
- Agrochemical handling and usage;
- Water resource use efficiency;
- Biodiversity conservation measures;
- Storm water/runoff management;
- Waste management;
- Plantation maintenance;
- Gaseous emissions; and
- Redress mechanism for public grievances.
Emergency Preparedness and Response Plan
The main aim of the emergency plan is to ensure that potential life threatening events are handled with maximum efficiency in order to protect people’s lives. It is important that workers are aware of their responsibilities in the event of an emergency.

The key components of VRL’s Emergency Preparedness and Response Plan (EPRP) are:

- Emergency Plan Actions;
- Fire Emergencies;
- Emergency evacuation;
- Emergency assembly area;
- Organizational functions;
- Training of employee;
- Emergency phone number; and
- Injury resulting from emergency situation

Programme to Meet Requirements
The plan takes into consideration all aspects of environmental management to ensure efficient implementation of environmental and social stewardship responsibilities.

The HSE/RSPO Manager coordinates all environmental and social issues to ensure the implementation of action plans. A Health, Safety and Environment (HSE) Committee supervises, monitors and reviews measures to ensure the implementation of the environmental and health and safety policies and action plans adopted by VRL in all units. The Committee is also promoting the effective co-operation of employees at all levels (both permanent and casual) to maintain an integrated approach to environmentally friendly and safe operations of the plantation.

The Community Relations Manager is a liaison between the surrounding communities and the company. As part of the measures to implement the plan, VRL may engage the services of qualified Environmental Consultants on retainership basis to work closely with the HSE/RSPO Manager as well as the Committee.

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ESMP Implementation
VRL acknowledges its responsibility to the environment and workplace health and safety and is committed to implementing the action plans for its operations. The existing environmental and safety management practices will be enhanced.

VRL will conduct monitoring programmes through the HSE Committee to ensure that targets are achieved. The Committee will hold regular quarterly meetings to evaluate progress and plan ahead. The HSE Manager will prepare annual reports to Management indicating the state of operational compliance. The state of implementation will be reviewed annually by the General Manager of Operations who will work with the HSE committee and Environmental Consultants to rectify challenges with the environmental management systems of the company.
**ESMP Implementation Budget**
Implementation of the action plans over the 3-year period of the ESMP will cost an estimated USD **296,000**. A summary of the budget estimates is found in the table below.

**Summarized Budget for EMP Implementation**

<table>
<thead>
<tr>
<th>Action</th>
<th>Cost in USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Management</td>
<td>10,000</td>
</tr>
<tr>
<td>Refurbishment of the chemical storage room</td>
<td>30,000</td>
</tr>
<tr>
<td>Preparation of annual report</td>
<td>45,000</td>
</tr>
<tr>
<td>Renewal of environmental Permit</td>
<td>20,000</td>
</tr>
<tr>
<td>Annual Environmental and safety audits and monitoring</td>
<td>35,000</td>
</tr>
<tr>
<td>Grievance redress mechanisms</td>
<td>15,000</td>
</tr>
<tr>
<td>Provision of PPE</td>
<td>15,000</td>
</tr>
<tr>
<td>Renewal of fire permit</td>
<td>6,000</td>
</tr>
<tr>
<td>Fire safety equipment</td>
<td>50,000</td>
</tr>
<tr>
<td>Fire drills and mock operation</td>
<td>20,000</td>
</tr>
<tr>
<td>Provision of sanitary facilities</td>
<td>10,000</td>
</tr>
<tr>
<td>Training in First Aid</td>
<td>5,000</td>
</tr>
<tr>
<td>Capacity building</td>
<td>15,000</td>
</tr>
<tr>
<td>Community sensitization and HIV/AIDS campaign</td>
<td>20,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>296,000</strong></td>
</tr>
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Chapter 1

Introduction

- Background
- Company Information
- Effluent parameters that do not meet EPA Guidelines
- Methods of disposal of hazardous waste and obsolete chemicals
- Major Environmental Challenges
- Major Plans
- Public Complaints
- Management Commitment
1.0 INTRODUCTION

1.1 Background

In accordance with the statutory requirements of the country, SG Sustainable Oils Ghana Ltd (SGSOG) obtained an Environment Certificate (Appendix 1) to operate a plantation approximately 3,716Ha of sustainable palm oil plantation near Brewaniase, in the Nkwanta South District of the Volta Region of Ghana, to produce crude palm oil for both the local and international markets. The certificate (CA 253/03/12) was issued by the Environmental Protection Agency (EPA) on 9th January 2013. The schedule to the permit required SGSOG, in section 6.13, to “submit an Environmental Management Plan (EMP) after 3 years of the issuance of the Environmental Certificate

This EMP has been prepared to review the company’s environmental performance and guide management towards more effective environmental, occupational health and safety actions in the next three years (i.e. from the date of approval of this EMP). This report will help heighten environmental awareness among all company staff and employees and ensure continuous improvement in environmental performance over the next three years.

1.2 Company Information

1.2.1 Establishment

SGSOG (a wholly owned subsidiary of Herakles Farms LLC) was incorporated in Ghana on 7th October 2008 and obtained certificate to commence Business on 10th November 2008. In August 2014, Volta Red Ltd (VRL) acquired the Brewaniase Estate from SGSOG, made up of 3,715ha of land, of which 2,168.57ha was under cultivation, 160ha as a High Conservation Value (HCV) forest and 22ha as nursery. The unplanted section made up of mountainous areas is 1,055ha (Figure 1.2). Planting took place over four years with 797.24ha planted in 2010, 1051.02 in 2011, 321.31ha planted in 2012 and 303.43ha in 2015 which includes the 22ha area for the nursery. All of the planting, excluding the Presidential Special Initiative (PSI) land, was approved through the Roundtable on Sustainable Palm Oil (RSPO) New Planting Procedures (NPP). VRL is a company registered with the Registrar-General’s Department of Ghana with Registration No. CS131972013 and was incorporated on 17th January 2013 as a limited liability company.

1.2.2 Location and Property

The oil palm estate development is located near Brewaniase in the Nkwanta South District of the Volta Region of Ghana (Figure 1.1). Figure 1.2 shows the 3,715 ha concession of Volta Red with respect to the years of planting. The project consists mainly of the following sections or operational areas:

- A 2,168.57ha oil palm plantation;
- A 160ha HCV forest; and
- Site camp.
Figure 1.1  Locational Map of VRL, Brewaniase Project Area
Figure 1.2  Map of the Brewaniase Estate
1.2.3 Products and Market
VRL is mainly engaged in the production of fresh fruit bunches from the plantation. The main species produced is Elais guineensis, and currently 100% of the species is utilized. VRL has no nursery. The company will develop a nursery as and when the need arises.

1.2.4 Installed Capacity Utilisation
The plantation is 3,715ha accommodating up to 531,245 oil palm seedlings. About 2,168.57ha has been planted with oil palm seedlings while 160.9 has been reserved as High Conservation Value (HCV) forest to ensure that some amount of the original flora and fauna is preserved. The remaining 1,054.1ha is made of mountainous areas which will not be planted.

1.2.5 Corporate Commitments to Sustainability
VRL will continue to commit resources to maintain and enhance its stature as an environmentally and socially responsible entity. The company will also strive to become the leading palm oil producer in the country and also on the African continent.

SGSOG became a member of the Roundtable on Sustainable Palm Oil (RSPO) in March 2008. VRL after acquiring SGSOG became a member. RSPO is a nonprofit association that unites stakeholders from the palm oil industry to develop and implement global standards for sustainable palm oil.

1.2.6 Corporate Structure
The policy-making body is a five (5) member Board of Directors. The Estate Manager oversees the day to day running of the Plantation. The Company is committed to the quality of its products and knows this can be achieved through a well-trained dedicated workforce. For example, the company’s policy on staff development aims at enhancing employee skills and effectiveness. This is achieved through local and regular on-the-job training programmes.

1.2.6 Staffing/Employee Level
VRL has a workforce of about 387 persons belonging to the following categories as follows:

- Management: 3
- Senior Staff: 9
- Junior Staff: 75
- Casuals: 300
- Total: 387

1.3 Effluent Parameters that do not meet EPA Guidelines
No effluent is generated from the plantation activities carried out by VRL at the moment.

1.4 Methods of Disposal of Hazardous Waste and Obsolete Chemicals
The principal wastes produced from the production process are empty chemical containers/packaging materials and domestic waste. The empty chemical containers/packaging materials are used as water containers for fighting fire on the plantation in the dry season. Excess containers are carefully kept in a store room adjacent to the chemical room and periodically sent to the Greenshield and Calli Ghana, the distributors, for proper disposal. The domestic waste comprising food waste and food packaging materials
are presently disposed of into two refuse dumps (figure 1.3) located about 150m from the Site Camp under provision.

**Figure 1.3   Refuse Dump for Domestic Waste**

1.5  **Major Environmental Challenges**
There are no major environmental issues of concern currently.

1.6  **Major Plans**
The major activity to be undertaken in the three-year implementation period of the EMP is the construction of a properly designed storage facility for chemicals.

1.7  **Public Complaints**
Management is committed to maintaining a cordial and fair relationship with the communities and has initiated measures to address these concerns. These measures include the provision of accommodation on site for all permanent workers and migrant casual workers that may need accommodation by the second year of the implementation of the EMP. The major concerns raised from the neighboring communities about the operations of the oil palm plantation estate involve:

- Concerns about possible increase in migrant population as the plantation develops, as this may put stress on available community resources, especially water;
- Concerns about migrant job seekers who may be without accommodation.

1.8  **Management Commitment**
VRL is committed to the implementation of the action plans outlined in this report. Management has appointed a Health, Safety and Environment (HSE)/RSPO Manager and an HSE committee has also been set up, headed by the General Manager, to work closely with all employees to ensure the implementation of the environmental and safety policies and action plans.

Other requirements to be carried out to achieve the objectives of the EMP include:

- Awareness creation and training of staff;
• Engagement of Consultants to assist with environmental monitoring;
• Documenting and tracking of actions;
• Reporting to stakeholders as required by law;
• Stakeholders involvement; and
• Annual environmental and safety audit and reviews.

Management will commit an estimated amount of **USD 296,000.00** to cover expenditure on safety and environmental issues over the three-year period of the EMP implementation.
Chapter 2

Policy on Environment, Health and Safety

- VRL’s Environmental Policy
- VRL’s Health and Safety Policy
- Legal, Institutional and Administrative Framework
  - National Environmental Legislations and Regulations
  - International Environmental and Social Conventions and Declarations
  - National Health and Safety Laws and Regulations
  - International Labour and Work Compensation Conventions and Declarations
2.0 POLICY ON ENVIRONMENT, HEALTH AND SAFETY

2.1 Environmental Policy

2.1.1 Policy Statement
The policy of VRL is to maintain high standards of environmental care and minimize the impact of operations on the environment and the community. The policy aims at prevention of pollution through continuous improvement in environmental performance in all of its operations.

2.1.2 Policy Objectives and Targets
VRL’s policy objectives are to:

1. Identify and seek to reduce significant environmental impacts which arise from its operations and activities and prevent pollution wherever possible;
2. Abide by all applicable national and local environmental legislation and regulations, policies and standards;
3. Develop and implement processes and agricultural practices that are environmentally friendly;
4. Use sustainable agricultural practices to continuously improve on its environmental performance;
5. Strive to reduce, reuse and recycle its waste materials in factory and field;
6. Work with the relevant industry regulators, EPA and other stakeholders to promote environmental care and disseminate best agricultural practices among its partners;
7. Deal promptly and thoroughly with environmental incidents and complaints from the communities and authorities; and
8. Provide training/orientation for its employees and contractors to be aware of its environmental policy and objectives, as well as measures adopted to minimize impact on the environment.

To achieve these objectives, VRL will:

- Set annual improvements targets and review them regularly to ensure continuous improvement in environmental performance;
- Maintain environmental monitoring programs to ensure compliance with all applicable legislation and to address its significant environmental aspects; and
- Focus particularly on wastewater from factory operations, agro-chemicals and air emissions.

2.2 Occupational Health and Safety Policy

2.2.1 Policy Statement
VRL aims to eliminate the potential for injury and accidents at the work place and strives to minimize hazards associated with its operations. Management of VRL is committed to:

1. Creating a healthy and safe working environment for all employees, contractors and the community.
2. A zero tolerance attitude that will be taken and cultivated to any work practice and/ or condition that may risk injury or ill health to people working under the control of the company.
3. The continuous identification of hazards, risk assessment and risk control regarding the health and safety of people, property, and the environment.
4. Compliance to current applicable Occupational Health and Safety (OH &S) Standards.
5. The training of employees regarding (OH &S) hazards, risk and relevant control measures to enable employees to ensure their own health and safety.
6. The management and evaluation of a formalized OH&S management system aimed at continuous control of OH&S risks as identified through the baseline risk assessment.

7. International and external performance measurement, monitoring and audit of the OH&S management system to ensure OH&S risk control is achieved.

8. The review of performance measurement results to correct the OH&S management system to ensure it is suitable, adequate and effective.

VRL’s commitment will be enforced through:

- Management leading by example.
- Active participation by the workforce, community and stakeholders to identify hazards, conduct risk assessment and establish controls.
- Management providing the necessary resources to fulfill its commitment in terms of education and training for those who are required to operate manage and implement the OH&S management system to ensure proper control of OH&S risks on a day-to-day basis.
- Continual improvement in its efforts to ensure OH&S risks are controlled and a healthy and safe work environment prevails.

2.3 **Legal, Institutional and Administrative Framework**

The relevant national environmental legislations and regulations guiding VRL’s operations are the following:

- Ghana Investment Promotion Centre Act, 1994 (Act 478);
- Environmental Protection Agency Act, 1994 (Act 490);
- Environmental Assessment Regulations, 1999 (LI 1652);
- Environmental Assessment Regulations (Amendment) 2014, (LI 2216);
- Water Resources Commission Act 1996, (Act 522);
- Water Use Regulations 2001, (LI 1692);
- National Effluent Quality Discharge Guidelines;
- National Ambient Air Quality Guidelines;
- National Ambient Noise Level Guidelines; and

The relevant international environmental and social conventions and declarations, including certification programs guiding VRL’s operations are the following:

- United Nations (UN) Convention on Biological Diversity (1992);
- UN Declaration on the Rights of Indigenous People (2007) – Articles 25, 26;
- ILO Convention 169 (1989) on indigenous and Tribal Peoples Indigenous and Tribal Peoples – Articles 6-9;
- UN Declaration on the Rights of Indigenous Peoples (2007) – Articles 10, 11(2), 19, 28(1), 29(2) and 32(2);
- ILO Convention 184 (2001) Safety and Health in Agriculture – Articles 7-21;
Stockholm Convention on Persistent Organic Pollutants (2001) – Articles 1-5;

The relevant national health and safety laws and regulations guiding VRL’s operations are the following:

- The labour Act 2003, Act 651;
- Factories, Offices and Shops Act 1970, Act 328;
- Fire Precautions (Premises) Regulations, 2003 (LI 1724);
- Workmen’s Compensation Law, 1987;
- Fair Wages and Salaries Commissions Act, 2007 (Act 737);
- National Health Insurance Act, 2003;
- National Health Insurance Regulations, 2004 (LI 1809);
- Social Security Law, 1991 (PNDCL 247);
- Plants and Fertilizer Act, 2010 (Act 803);
- Children’s Act, 1998 (Act 560);
- Domestic Violence Act, 2007 (Act 732);
- National Pensions Act, 2014 (Act 883);
- Public Holidays Act, 2001 (Act 601);
- Labour Regulations, 2007 (LI 1833); and

The relevant international labour and work compensation conventions and declarations guiding VRL’s operations are the following:

- ILO Convention 29 (1930) Forced Labour – Article 5
- ILO Convention 105 (1957) Abolition of Forced Labour- Article 1
- ILO Convention1389 (1973) Minimum Age – Article 1-3
- ILO Convention 182 (1999) Worst Forms of Child Labour – Articles 1-7
- UN Declaration on the Right of Indigenous People (2007) – Articles 17(2), 21, 22(2)
- ILO Convention 87 (1948) Freedom of Association and Protection of Right to Organise – Articles 2 -11
- ILO Convention 98 (1949) Right to Organise and Collective Bargaining Convention – Articles 1-4
- ILO Convention 141 (1975) Rural Workers’ Organizations – Articles 2-3
- ILO Convention 111 (1958) Discrimination (Employment and Occupation)
- UN Declaration on the Right of Indigenous Peoples (2007) – Articles 2, 8(2e), 9, 15(2), 16(1), 21(2), 22, 24(1), 29(1), 46(3)
- ILO Convention 97 (1949) Migration for Employment – Articles 1-9
- ILO Convention 143 (1975) Migrant Workers (Supplementary Provisions) – Articles 1-12
- ILO Convention 110 (1958) Plantations – Articles 5-91
- UN Declaration on the Right of Indigenous Peoples (2007) – Articles 21(1), 23, 24, 29(3).
2.3.1 **Ghana Investment Promotion Centre Act, 1994 (Act 478)**
The Ghana Investment Promotion Agency Act, 1994 (Act 478) requires that every investor wishing to invest in the country must in its appraisal of proposed investment projects or enterprises, “…have regard to any effect the enterprise is likely to have on the environment and measures proposed for the prevention and control of any harmful effects to the environment…”.

2.3.2 **Environmental Protection Agency Act, 1994 (Act 490)**
The Environmental Protection Agency (EPA) Act 1994 (Act 490) gives mandate to the Agency to ensure compliance of all investments and undertakings with laid down Environmental Assessment (EA) procedures in the planning and execution of development projects, including compliance in respect of existing ones. Part Two of the Act restricts the importation, exploration, manufacture, distribution, advertisement, sale or use of a pesticide unless the pesticide has been registered by the Agency in accordance with this Act. It also provides the conditions under which the importation and exportation of unregistered pesticides may be authorized by the EPA (e.g. experimental or research purposes).

2.3.3 **Environmental Assessment Regulations, 1999 (LI 1652)**
The Environmental Assessment Regulations, 1999 (LI 1652) enjoins all existing companies to submit Environmental Management Plans to the EPA every three years and ensure that the action plans therein are always implemented. The EMP, among other things, is to serve as a management tool for effective pollution control of the Asukokoo River.

2.3.4 **Fees and Charges (Amendment) Instrument, 2015 (LI 2228)**
The Fees and Charges (Amendment) Instrument, 2015 (LI 2228) stipulates the fees and charges to be paid by proponents with respect to environmental permits and certificates.

2.3.5 **Water Resources Commission Act, 1996 (Act 522)**
The Water Resources Commission (WRC) Act, 1996 (Act 522) establishes and mandates the WRC as the sole agent responsible for the regulation and management and the utilization of water resources, and for the coordination of any policy in relation to them. The Commission does this through the granting of water rights to potential water users.

2.3.6 **Water Use Regulations, 2001 (LI 1692)**
The Water Use Regulations, 2001 (LI 1692) enjoins all persons to obtain Water Use Permits from the Water Resources Commission for commercial water use. The Commission is also mandated to request for evidence that an Environmental Impact Assessment (EIA) or an Environmental Management Plan (EMP) has been approved by the EPA before issuance of the Water Use Permit.

2.3.7 **National Ambient Air Quality Guidelines (NAAQG)**
The guidelines provide advice on maximum permissible noise levels for a variety of air pollutants.

2.3.8 **National Ambient Noise Level Guidelines**
The guidelines provide advice on maximum permissible noise levels for various locations ranging from residential to heavy industrial areas.
2.3.9 Local Government Act, 1993 (Act 462)
The Local Government Act 1993, Act 462 empowers the Assemblies to establish Waste Management Department to be responsible for the development and management of waste disposal within their areas of jurisdiction.

2.3.10 United Nations (UN) Convention on Biological Diversity (1992)
The convention provides for the protection and encouragement of customary use of biological resources in accordance with traditional practices.

2.3.11 ILO Convention 169 (1989) on Indigenous and Tribal Peoples
The articles (Articles 13-19) prescribe the respect and safeguard of rights to lands and natural resources traditionally occupied and used; respect for customs of inheritance; no forces removals; compensations for loss and injury.

2.3.12 UN Declaration on the Rights of indigenous Peoples (2007)
Articles 25, 26 relate to the rights of indigenes to distinctive relationship with land; right to own, use, develop and control their lands, territories and other resources.

2.3.13 ILO Convention 169 (1989) on Indigenous and Tribal Peoples
Articles 6-9 relate to the rights of indigenous and tribal peoples to represent themselves through their own representative institutions; consultations with objective of achieving agreement or consent; rights to decide their own priorities, retain their own customs and resolve offences according to customary law (compatible with international human rights).

2.3.14 UN Declaration on the Right of Indigenous Peoples (2007)
Articles 10, 11(2), 19, 28(1), 29(2) and 32(2) relate to rights of indigenes to free, prior and informed consent to any project affecting their lands as expressed through their own representative institutions.

2.3.15 Convention on the Elimination of All forms of Racial Discrimination
The Convention on the Elimination of All forms of Racial Discrimination, International Covenant on Economic, Social and Cultural Rights, Inter-American Human Rights System guarantees the right to free, prior and informed consent for decisions that may affect indigenous people (This standard has widely been accepted as a ‘best practice’ standard by bodies such as World Commission on Dams, Extractive Industries Review, Forest Stewardship Council, UNDP, CBD, IUCN and WWF).

2.3.16 Factories, Offices and Shops Act, 1970 (Act 328)
The Factories, Offices and Shops Act of 1970 (Act 328) requires all proponents to register every factory / workplace with the Chief Inspector of Factories Inspectorate Division. The Act makes provision for, among others, the notification of accidents/dangerous occurrences including safe passages and the prevention of fires etc.

2.3.17 The Fire Precaution (Premises) Regulations, 2003, (LI 1724)
The Fire Precaution (Premises) Regulations 2003 (LI1724) requires all premises intended for use as workplaces to have Fire Certificates.
2.3.18 The Labour Act 2003, Act 651
Section 118(1) of the New Labour Act 2003 (Act 651) stipulates that it is the duty of an employer to ensure that every worker employed works under satisfactory, safe and healthy conditions.

2.3.19 Workmen’s Compensation Law, 1987
The law holds employees responsible for the payment of compensation to workmen for personal injuries caused by accidents arising out of and in the course of their employment.

2.3.20 ILO Convention 29 (1930) Forced Labour – Article 5
No concession to companies shall involve any form of forced or compulsory labour.

2.3.21 ILO Convention 105 (1957) Abolition of Forced Labour - Article 1
Not make use of any form of forced or compulsory labour.

2.3.22 ILO Convention138 (1973) Minimum Age – Article 1-3
Abolition of child labour and definition of national minimum age for labour not less than 15 - 18 years (depending on occupation)

2.3.23 ILO Convention 182 (1999) Worst Forms of Child Labour – Articles 1-7
Relates to the abolition of child slavery, debt bondage, trafficking and procurement for prostitution, and suitable methods to monitor and enforce compliance.

2.3.24 UN Declaration on the Right of Indigenous People (2007) – Articles 17(2), 21, 22(2)
No exploitation or exposure to hazard or discrimination against indigenous women and children.

2.3.25 ILO Convention 87 (1948) freedom of Association and Protection of Right to Organise – Articles 2-11
Freedom to join organizations, federations and confederations of their own choosing; with freely chosen constitutions and rules; measures to protect the right to organize.

2.3.26 ILO Convention 98 (1949) Right to Organise and Collective Bargaining – Articles 1-4
Protection against anti-union acts and measures to dominate unions; established means for voluntary negotiation of terms and conditions of employment through collective agreements

2.3.27 ILO Convention 141 (1975) Rural Workers’ Organizations – Articles 2-3
Rights of tenants, sharecroppers and smallholders to organize; freedom of association; free from interference and coercion

2.3.28 ILO Convention 100 (1951) Equal Remuneration- Article 1-3
Equal Remuneration for men and women for work of equal value

2.3.29 ILO Convention 111 (1958) Discrimination (Employment and Occupation)
Equality of opportunity and treatment in respect to employment and occupation; no discrimination on the basis of race, colour, sex, religion, political opinion national extraction or social origin.
2.3.30  **UN Declaration on the Right of Indigenous Peoples (2007) – Articles 2, 8(2e), 9, 15(2), 16(1), 21(2), 22, 24(1), 29(1), 46(3)**

No discrimination based on origin or identity; free to express identity based on custom; special attention to and full protection of rights of indigenous women.

2.3.31  **ILO Convention 97 (1949) Migration for Employment – Articles 1-9**

Provision of information; no obstacles to travel; provision of health care; non-discrimination in employment, accommodation, social security and remuneration; no forced repatriation of legal migrant workers; repatriation of savings.  **ILO Convention 143 (1975) Migrant Workers (Supplementary Provisions) – Articles 1-12** respects basic human right; protection of illegal migrants from abusive employment; no trafficking in illegal migrants; fair treatment of migrant labour.

2.3.32  **ILO Convention 110 (1958) Plantations – Articles 5-91**

Protection of members of families of recruited workers; protection of workers’ right during recruitment and transport; fair employment contracts; abolition of penal sanctions; fair wages and conditions of work; no coercion or obligation to use company stores adequate accommodation and conditions; maternity protection; compensation for injuries and accidents; freedom of associations; right to organize and collective bargaining; proper labour inspection; decent housing and medical care.

2.3.33  **ILO Convention 184 (2001) Safety and Health in Agriculture – Articles 7-21**

Carry out risk assessments and adopt preventive measures to ensure health and safety with respect to workplaces, machinery, equipment, chemicals, tools and processes; ensure dissemination of information, appropriate training, supervision and compliance; special protections for youth and women workers; coverage against occupational injuries and disease.

2.3.34  **Stockholm Convention on Persistent Organic Pollutants (2001) – Articles 1-5**

Prohibit and/or eliminate production and use of chemicals listed in Annex B (e.g. DDT); reduce or eliminate releases of chemicals listed in Annex C (e.g. Hexa-chloro-benzene).

2.3.35  **FAO International Code of Conduct on the Distribution and Use of Pesticides (1985, Revised 2002) – Article 5**

Curtail use of dangerous pesticides where control is difficult; ensure use of protective equipment and techniques; provide guidance of workers on safety measures; provide extension service to smallholders and farmers; protect workers and bystanders; make available full information in risks and protections; protect biodiversity and minimize impacts on environment; ensure safe disposal of waste and equipment; make provisions for emergency treatment for poisoning.

2.3.36  **UN Declaration on the Right of Indigenous Peoples (2007) – Articles 21(1), 23, 24, 29(3)**

Improvement of livelihood in sanitation, health and housing; participate in health delivery; maintain traditional health systems; effective monitoring of health.
Chapter 3

Current Environmental Practices and Management of Identified Impacts

- Raw Material Types, Annual Usage, Source and Packaging Forms
- General Plantation Activities
- Plantation Development
- Equipment and Machinery
- Resource Utilisation
- Releases into Environmental Media
- Hazard in the Working Environment
3.0 CURRENT ENVIRONMENTAL PRACTICES AND MANAGEMENT OF IDENTIFIED IMPACTS

The real and potential impacts of the production activities of VRL regarding material storage and handling and palm plantation development are herein discussed.

3.1 Raw Material Types, Annual Usage, Source and Packaging Forms
Volta Red currently is not operating a nursery as it has used up all available space suitable for planting. Hence use very few raw materials which include:
- Wire mesh; and
- Agrochemicals such as fertilisers, fungicides, herbicides and insecticides.

Management ensures that all agrochemicals used are neither categorised as Type 1A or 1B by the World Health Organisation, nor listed by the Stockholm or Rotterdam Conventions.

3.2 General Plantation Activities
The main plantation activities involved in VRL’s operations are illustrated in the environmentally based process flow diagram in Figure 3.1, consisting of the following main stages:
- Pre-nursery Stage;
- Nursery Stage; and
- Plantation.

3.2.1 Pre-nursery Stage
During the pre-nursery stage, the germinated seed nuts or sprouts are grown in small black polythene bags, of 250 gauge and 23 by 13cm size, for 2 – 3 months, by which time they would have developed 4 or 5 leaves and ready to be transferred to the nursery. The pre-nursery is carried out under a shading net house as shown in Figure 3.1. The seedlings are watered daily to keep the substrate uniformly wet. A balanced supply of NPK fertiliser is applied to provide steady growth. NPK application is in two phases. Mulching is undertaken to retain soil moisture and prevent soil compaction.

3.2.2 Nursery Stage
When seedlings reach the 5-leaf stage, they are transferred to the main nursery of large sized polythene bags of 500 gauge and 40 by 45cm, in an open field. Each polythene bag is filled with about 16kg of sufficiently free-draining nursery soil. The polythene bags are perforated at the bottom at 7.5cm interval for drainage. The periphery of the nursery is about 50m away from the Asukokoo River. The seedlings are kept with spacing of 0.75m by 0.75m.

Maintenance of the nursery entails:
- Slight weeding around the bags;
- Supply of sufficient water; and
- Application of fertilisers.
**Figure 3.1**  Environmentally Based Flow Diagram of VRL’s Plantation Activities

- **Pre-nursery Stage**
  - Preparation of soil for planting germinated seed nuts and filling into small black polythene bags
  - Growing of germinated seed nuts or sprouts in small black polythene bag under shading net
  - Watering and application of NPK fertilizer
  - Transfer of seedlings to the nursery at the four or five leaf stage
  - Small amount of drained water
  - Used polythene bags

- **Nursery Stage**
  - Preparation of nursery soil and filling into large black polythene bags
  - Transfer of seedlings into large sized polythene bags filled with free draining nursery soil in the open field of the main nursery
  - Watering and application of NPK fertilizer
  - Transplanting of seedlings after about a year at a height of about 1-1.3m
  - Wastewater
  - Used polythene bags

- **Plantation Stage**
  - Land clearing, lining and pegging to dig the planting pits
  - Filling pit with surrounding topsoil and application of 500g-rock phosphate per planting pit
  - Planting of seedlings with 9 meters between plants, a total of about 143 plants per hectare
  - Ring weeding around the base of the oil palm, ablation or castration of initial bunches
  - Biomass
Seedling watering is by a combination of the drip irrigation system and manual watering. At this stage, NPK fertilizer with a ratio 15:15:15 or 17:17:17 is applied, providing both the phosphorus needed for good roots development and the nitrogen necessary for fast vegetative growth. The seedlings are transplanted after about a year, when they are typically of a height of 1 to 1.3m from base and have more than 13 functional leaves. They are transplanted to the field on ‘first come first served’ basis i.e. older seedlings are transplanted first. However, no pre-nursery and nursery activities has been undertaken within the past three years because the land available for planting has been exhausted.

3.2.3 Plantation Stage
The plantation stage involves the following major activities:

- Land preparation;
- Transplanting;
- Planting;
- Maintenance of plantation (field inspection, weed control, ablation or castration of initial flowers, pest control and disease control).

Land Preparation
The land is prepared for oil palm plantings at least 3 months before transplanting the seedlings. This involves land clearing, lining and pegging to dig the planting pits at the required distances. Pits of 60cm³ are taken and filled with surrounding topsoil and allowed to settle. Rock phosphate is applied at 500g per planting pit. At present no land has been cleared for land preparation.

Transplanting
Transplanting to the main field is carried out at the onset of the rainy season (between May and June). While transporting seedlings to the planting site, one hand is placed at the bottom of the bag while holding the plant collar with the other one. Gloves are used to avoid injury with spines of the leaves.

Planting
Planting in the field is commonly done in equilateral triangular form, with 9m between plants, reaching a total of about 143 plants per hectare. In the equilateral triangular system, each plant occupies the center of a hexagon thus allowing efficient use of space. The plantation is rain fed, and the NPK fertiliser is applied once at 4 – 6 weeks after planting. The second application of the NPK fertiliser will be carried out during the dry season.

Maintenance of Plantation
Field Inspection: Field inspection is carried out 1 month after planting to be able to detect dead plants and make arrangements for replanting. Replanting is carried out during the onset of next rainy season.

Weed control: The base of the oil palm is kept free of weeds through ring weeding to keep the roots of the young palms free from competition. The application of herbicides to control weeds is also being implemented. Weed control also aids in the maintenance of paths between the palms to allow for inspection and in later years for harvesting. Guidelines or the application of agrochemicals document has been drawn up by management to ensure the appropriate application of agrochemicals. A total of 660lts and 4,260lts of herbicides was utilised in 2015 and 2016.
Ablation or Castration of Initial Flowers
Some young palms have already produced their initial flowers. All initial flowers produced are removed. Removal of such inflorescences is called ablation or castration. Removal of all inflorescences during the initial 3 years is known to improve vegetation growth of young palms so that regular harvesting can commence after 3½ years of planting. Ablation is done at monthly interval by pulling out the young inflorescences using gloves or with the help of devices such as narrow bladed chisels. Ablation is also known to improve drought resistance capacity of young palms by improving shoot and root growth.

Pest Control
Rodents such as rats burrow into bole of the seedlings and the young palms that have been transplanted into the field. Wire meshing is used to protect the seedlings and the young palms from the rodents. Biological control of the rodents by creating bird perches within the plantation to invite birds of prey, such as the barn owls, to the plantation has been implemented with moderate level of success (Appendix 4). No pesticides are applied in the field in rodent control.

Disease Control
The most prevalent disease is Blast and this controlled by the application of Furadan 3G and watering.

3.3 Plantation Development
About 303,740 seedlings were transplanted between 2010 and 2012, and 46,260 in 2015; all covering a total area of about 2,169ha and 330.43ha respectively. Of the seedlings that are transplanted, about 90% are able to survive in the field.

3.4 Equipment and Machinery
The equipment and machinery status of VRL is shown in Table 3.2.

Table 3.1 List of Equipment and Machinery Operated by VRL

<table>
<thead>
<tr>
<th>No.</th>
<th>Type of Equipment</th>
<th>Quantity</th>
<th>Comments/Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pick-Up Trucks</td>
<td>4</td>
<td>Good condition</td>
</tr>
<tr>
<td>2.</td>
<td>Tractors</td>
<td>1</td>
<td>Good condition</td>
</tr>
<tr>
<td>3.</td>
<td>Stand-by Generator</td>
<td>3</td>
<td>Good condition</td>
</tr>
<tr>
<td>4.</td>
<td>Wheel barrows</td>
<td>20</td>
<td>Good condition</td>
</tr>
<tr>
<td>5.</td>
<td>Chainsaw</td>
<td>2</td>
<td>Good condition</td>
</tr>
<tr>
<td>6.</td>
<td>Motor Bikes</td>
<td>10</td>
<td>Good condition</td>
</tr>
<tr>
<td>7.</td>
<td>Boom Sprayer</td>
<td>1</td>
<td>Good condition</td>
</tr>
<tr>
<td>8.</td>
<td>Irrigation Infrastructure</td>
<td>1</td>
<td>Good condition</td>
</tr>
<tr>
<td>9.</td>
<td>Printers</td>
<td>2</td>
<td>Good condition</td>
</tr>
<tr>
<td>10.</td>
<td>Laptop Computers</td>
<td>6</td>
<td>Good condition</td>
</tr>
<tr>
<td>11.</td>
<td>Desktop Computer</td>
<td>1</td>
<td>Good condition</td>
</tr>
<tr>
<td>12.</td>
<td>Handpush Truck</td>
<td>4</td>
<td>Good condition</td>
</tr>
<tr>
<td>13.</td>
<td>Grass cutting machine</td>
<td>2</td>
<td>Good condition</td>
</tr>
<tr>
<td>14.</td>
<td>Knapsack spraying machine</td>
<td>50</td>
<td>Good condition</td>
</tr>
</tbody>
</table>

3.5 Resource Utilisation
3.5.1 Electricity Consumption
The company uses generator set for its electricity supply on the plantation.
3.5.2 Water Consumption

Water supply is from two main sources. Water used at the Manager’s residence is mainly from the Ghana Water Company Limited mains, while the plantation utilises the Asukokoo River as its source of water supply.

Water is pumped from the Asukokoo River for irrigation purposes on the plantation. A meter has been installed on the pump and the average monthly water consumption recorded is 1,000 m$^3$ per day during the rainy season and 1,450 m$^3$ per day during the dry season. Boreholes have been provided for workers at the site camp for domestic water supply.

3.5.3 Fuel Consumption

Fuels used are diesel, petrol, lube oil and fuel-wood. Diesel and petrol are stored in 0.208 m$^3$ drums at the fuel depot located onsite. The diesel is mainly used to power a 30kVA capacity standby generator and the vehicles. Hired vehicles are also sometimes fueled by VRL. Petrol is used mainly to power a 13 horse power, 7.8kVA capacity standby generator set used at the apartment for the managers. Lube Oil is procured for the company’s vehicles.

Logged tree branches are utilised as fuel wood by workers onsite for cooking. An estimated average of 4.85 m$^3$ of fuelwood is consumed monthly. This translates to about 58.25 m$^3$ of fuelwood consumption annually.

Diesel consumption for Genset between January and July 2016 was 6,570 litres. Detailed monthly diesel from the operations of VRL at Brewaniase are tabulated in Table 3.3.

Table 3.2 Generator Set Fuel Usage in 2014 and 2015

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Volume (litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>September</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>October</td>
<td>540</td>
</tr>
<tr>
<td></td>
<td>November</td>
<td>540</td>
</tr>
<tr>
<td></td>
<td>December</td>
<td>630</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>1,800</td>
</tr>
<tr>
<td>2016</td>
<td>January</td>
<td>1,530</td>
</tr>
<tr>
<td></td>
<td>February</td>
<td>1,470</td>
</tr>
<tr>
<td></td>
<td>March</td>
<td>630</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>810</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>780</td>
</tr>
<tr>
<td></td>
<td>Jane</td>
<td>810</td>
</tr>
<tr>
<td></td>
<td>July</td>
<td>540</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>6,570</td>
</tr>
</tbody>
</table>

3.6 Releases into Environmental Media

The releases from VRL’s operations into the various environmental media (ie. water, air and land) are described below. The environmentally based process diagram of the activities of the plantation has been shown in Figure 3.4. As per Section 6.15 of its environmental permit conditions (Permit # CA00253), and as a self-regulatory measure, SGSOG instituted an environmental media monitoring programme to identify, and ascertain the sources and characterizes of releases into environmental media. The monitoring programme is
summarised in Table 3.4. VRL continued the environmental media monitoring programme for the plantation, 2015.

**Table 3.3 Schedule of the Environmental Media Monitoring Programme**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient air quality monitoring</td>
<td>June 2015/September 2015 and January 2016/March 2016</td>
</tr>
<tr>
<td>Ambient noise level monitoring</td>
<td>June 2015/September 2015 and January 2016/March 2016</td>
</tr>
<tr>
<td>Surface water quality monitoring</td>
<td>September 2015/March 2016</td>
</tr>
</tbody>
</table>

3.6.1 **Releases into Water**

*Stormwater/Runoff*

A 30-m wide buffer has been created between plots and the Asukokoo River. In addition to the buffer zone, pueraria (cover crop) has been planted to trap sediments that could be washed into the River during runoff.

*Raw Water Quality*

The mean of results obtained from the 2 monitoring sites for September 2015 and March 2016 are presented in Table 3.4. The quality of the river is compared with the WHO drinking water quality guidelines (based on the assumption that local communities have direct access to the streams and presumably use it for domestic purposes). The values are also compared to the EPA effluent quality guidelines.

**Table 3.4 Mean Water Quality Results of the Asukokoo River**

<table>
<thead>
<tr>
<th>Parameter (Units)</th>
<th>Upstream ASK 2</th>
<th>Downstream ASK 1</th>
<th>WHO Guidelines</th>
<th>EPA Effluent Quality Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH (units)</td>
<td>8.003</td>
<td>8.083</td>
<td>6.5 – 8.5</td>
<td>6 – 9</td>
</tr>
<tr>
<td>Conductivity (μS/cm)</td>
<td>65.60</td>
<td>54.73</td>
<td>-</td>
<td>1,500</td>
</tr>
<tr>
<td>Total Dissolved Solids (mg/l)</td>
<td>39</td>
<td>33.6</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Total Suspended Solids (mg/l)</td>
<td>6.5</td>
<td>4.5</td>
<td>-</td>
<td>50</td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td>40.01</td>
<td>41.205</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>Chloride (mg/l)</td>
<td>3</td>
<td>1.5</td>
<td>250</td>
<td>250</td>
</tr>
<tr>
<td>Sulphate (mg/l)</td>
<td>2.225</td>
<td>2.285</td>
<td>250</td>
<td>-</td>
</tr>
<tr>
<td>Nitrate (mg/l)</td>
<td>0.1915</td>
<td>0.3095</td>
<td>10</td>
<td>50</td>
</tr>
<tr>
<td>Total Hardness (mg/l)</td>
<td>44</td>
<td>146</td>
<td>500</td>
<td>-</td>
</tr>
<tr>
<td>Oil/grease (mg/l)</td>
<td>&lt;1.00</td>
<td>&lt;1.00</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Total Iron (mg/l)</td>
<td>2.397</td>
<td>2.528</td>
<td>0.3</td>
<td>-</td>
</tr>
<tr>
<td>Manganese (mg/l)</td>
<td>0.014</td>
<td>0.0145</td>
<td>0.4</td>
<td>-</td>
</tr>
<tr>
<td>Faecal Coliform (counts)</td>
<td>19.5</td>
<td>19.5</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Total Coliform (counts)</td>
<td>276</td>
<td>278.5</td>
<td>0</td>
<td>400</td>
</tr>
</tbody>
</table>

The following observations were made from the results above:

5. The general physicochemical parameters analysed were within the WHO water quality guidelines;
6. The bacteriological quality of the stream was however, above the WHO guidelines. This is to be expected as surface water systems are open and exposed to contamination, and are rarely without coliform organisms;
7. Both upstream and downstream portions had comparable quality indicating that there was very little anthropogenic effects between the two points; and
8. The quality of the stream is comparable to the baseline quality determined during the baseline quality determination during the baseline data collection for the EIA study.
3.6.2  Releases into Air (Emissions)

Emissions into air are mainly from dust generated from the movement of vehicles within the plantation and the site camp. Exhaust fumes from vehicles and the standby generators is minimal due to relatively small quantity resulting in easy dispersion by air. Air quality is influenced significantly by climatic conditions. The means of the results obtained from environmental media monitoring during the relatively wet periods (ie, June, 2015), and the relatively dry period (ie. January, 2016) are tabulated in Tables 3.5 and 3.6. The results are compared to the relevant National Ambient Air Quality Guidelines (NAAQG) values. Two of the sampling locations are within the plantation and two others outside.

Table 3.5  Air Quality Monitoring Results

<table>
<thead>
<tr>
<th>No.</th>
<th>Sampling Site</th>
<th>TSP (µgm⁻³)</th>
<th>PM₁₀ (µgm⁻³)</th>
<th>SO₂ (µgm⁻³)</th>
<th>NO₂ (µgm⁻³)</th>
<th>CO (µgm⁻³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Offices/Work Camp</td>
<td>196.00</td>
<td>34.50</td>
<td>&lt;0.5</td>
<td>ND</td>
<td>7.50</td>
</tr>
<tr>
<td>2</td>
<td>Old Fankyeneko Hamlet</td>
<td>195.50</td>
<td>33.50</td>
<td>&lt;0.5</td>
<td>ND</td>
<td>6.70</td>
</tr>
<tr>
<td>3</td>
<td>Abrubruwa Village</td>
<td>199.00</td>
<td>34.00</td>
<td>&lt;0.5</td>
<td>ND</td>
<td>7.50</td>
</tr>
<tr>
<td>4</td>
<td>New Fankyeneko LA Primary School</td>
<td>200.50</td>
<td>38.00</td>
<td>&lt;0.5</td>
<td>ND</td>
<td>7.50</td>
</tr>
</tbody>
</table>

**National Ambient Air Quality Guidelines (NAAQG) for Industrial Areas**

<table>
<thead>
<tr>
<th>TSP (µgm⁻³)</th>
<th>PM₁₀ (µgm⁻³)</th>
<th>SO₂ (µgm⁻³)</th>
<th>NO₂ (µgm⁻³)</th>
<th>CO (µgm⁻³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>230.00</td>
<td>70.00</td>
<td>900</td>
<td>400</td>
<td>100</td>
</tr>
</tbody>
</table>

*Not detected or below the detection limit of the instrument*

Averaging Time………*=24hrs ………………**=1 hour……………***=15mins

March, 2015

Table 3.6  Mean Air Quality Monitoring Results (Wet Season)

<table>
<thead>
<tr>
<th>No.</th>
<th>Sampling Site</th>
<th>TSP (µgm⁻³)</th>
<th>PM₁₀ (µgm⁻³)</th>
<th>SO₂ (µgm⁻³)</th>
<th>NO₂ (µgm⁻³)</th>
<th>CO (µgm⁻³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Offices/Work Camp</td>
<td>162.00</td>
<td>37.00</td>
<td>&lt;0.5</td>
<td>ND</td>
<td>0.03</td>
</tr>
<tr>
<td>2</td>
<td>Old Fankyeneko Hamlet</td>
<td>161.00</td>
<td>38.50</td>
<td>&lt;0.5</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>3</td>
<td>Abrubruwa Village</td>
<td>166.65</td>
<td>40.00</td>
<td>&lt;0.5</td>
<td>ND</td>
<td>0.02</td>
</tr>
<tr>
<td>4</td>
<td>New Fankyeneko LA Primary School</td>
<td>171.00</td>
<td>43.50</td>
<td>&lt;0.5</td>
<td>ND</td>
<td>0.03</td>
</tr>
</tbody>
</table>

**National Ambient Air Quality Guidelines (NAAQG) for Industrial Areas**

<table>
<thead>
<tr>
<th>TSP (µgm⁻³)</th>
<th>PM₁₀ (µgm⁻³)</th>
<th>SO₂ (µgm⁻³)</th>
<th>NO₂ (µgm⁻³)</th>
<th>CO (µgm⁻³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>230.00</td>
<td>70.00</td>
<td>900</td>
<td>400</td>
<td>100</td>
</tr>
</tbody>
</table>

*Not detected or below the detection limit of the instrument*

Averaging Time………*=24hrs ………………**=1 hour……………***=15mins

It can be assumed from the two tables that the concentration of TSP, PM₁₀, CO and SO₂ were within the EPA’s maximum permissible limits at all the monitoring sites. NO₂ was not in detectable concentrations for both periods.

3.6.3  Releases onto Land

The primary waste streams generated from the plantation activities are listed as follows:

- Used polythene bags (pieces)
- Tree stumpage and felled trees;
- Empty chemical containers and other packaging materials;
- Waste paper;
- Wastewater from cleaning; and
- Domestic waste from site camp (mainly food waste and food packaging materials).

The estimated quantities of some of the waste generated are summarized in Table 3.7.
Table 3.7  
**Estimated Quantities of Waste Generated on the Plantation**

<table>
<thead>
<tr>
<th>No.</th>
<th>Waste</th>
<th>Quantity in 2012</th>
<th>Quantity in 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Used polythene bags (pieces)</td>
<td>123,000</td>
<td>-</td>
</tr>
<tr>
<td>2.</td>
<td>Empty chemical containers / packaging materials (containers)</td>
<td>180</td>
<td>213</td>
</tr>
<tr>
<td>3.</td>
<td>Waste paper (tonnes)</td>
<td>0.60</td>
<td>0.50</td>
</tr>
<tr>
<td>4.</td>
<td>Domestic Waste (tonnes)</td>
<td>65kg</td>
<td>36kg</td>
</tr>
</tbody>
</table>

3.7  
**Hazard in the Working Environment**

The industrial hazards associated with VRL’s plantation operations are summarized as follows:

- Noise generation;
- Occupational health and safety risks;
- Exposure to chemicals;
- Fire risks; and
- Exhaust and dust emissions.

Table 3.8 summarizes the release into environmental media as well as hazards in the working environment.

Table 3.8  
**Summary of Hazards and Releases into Environmental Media**

<table>
<thead>
<tr>
<th>Activity/Workplace</th>
<th>Air</th>
<th>Water</th>
<th>Land</th>
<th>Hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transplanting to field</td>
<td></td>
<td>Waste polythene</td>
<td></td>
<td>Injury from spikes on seedlings</td>
</tr>
<tr>
<td>Plantation development</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixing and application of agrochemicals</td>
<td></td>
<td></td>
<td></td>
<td>Exposure to chemicals through contact and inhalation</td>
</tr>
<tr>
<td>Equipment/machinery handling and movement of vehicles</td>
<td>Exhaust fumes, Dust, Noise</td>
<td></td>
<td></td>
<td>Inhalation of fumes and dust, noise nuisance, Injury from accidents</td>
</tr>
<tr>
<td>Site camp activities</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel storage</td>
<td>Inhalation of VOCs</td>
<td></td>
<td></td>
<td>Fire outbreak</td>
</tr>
<tr>
<td>Stores/Warehouse</td>
<td></td>
<td>Chemical containers, packaging material, product spills, leakages</td>
<td>Occupational health risk, injury from accidents</td>
<td></td>
</tr>
<tr>
<td>Generator set</td>
<td>Noise, Fumes, Emissions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td>Release of noxious gases from welding</td>
<td>Spills</td>
<td>Scrap, spills and leaks</td>
<td>Injury, inhalation of noxious emissions</td>
</tr>
</tbody>
</table>

The mean values of results of noise measurements obtained from environmental media monitoring in 2015 and 2016 are presented in Table 3.9. The results are compared to the relevant National Ambient Noise Level Guideline (NANLG) values. Two of the sampling locations are within the plantation and two others outside.

Table 3.9  
**Results of Noise Measurements at 4 Monitoring Locations**

<table>
<thead>
<tr>
<th>Sampling Site</th>
<th>Integrated Noise Level (Leq) in Db(A)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sept.15</td>
</tr>
<tr>
<td>Offices/Work Camp</td>
<td>43.7</td>
</tr>
<tr>
<td>Old Fankyeneko Hamlet</td>
<td>42.2</td>
</tr>
<tr>
<td>Abrubruwa Village</td>
<td>58.2</td>
</tr>
<tr>
<td>New Fankyeneko</td>
<td>60.2</td>
</tr>
<tr>
<td>NANLG for areas with some commercial or light industry</td>
<td>60</td>
</tr>
</tbody>
</table>
The table above establishes quite clearly that noise levels measured within the plantation area were below EPA NANLG threshold of 60 dB(A), for areas with some commercial or light industry. Noise levels outside the plantation however generally exceeded the guidelines mostly due to local influences such as movement of vehicles, etc. Noise generation is therefore not a significant hazard arising from the operations of VRL at present.
Chapter 4

Evaluation of Environmental Performance

- Compliance with Statutory Requirements
- Raw Material Handling and Usage
- Energy Management
- Water Use Efficiency
- Emissions Management
- Diesel Storage and Supply
- Biodiversity Conservation Practices
- Waste Management
- Agro-chemical Handling and Usage
- Land Use Management
- Occupational and Public Health and Safety
- Maintenance Activities of Plantation
- Grievance Redress Process
4.0 EVALUATION OF ENVIRONMENTAL PERFORMANCE

Volta Red has so far carried out its operations with the intent of reducing, to a minimum, all adverse effects associated with the plantation activities while taking steps to ensure the sustainability of the entire project. The company has made strides in keeping with its commitments in the following areas:

- Raw material handling;
- Energy management;
- Water use efficiency;
- Emissions management;
- Diesel storage and supply;
- Biodiversity conservation;
- Waste management;
- Agro-chemical handling and usage;
- Land use management;
- Occupational and public health and safety; and
- Grievance redress.

4.1 Compliance with Statutory Requirements

4.1.1 Water Use Permit
SGSOG obtained a Water Use Permit in January, 2011 from the Water Resources Commission to abstract water from the Asukokoo River for irrigation of the nursery at an annual rate of 14,250m$^3$ for a term of three years subject to renewal. VRL has already applied for permit renewal and is awaiting approval and issuance.

4.1.2 Environmental Media Monitoring
As part of the Schedule to the Environmental Permit (permit no. CA00253; section 6.15) issued the Company, and as a self-regulatory measure, the company has instituted an environmental media monitoring which comprises the following:

- Surface water monitoring;
- Ambient air quality monitoring; and
- Ambient noise level monitoring.

The monitoring reports are submitted to the EPA as per the permit conditions.

4.1.3 Annual Environmental Report
SGSG submitted its first Annual Environmental Report (2010) to the EPA in accordance with section 25(1) of the Environmental Assessment Regulations (LI 1652), which requires any person granted an environmental permit under this regulation to submit an Annual Environmental Report (AER) in respect of this undertaking 12 months from the date of commencement of operation and every 12 months thereafter to the Agency. However, because of plans to change the ownership in 2011, No AER was submitted in the subsequent years.

4.1.4 Environmental Management Plan
As per section 6.26 of the schedule to the Environmental Permit granted, an Environmental Management Plan (EMP) is expected to be submitted within 18 months after the commencement of project operation and thereafter every 3 years in accordance with requirements spelt out in Regulation 24 of the Environmental
Assessment Regulation, LI 1652. This is the first EMP covering the operations of Volta Red since it took over the plantation from SGSOG.

4.2 Water Resource Use Efficiency

VRL continues to put in steps to manage water resources available on the plantation. There are two water management methods in place. These are:

- Management of water consumption rate; and
- Management of water resources available.

4.2.1 Water Consumption Management

Water is abstracted from the Asukokoo River for mixing chemicals and irrigation purposes by means of a diesel-powered generator to run a 20hp pedrollo submersible pump supported by a wharf (Figure 4.1), by pumping through PVC pipes. Water is distributed to the field using sprinkler irrigation method. Water usage at the plantation varies according to the season. About an average of 1,000m³ of water is required per day during the rainy season and about an average of 1,450m³ of water per day in the dry season.

![Figure 4.1 20hp Pedrollo Submersible Pump Supported by a Wharf](image)

Once the required volume of water for irrigation is attained, pumping of water is stopped for the day. The irrigation system entails the use of pipes connected to the pump so as to ensure the judicious use of water and also prevents any form of contaminants, such as pesticides, from directly reaching the River.

Water for mixing chemicals is delivered through a rubber hose/tube and mixed in gallons to reduce the risk of spillage and contact with the skin. The field supervisors ensure that water spilling over during chemical mixing is minimised to reduce run-off and evaporation.

Water abstracted is not treated for any purpose at the plantation, as water for domestic purpose is obtained from two (2) boreholes installed at the site.

4.2.2 Water Resource Management

The plantation is drained by the Asukokoo River as well as its tributaries: Dibem, Kpafia and Tomgbah streams. The Asukokoo is a perennial river while the tributaries dry up during the dry season.
In line with permit conditions from the WRC for water abstraction and also as a conservation measure, Volta Red maintains a buffer zone of 30m and 15m (Figure 4.2) around the Asukokoo River and its tributaries respectively. The Ghana interpretation of the RSPO (of which Volta Red is a part) also requires that a buffer zone be maintained around water resources. The buffer zones serve as natural filters for surface runoff from the plantation areas and also play a major role in protecting the banks of the waterways from channel erosion.

![Figure 4.2 Portion of the 30m wide Buffer Zone](image)

### 4.3 Biodiversity Conservation Measures

VRL strictly prohibits illegal logging, hunting and other human-induced disturbances within its concession and also in the High Conservation Value (HCV) forest. This is aimed at conserving the environment in which the company operates. In regard of these, the company has put in place a policy that prohibits hunting, illegal logging, cattle grazing among others. Once the environment is protected, it will deliver significant biodiversity, social and cultural benefits. There are also biodiversity plots within the plantation (Figure 4.3).

![Figure 4.3 Sections of Biodiversity Conservation Plots](image)
Volta Red has not been able to continue with the annual survey of the aquatic ecosystem of the Asukokoo River, an exercise which was began in July 2010. Furthermore, the annual terrestrial survey of Fauna and Flora within the plantation, surrounding communities and the HCV forest has also not been done as set out in the permit condition.

Additionally, Volta Red has put in place an educational and awareness creation programme for its workforce. The objectives of the programme are to:

- Inform the workforce on the importance of the protection and conservation of wildlife and nature;
- Improve knowledge and foster positive attitude among the workforce toward wildlife protection and nature;
- Educate the workforce to learn and care about conservation issues; and
- Promote sustainable environmental conservation practices among the workforce in their small ways.

4.4 **Agrochemical Usage and Handling**

The main fertilizers in use are NPK and Urea whereas herbicides, insecticides, and fungicides (HIFs) are used to control weeds and diseases. These chemicals are from certified brands whose products have been recommended for safe use in the environment. Agrochemicals are purchased from certified suppliers (Calli Ghana Limited and Greenshield Enterprise). Only the needed quantity of agrochemicals is purchased for each application session, hence, there is minimal generation of leftovers. Leftovers are stored in a designated storage until the next application session when they are exhausted. In handling chemicals, it is ensured that good records are kept by store keepers at all times.

Application of these chemicals is done by using manual backpack (knap sack) sprayers. Glyphosate mixtures are often applied pre-emergent on paths and circles to remove early-germinating weeds. During fertiliser, herbicide and pesticide application, only that amount necessary for optimum plantation production is used as dictated by tissue sampling results and weed control requirements.

Additionally, chemical applicators are trained in correct fertiliser application and spraying techniques (Appendix 5) to ensure fertiliser is applied near the point of use and not spread too close to, or onto waterways and that herbicide is only applied where necessary.

Between September 2015 and June 2016, Volta Red had purchased a sum total of 660 litres of EDUODZI herbicide from Greenshield Enterprise and 4,260 litres (Table 4.1) of kalach 360SL from Calli Ghana limited with each gallon containing 20 litres. These herbicides are stored and locked in a secure area (Fig 4.4).
Table 4.1  Data on Herbicides received in 2015 and 2016

<table>
<thead>
<tr>
<th>Chemicals</th>
<th>Date Received</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kalach 360 SL</td>
<td>12/08/2015</td>
<td>580 lts</td>
</tr>
<tr>
<td></td>
<td>16/09/2015</td>
<td>1100 lts</td>
</tr>
<tr>
<td></td>
<td>30/10/2015</td>
<td>700 lts</td>
</tr>
<tr>
<td>Kalach 360 SL</td>
<td>18/01/2016</td>
<td>360 lts</td>
</tr>
<tr>
<td></td>
<td>18/04/2016</td>
<td>240 lts</td>
</tr>
<tr>
<td></td>
<td>28/04/2016</td>
<td>800 lts</td>
</tr>
<tr>
<td></td>
<td>28/06/2016</td>
<td>480 lts</td>
</tr>
</tbody>
</table>

The safety officer ensures that chemicals do not leak or spill during handling and dispensing. Detailed records of raw materials are kept throughout the plantation development. Table 4.1 show records of quantities of raw materials used from 2015 to 2016. Data on the quantity and type of agro chemicals are always kept.

4.5  Storm Water/Run off Management

Volta Red maintains a no burning policy during land preparation. Land clearing is done in such a way that the top soil is not removed. Additionally, to minimise soil erosion and improve the fertility of the soil, leguminous cover crops (pueraria) are broadcasted as early as possible after land preparation especially in areas where the crop has not been established. This is carried out to recycle plant nutrients whiles enhancing the soil’s organic and moisture content. The crop is also however, slashed down in areas where they seem over-grown either by manual slashing or by means of tractor mounted slasher. Figure 4.5 shows pueraria grown to control weeds.
Figure 4.5  Mature Pueraria grown for Weed Control

4.6 Waste Management

Waste management in the plantation involves the following:

- Waste oil management
- Wastewater management; and
- Solid domestic waste.

4.6.1 Waste Oil Management

Waste oil generated from the activities in the plantation is from water pumps, generator sets and farm machinery. Used oil is stored in oil-storage drums and given to Total Ghana Limited and a small scale oil dealer; who have useful need for it. This ensures that no waste oil is discharged on the plantation.

4.6.2 Wastewater Management

Wastewater generated from the plantation activities are limited to sewage from the use of sanitary facilities and are collected in septic pits. Wastewater generated from the use of water hose to fill gallons during chemical mixing is limited to the mixing shed. The wastewater from this process is very small and it seeps into the ground.

4.6.3 Solid Waste Management

The main types of solid waste generated from the activities on the plantation include empty chemical contains/packaging materials, used polythene bags and solid domestic waste. About 118 empty containers and 3,000 fertilizer bags were generated in 2015. Chemical containers and fertilizer bags are returned to the suppliers (Calli Ghana and Greenshield Company limited) to be reused or disposed of. Chemicals stored or handled are not more than what is absolutely necessary. Currently there are no expired chemicals in stock but should there be any such chemicals; Volta Red shall return obsolete chemical to the suppliers for proper disposal.

Solid domestic waste, mainly styrofoam food packaging and plastic water containers as well as food leftovers generated in small quantities of about 25kg/week are disposed of at two (2) refuse dumpsite (16 feet deep) located 150m from the site camp.
4.7 Maintenance of the Plantation

VRL believes in implementing the best agricultural practices that are in place industry-wide today. Hence, the development of good agricultural practices guidelines based on a thorough evaluation of potential agronomic practices and associated inputs to ensure the sustainability of the plantation operations.

In demonstrating Volta Red’s commitment to good agricultural practices, standard procedures for each work area have been established (Appendix 5). Field maintenance schedules are carried out on daily basis in accordance with these standards with the supervision of headmen and departmental heads to ensure that the standard established is attained.

Depending on field conditions, ring weeding is carried out on daily basis. It is usually either by manual means or by herbicide application. With manual weeding, circles are slashed at a radius of 2m around the base of the palm using cutlass at ground level and all over-grown legumes and other creepers on the palm tree are de-creeped from the palm using cutlass.

Pre-emergent herbicides are applied on cycles to remove early-germinating weeds. Maintenance or routine pruning is done two (2) times each year on well-maintained palms, i.e. one cycle in December or January (i.e. before the peak crop season) and one cycle in June to August (.i.e. at the end of the main crop season).

The plantation is divided into 25 blocks and accessed by plantation roads. These roads which are not paved are cumbered by slush so as to prevent ponding and erosion during the rainy season. The roads are also scheduled to be maintained annually by the road maintenance team of the company.

4.2.7 Gaseous Emission

Fumes from trucks and gensets are minimal and are easily dispersed by air. They are therefore not a public nuisance. The access and internal feeder roads on the plantation are not paved but vehicular movements on these roads though not frequent are restricted to a maximum of 30km/hr. Generation of particulate matter is therefore very minimal. Moreover, the periodic burning of refuse is scheduled for periods when workers are away from the site camp.

Gensets are purchased from reliable sales outlets, who have trained personnel to provide expert service and parts support after sale service. Servicing and maintenance works on genset are scheduled and carried out by trained personnel certified to do so. Volta Red runs a routine preventive maintenance programme. The preventive maintenance consists of the following operations:

- General inspection
- Lubrication service
- Cooling system service
- Fuel system service
- Servicing and testing starting batteries
- Regular engine exercise

4.8 Occupational and Public Health and Safety

Volta Red recognises its responsibility to ensure that all reasonable precautions are taken to provide working conditions which are safe, healthy and compliant with all statutory requirements and codes of practice. The use of agro-chemicals, generation of noise from machinery, emission of dust from land preparation activities are
the key sources of risk for occupational and public health and safety. Volta Red has a stock of PPE which are provided to all personnel once they undergo an initial orientation. The Plantation Manager, the Health and Safety Officer and Field Supervisors conduct daily monitoring on the plantation to ensure that the right PPE are used by workers. Safety signs/boards have been erected at vantage points throughout the plantation to provide onsite education and directions to staff and visitors (Figure 4.6).

Overalls, gloves, goggles and nose masks are provided to all workers involved in the use of agro-chemicals. Operators of machinery such as water pumps are provided with nose masks and ear plugs to protect them from dust emissions and noise. First aid kits are provided on the Site camp. Additionally, all personnel are given adequate training for tasks that they perform to reduce any risks associated with their work activities.

**Figure 4.6   Display of Safety Rules on the Plantation**

However, Volta Red also recognises that accidents are inevitable, even in the safest of working environments, despite the best efforts of management and employees to prevent them. Such occurrences are handled so as to minimise threat and injury to all. Accidents are reported to either the Safety Officer or an immediate supervisor within 24 hours of the incident occurring and recorded no matter how minor it is and the reports acted upon so that accidents can be minimised in the future and the organisation can learn from their experiences.

In the event of a minor injury or health related incident, first aid care is rendered according to the situation by a first aider, based on the aider’s capabilities and training. Following such an incident, an incident or accident form is filled by the aider and filed. Additionally, in the event of an injury or accident where medical attention is considered advisable or necessary (major injury), the safety officer is informed and arrangements made immediately to take the casualty to the nearest health facility.

All accidents or incidents that result in an injury or illness at work are recorded using the accident and incident Report form (Table 4.2), through which the company is able to determine which department has the highest cases of accident within the week and the field of most accident occurrence. This enables the company to draw out educational and awareness programme aimed at sensitizing the department on health and safety. Detailed information on the occupational health and safety plan of VRL is in Appendix 4.
Table 4.2  Accidents and Illnesses recorded from January 2016 to July 2016

<table>
<thead>
<tr>
<th>Month</th>
<th>No. of Injuries</th>
<th>Causes</th>
<th>Illness</th>
<th>Causes</th>
<th>Corrective Action Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>14</td>
<td>Most of the cases were as a result of disregard for safe work procedures.</td>
<td>6</td>
<td>Physical stress, and lack of good housekeeping practices</td>
<td>* Continuous education and awareness of the workforce on the importance of incorporating safe work procedures in every job. * Monitoring of the work area to ensure strict adherence to work procedures. * Education on personal hygiene and health (good housekeeping practices)</td>
</tr>
<tr>
<td>February</td>
<td>2</td>
<td>Not using PPE and improper handling of cutlasses during and after field work.</td>
<td>5</td>
<td>Physical stress</td>
<td>* Provision of adequate PPE * Education on the use and importance of PPE * Education on the need to take some exercises as an effective way to reduce stress.</td>
</tr>
<tr>
<td>March</td>
<td>9</td>
<td>Disregard for safe work procedures</td>
<td>9</td>
<td>Inability of employees to report early signs of illness leading to critical situations</td>
<td>* Education on the need to report to immediate supervisor any sign of illness felt during work. * Continuous education on the need to adhere to safe work procedures. * Disciplinary action taken against those who deliberately undermine established work procedures.</td>
</tr>
<tr>
<td>April</td>
<td>12</td>
<td>* As a result of the influence of alcohol. * Deliberate refusal to wear PPE</td>
<td>19</td>
<td>* Physical stress, tiredness, and temperature extremes.</td>
<td>* Education on the effects of alcohol whiles at work and disciplinary action for any breach of the rules * Education on the need to take in more water whiles working in a relatively high heat environment. * Disciplinary action taken against those who deliberately refuses to wear their PPEs</td>
</tr>
<tr>
<td>May</td>
<td>19</td>
<td>* Attention distracted whiles sharpening cutlass and harvesting chisels * Failure to use PPE</td>
<td>10</td>
<td>Inadequate physical capability. * Poor housekeeping practices. * Physical stress. * Extremes temperatures.</td>
<td>* The need to wear leather hand gloves prior to the sharpening of shape tools * Continuous education on the importance of good housekeeping practices both at work and home. * Education on the importance of drinking adequate water whiles working under extreme temperatures.</td>
</tr>
<tr>
<td>June</td>
<td>20</td>
<td>* Employees in an act to quickly finish up daily targets and catch up with colleagues. * Employees inability to cover their cutlasses with piece of rags after work.</td>
<td>18</td>
<td>* Extreme temperature causing high body temperature usually accompanied by shivering, and headache.</td>
<td>Regular field monitoring to ensure that employees after field work wrap their cutlasses with piece of rag * The need to avoid being in a haste to either catch up with colleagues or be in a race to finish first.</td>
</tr>
<tr>
<td>July</td>
<td>9</td>
<td>Complacency on the part of most employees</td>
<td>3</td>
<td>* Bee sting resulting into severe headache. * Severe bodily pains as a result of the nature of the work.</td>
<td>* All employees are entreated to keep careful watch for areas where bees might present. * Employees are also advised to report any minor sign of illness to immediate supervisor as soon as possible. * Disciplinary action is taken immediately against persons found acting contrarily to work procedures</td>
</tr>
</tbody>
</table>

4.9  Grievance Redress Mechanisms

Volta Red is committed to provide a transparent and open process for stakeholders to raise a grievance related to the implementation of its Sustainable Palm Oil policy. This is to ensure that local and other interested parties including employees understand the communication and consultation process for raising any issues with the company. For this reason, the company recognises that any dispute resolution mechanisms put forth
must be through open and transparent process where all grievances are dealt with in an effective, fairly and in a timely manner. The company accepts the responsibility as a corporate body, hence, wants local communities to be aware and involved in the communication and consultation methods put in place.

A grievance to the company is a complaint or concern, associated with the implementation of Volta Red’s Sustainable Oil Palm Policy, which an individual or a group seeks to address with Volta Red Limited. A grievance must be raised either in writing or by email via Volta Red’s email address (enquiry@voltared.com).

This process is deployed by Volta Red to handle any grievance from internal or external parties, including individuals, employees, contractors, suppliers, and civil society organizations concerning the development of projects, which includes recording grievances, verifying claims, rectifying confirmed issues, reporting the verification results and actions, delivering the response to stakeholders and managing and monitoring follow-up actions.

Grievance mechanism applies to Volta Red’s plantation, processing and trading operations, and all third-party suppliers. When a complaint against a third-party supplier is submitted to Volta Red, Volta Red engages the Grievance Raiser (Grievance Raiser refers to the individual or group submitting a concern) and the said supplier to discuss the issues raised in accordance with this procedure, with the end-objective of resolving the issues where they have been confirmed. In the event that the supplier does not want to engage in the process towards resolution and compliance with the Grievance Raiser’s concern, Volta Red may choose to review its relationship with that supplier.

Grievances related to Volta Red’s plantations may be addressed through a local, culturally appropriate grievance procedure, unless a community or their representative has opted to follow this mechanism. To this end, Volta Red Limited has nominated the Company General Manager and the Relation Manager as persons responsible for the handling of all enquiries about and grievances against the company. Any enquiries or issues relating to Volta Red Limited or the actions of any of the company’s officers should be addressed to the General Manager and the Relation Manager. They can be contacted on the following mobile numbers:

The General Manager: 002332441002/0023320753083
The Relation Manager: 0023324407182/0023320834097

Grievances are expressed via any of the following channels:
Via email to: Daniel@voltared.com
Nich@voltared.com
enquiry@voltared.com

In writing to: The General Manager or the Relation Manager
C/O Volta Red Limited
P. O. Box HH 64
Hohoe, GHANA

In addition, grievances submitted in writing by any grievance raiser should include the following information:
- Full Name
- Name of Organization (if any)
- Job Title
- Address
- Phone No. /Email Address (at least one contact point)
- Description of the grievance in detail
- Evidences to support the grievance
Chapter 5

Environmental Action Plan

- Compliance with Statutory Requirements
- Raw Material Handling
- Water Management Plan
- Biodiversity Conservation Plan
- Stormwater / Runoff Management Plan
- Waste Management Plan
- Plantation Maintenance
- Energy Management
- Grievance Redress Mechanism
5.0 ENVIRONMENTAL ACTION PLAN

Volta Red’s operations have been conducted in accordance with its commitment to run an environmentally sustainable development/project. This has been facilitated by the adoption and application of best operating practices (BOPs), improved technological methods and the efficient use and maintenance of machinery. The aspects of operations where environmental sustainability is emphasized are:

- Compliance with statutory requirements;
- Raw material handling and storage;
- Agrochemical handling and usage;
- Water resource use efficiency;
- Biodiversity conservation measures;
- Storm water/runoff management;
- Waste management;
- Plantation maintenance;
- Gaseous emissions; and
- Redress mechanism for public grievances.

5.1 Compliance with Statutory Requirements

5.1.1 Water Use Permit
Volta Red has completed the processes of renewing the Water Use Permit, covering water abstraction from the Asukokoo River for irrigation purposes, which expired in December 2013. The new permit is however yet to be issued. VRL will continue to abide by the permitting conditions of the permit.

5.1.2 Environmental Media Monitoring
As per section 6.15 of the Environmental Permit conditions and as a self-regulatory measure, VRL will pursue the implementation of the existing environmental media monitory programme which has not been actuated since Volta Red took over the plantation from SGSOG in 2013. The monitoring report would be submitted to the EPA. The monitoring programme would comprise:

- Ambient air quality monitoring;
- Ambient noise level monitoring;
- Surface water quality monitoring;
- Aquatic biological monitoring of the Asukokoo River; and
- Terrestrial biological monitoring.

5.1.3 Annual Environmental Monitoring
Volta Red will prepare and submit Annual Environmental Reports to the EPA, an exercise which has not been carried out since 2015, as stipulated in section 25(1) of the Environmental Assessment Regulations (LI 1652) which enjoins any person granted an environmental permit under these regulations to submit an annual environmental report (AER).

5.1.3 Environmental Permit Renewal
Volta Red is updating the EMP which expired in 2015 for submission to the EPA in order to secure a renewal of its Environmental Permit as per regulation 24 of the Environmental Assessment Regulations, LI 1652.
5.2 Raw Material Handling

A functional, well-engineered warehouse will be constructed for the proper storage of all needed chemicals. This will provide a clean and well ventilated storage room with dedicated shelves for different chemical categorization such as fertilizers, pesticides and herbicides.

The following will be considered in the design of the facility:

- Storerooms will be labeled to ensure materials are always placed at their designated positions and allow for easy access and reference;
- Chemicals will be categorized and arranged according to hazard level and labeled accordingly with the standardized hazard symbols;
- Designation of a room for washing and drying of PPE used by those applying agrochemicals;
- Provision of a shower and changing room for the agrochemical spraying team (applicators), and temporary storage room for empty chemical containers; and
- Installation of fire protection devices.

Moreover, the following records on chemicals will be kept and updated regularly:

- Date of purchase of chemicals;
- Expiry date of chemicals;
- Name of Officer collecting chemical;
- Quantity collected;
- Name and quantity of expired chemicals;
- Disposal method of obsolete chemicals; and
- Proper handling of chemicals.

Agro-Chemical Usage

The regime in which only needed quantities are purchased and used will be continued; the aim is to minimize excess chemicals which have to be stored. Any surplus chemical from previous application will be used in the next application. Good stock management practices would be continued by the store keepers. The mode of application and the training of applicators of chemicals and fertilizers would continue.

5.3 Water Management Plan

The current water management regime on the plantation will continue as described in Section 4.2. VRL will continue to abstract water from the Asukokoo Rivers for irrigation of the nursery once the Water Use Permit is ready for issuance. Management measures for these are as outlined below:

- Water consumption monitoring; and
- Water resources protection.

5.3.1 Water Consumption Monitoring

Management will institute wastage minimization plans, which will include implementation of the following programmes to significantly reduce present water consumption per unit product.

- Installing water meters on the pump for mechanized borehole to monitor consumption level from domestic uses;
- Analyse meters to detect consumption patterns by means of progression charts and graphs; and
• Education of relevant staff on judicious use of water through awareness creation seminars.

Borehole water will be sampled for laboratory examination to test its quality. The following maintenance and cleaning regime for boreholes, pumps and tanks will be ensured:

• Annual checks on boreholes;
• Cleaning of pumps and tanks, and
• Chlorination of tanks.

5.3.2 Water Resources Protection
The 30m buffer created between the Asukokoo and the activities of SGSOG will be maintained and protected for VRL’s activities. Additionally, the 15m wide riparian vegetation along the Dibem, Kpafia and Tomgbah Streams will also be conserved as well as the wetland within the plantation site. Management shall continue to educate workers on the importance of these conservation measures and supervisors will ensure that no plantation activity is carried out in the buffer zones.

5.4 Biodiversity Conservation Plan
The current biodiversity conservation plan, which discourages illegal logging, hunting and other disturbances within its concession and also in the High Conservation Value biodiversity plots, will continue as described in Section 4.3.

The annual survey of the aquatic ecosystem of the Asukokoo River and that of the terrestrial survey of fauna and flora within the plantation, surrounding communities and HCV forest will be revived, since its discontinuation in 2014. Awareness creation and education of workforce on the importance of conservation will be continued.

5.5 Stormwater / Runoff Management Plan
As a measure to reduce erosion on site and the transportation of sediment of the Asukokoo River as a result of storm water/runoff, Volta Red will undertake the following measures:

• Provide drains at site camp to channel runoff through vegetated areas;
• Ensure that vegetation making up the buffer zone along the water bodies is maintained to filter off sediments from runoff that flow in their direction;
• Stabilize all areas already disturbed by erosion with vegetation as soon as possible;
• Periodically inspect and maintain drains to remove accumulated sediment and debris; and
• Ensure there is no burning during land preparation to prevent exposure of the bare soil.

5.6 Waste Management Plan
5.6.1 Waste Oil
Volta Red will continue its arrangements with Total Ghana Ltd and small scale oil dealers for the retrieval of waste oil generated from its activities.

5.6.2 Effluent / Wastewater Management
Presently, no effluent is discharged into the water bodies. Sewage from the use of sanitary facilities will be channeled into a septic tank. A containment facility will be built around the chemical mixing shed to prevent runoff of spilled water.
5.6.3 Solid Waste Management
Volta Red will ensure the proper management of its waste. Waste will be covered up to minimize attraction of scavengers. A worker will be assigned to supervise the site and ensure proper housekeeping.

Segregation of waste on the plantation will be implemented to easily facilitate recycling and reuse. Colour-coded waste bins will be provided throughout the estate. The containers will also be numbered. The following colour codes will be adopted;
- Green - organic waste
- Black - rubbers or plastics and
- Red - metals.

Used plastic bags for the seedlings will be as much as possible reused. Management will seek interested parties who can reuse the waste plastic bags. The option of disposal by private sanitation agencies will be explored. Empty chemical containers/packaging materials from production process will be temporarily packed in a store room and returned to the suppliers, Calli Ghana and Greenshield Company Ltd for disposal. Record of the quantity of chemical containers returned will be kept.

5.7 Maintenance of Plantation
The daily field maintenance schedule based on the standard operation procedures (SOP) will be continued. Management will continue with the schedule for annual road maintenance by the road maintenance team. All workers will be reminded to report any detected deterioration on the road surface to the maintenance team for prompt repair in order to keep the roads accessible.

5.8 Energy Management
The following measures will be implemented to ensure the efficient utilization of energy;
- Setting clearly defined, high but realistic targets for fuel and power consumption;
- Setting up clearly defined maintenance regime for all equipment to ensure the efficient use of power without compromising production levels;
- Maintaining monthly records on the consumption levels of fuel and electricity utilized;
- Education of relevant staff on judicious use of electricity and fuel through awareness creation seminars;
- Carry out routine vehicle maintenance /servicing of vehicles after every 5,000 km travelled and every 250 hours for heavy-duty machines, and
- Appointing a senior staff member to oversee and monitor the programme.

5.9 Awareness Creation and Training
As indicated earlier, Volta Red will organize annual awareness creation seminars to disseminate environmental information at 3 levels namely: junior staff, supervisors and managers. All staff will be regularly sensitised on the aspirations and mission of VRL as articulated in this EMP document and other policy documents and required to contribute their quota towards its success.
5.10 Occupational and Public Health and Safety Enhancement Plan
Volta Red will continue to ensure appropriate PPE is provided for all members of staff. Annual awareness creation seminars and training in first-aid will be organized to prepare staff to effectively manage and deal with emergencies that may arise in the course of executing their duties.

5.11 Grievance Management
Volta Red will implement its grievance procedures policy to cater for all complaints from all stakeholders. Sensitisation programmes will be carried out for all employees, members of neighboring communities and the Community Consultative Committee (CCC) on the grievance management procedures. The CCC is comprised of representatives from the affected communities and land owners, the district assembly, the Assembly Men, and two management staff of Volta Red ltd.

Details of complaints and grievances will be documented for management to deliberate on and put in place measures for redress. The grievance procedures will be reviewed periodically by stakeholders to identify possible areas for modification or upgrading.

5.12 Summary of Environmental Actions
The major environmental action plans are summarized in Table 5.1 below showing the officers responsible for its execution.

<table>
<thead>
<tr>
<th>Table 5.1</th>
<th>Summary of the Environmental Action Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigation</td>
<td>Target</td>
</tr>
<tr>
<td><strong>Compliance with Statutory Obligations</strong></td>
<td></td>
</tr>
<tr>
<td>Permit Conditions</td>
<td>• Annual Environmental Report end of 2017</td>
</tr>
<tr>
<td></td>
<td>• Renew Water Use Permit mid 2017</td>
</tr>
<tr>
<td></td>
<td>• Update EMP by 2019</td>
</tr>
<tr>
<td><strong>Raw materials management</strong></td>
<td></td>
</tr>
<tr>
<td>Record keeping</td>
<td>• Keep records on raw material supply, storage and usage all the time</td>
</tr>
<tr>
<td><strong>Water Resource management</strong></td>
<td></td>
</tr>
<tr>
<td>Adherence to the Maintenance of Buffer Zones; 30m for the Asuokokoo River and 15m for smaller streams</td>
<td>• Degraded buffer zones are planted with trees before end of year 2017</td>
</tr>
<tr>
<td></td>
<td>• Water quality monitoring of the Asokokoo River and borehole twice yearly monitored</td>
</tr>
<tr>
<td><strong>Waste</strong></td>
<td></td>
</tr>
<tr>
<td>Waste Oil: Store all waste oil for collection by a contracted waste</td>
<td>• Contract only company with demonstrated capacity</td>
</tr>
<tr>
<td>Mitigation Actions</td>
<td>Target</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------</td>
</tr>
<tr>
<td>oil dealer</td>
<td></td>
</tr>
<tr>
<td>Agrochemical containers</td>
<td>Continue to temporarily store chemical containers prior to collection in a special facility</td>
</tr>
<tr>
<td></td>
<td>• Return empty pesticide containers quarterly to Greenshield ltd and Cali Ghana ltd.</td>
</tr>
<tr>
<td></td>
<td>• Use empty chemical containers as water containers for fighting fire</td>
</tr>
<tr>
<td>Domestic waste</td>
<td>• Provide waste bins at vantage points within the plantation before the end of 2017</td>
</tr>
<tr>
<td></td>
<td>• Empty all bins and dispose of waste collected on daily basis</td>
</tr>
<tr>
<td></td>
<td>• Collect plastics, food waste and packaging in waste bins</td>
</tr>
<tr>
<td>Agrochemicals (Pesticides, insecticides, fungicides and Fertilizers)</td>
<td>• Purchase only needed quantities for an application session</td>
</tr>
<tr>
<td></td>
<td>• Exhaust any remaining quantity in the next spraying session</td>
</tr>
<tr>
<td></td>
<td>• Quantities of agro chemical purchased should be fully exhausted before new ones are purchased</td>
</tr>
</tbody>
</table>
Occupational Health and Safety Management

- Safety in the Work Environment
- Provision and Use of PPE
- Hygiene and Sanitation
- Provision of warning notices and signage
- Transport Safety
- First Aid and Medical Care
- Fire Risk Management
- Emergency Responses and Contingencies
6.0 OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT

The occupational health and safety of workers in Ghana is regulated by the Factory, Offices and Shops Act 1970 (Act 328) and other related regulations as listed in Chapter 2. Volta Red seeks to conduct its operations in such a way as to adhere to these regulations. An OHS audit was conducted in August 2014 to identify shortfalls and provide measures to improve health and safety. The company is implementing the recommendations from the audit, which is reflected in actions such as the renewal of a fire permit (Appendix 1), and the development of an OHS manual (Appendix 2).

The current occupational health and safety management practices at Volta Red have been discussed in relation to the following:

1. Safety in the working environment;
2. Provision and use of personal protective equipment;
3. Hygiene and sanitation;
4. Provision of warning notices and signage;
5. Transport safety;
6. First Aid and Medical Care;
7. Fire risk management; and

6.1 Safety in the Work Environment

Plantation activities such as slashing, pruning and general movement of loading trucks and other vehicles on the plantation and within the office premises are potential sources of accidents. Some of these accidents associated with these operations are:

- Cuts sustained during of slashing;
- Palm fronts injuring a harvester in the course of harvesting or pruning;
- Snake bites while working on the plantation; and
- A worker being run over by a moving vehicle among others.

Plantation operations and maintenance activities are overseen by Headmen and Supervisors who report to the Plantation Manager (PM), who has the responsibility to train, instruct and designate personnel to conduct such activities.

6.2 Provision and Use of Personal Protective Equipment

Personal Protective Equipment (PPE) such as overalls, gloves, safety goggles, nose masks and wellington boots are provided for all employees. The policy enjoins all workers to use appropriate methods, mechanisms and equipment to ensure a safe, accident-free and hygienic environment. This will continue to be enforced throughout the period of this second EMP.

6.3 Hygiene and Sanitation

Management has started work on providing adequate sanitary facilities (WCs and washing areas) for the use of workers to avoid inadequate washing and toileting activities which could foul the working area. Adequate litter bins have been provided to take care of rubbish.
6.4 Provision of Warning Notice and Signage

Warning notices and signage have been conspicuously displayed at vantage points on the plantation to constantly remind workers and provide a visual message to safeguard their safety (Figure 6.1).

![Warning Notices on the Plantation](image)

Figure 6.1 Warning Notices on the Plantation

6.5 Transport Safety

Volta Red operates pickups, tractors and trucks. The beds of pickups and trucks are strictly used to carry materials. It is against the policy of Volta Red for workers to be carried in the bed of trucks or pickups. Therefore, workers are transported in buses to and from work by third party transporters provided they do not overload and do not speed.

6.6 First Aid and Medical Care

First aid facility has been provided at the site camp for workers who get injured on the plantation because there is no clinic or hospital on the plantation. A staff has been trained in first aid to attend to workers. Workers receive medical care from a CHPS compound and Government Hospital at Dodo Pepe, some 25 kilometers away.

6.7 Fire Risk Management

Volta Red operates in line with the RSPO Principles, Criteria, Indicators and Guidelines, which prohibit bush burning during land preparation. The risk of plantation fires is usually from nearby farms on the periphery of the plantation, and is heightened in the dry season. Other sources include deliberate ignition by saboteurs, accidental fire such as lightening, explosion, chemical, mechanical electrical sources etc.

VRL has acquired a Fire Permit from the Ghana National Fire Service in fulfillment of Fire Precautions Regulations, 2003 (LI 1724). A copy of the permit is shown in Appendix 1. Fire extinguishers have been provided at vantage points at the site camp area, the fuel depot, and the genset area. All extinguishers are good working condition and are mounted on walls for easy access as shown in Figure 6.2.
The fuel depot is well aerated and about 150m away from the work camp. The fuel depot is protected with a security lock to prevent access to saboteurs.

VRL’s Fire Response Plan has been posted at vantage places to direct staff on firefighting action or procedures to employ in the event of any fire outbreak (Figure 6.2).

![Display of Fire Response/Action and Fire Extinguisher at the Site Camp](image)

**Figure 6.2** Display of Fire Response/Action and Fire Extinguisher at the Site Camp

### 6.8 Current Emergency Responses and Contingencies

In the event of any accidents or injury to an employee, the victim is given First Aid treatment and sent to the Government Hospital at Dodo Pepesu if necessary. The responsible Department head is also immediately informed.

All accidents/incidents occurring on the premises and the farm are investigated to determine the contributory factors and adequate preventive measures taken to prevent a recurrence. Accident/incidents are recorded in an accident report form, which is then filed for future reference.

### 6.9 Compliance with Statutory Regulations

#### 6.9.1 Registration of the Premises

Volta Red has begun the process of registering the premises with the Chief Inspector of Factories to acquire the Certificate of Registration. An abstract of the Factories, Offices and Shop Act 1970, Act 328 when ready will be conspicuously displayed at the site office.

#### 6.9.2 Fire Permit

Volta Red acquired a Fire Permit in 2014 and is in the process of renewing it (Appendix 2). The permit will be conspicuously displayed at the site office when ready.

#### 6.9.3 Distribution and Display of OHS Policy

Leaflets of the summary of the policy will be distributed to workers and displayed at vantage points, including reception areas which receive clients and other visitors.
Chapter 7

Emergency Preparedness and Response Plan

- Fire Emergency
- Emergency Evacuation
- Organisational Functions
- Injury Resulting from Emergency Situations
7.0 EMERGENCY RESPONSE PLANS

It is the responsibility of every employee of VRL to familiarize themselves with the applicable emergency procedures that apply to the project site. Employees would receive instruction from the RSPO, HSE Manager and their supervisors on what action to take in an emergency. Workers are cautioned not be afraid of asking question if they are uncertain, as responses may eventually save lives

The main aim of the emergency plan is to ensure that potential life threatening events are handled with maximum efficiency in order to protect people’s lives. It is important that workers are aware of their responsibilities in the event of an emergency.

7.1 General Guidelines

Employees are advised to remain calm, think clearly and act quickly during emergencies. The general guidelines to follow when in an emergency include:

- Protection of life is the first consideration in an emergency. Property protection is secondary;
- Learn the emergency telephone number;
- Find out where you have to go in an evacuation of the premises;
- Find out who your Fire Warden is;
- Find out who you have to notify if an emergency occurs; and
- If you are trained in the use of firefighting equipment, make sure you know the location of it.

7.2 Emergency Plan Actions

The emergency plan includes:

- Alarm sounding;
- Escape routes;
- Assembly point;
- Employee accounting;
- Emergency evacuation; and
- Rescue and medical duties

7.3 Fire Emergency

In the event of a small fire, employees are to attempt to extinguish it with the sand buckets or fire extinguishing equipment available. If the fire cannot be extinguished, an alarm should be sounded after which the HSE Manager should be called.

7.4 Emergency Evacuation

The following are the rules regarding emergency evacuation:

- Stop all work immediately and ensure that all equipment is left in a safe condition.
- Proceed to designated emergency assembly point.
- Remain at the assembly point, as instructed
- Remember, do not enter the area for any reason until you are told to do so
7.5  Emergency Assembly Area

The following shall be the rules regarding assembling during emergencies:

- Employees shall be assigned definite location to assemble. The assembly area shall be located at strategic place, close enough to work areas for access, but far enough away from potential disaster areas to afford protection to employees.
- Procedures shall be established for an orderly shutdown of work at the sounding of the emergency warning signal. Equipment shall be secured and other activities shall be stopped. Employees shall then proceed to designated emergency assembly areas.
- When employees are assembled, supervisors shall immediately do a head count and roll call to be sure everyone is accounted for by name.
- Employees shall remain in the assembly area pending instructions. Supervisors shall inform employees, plans for the resumption or suspension of work.

7.6  Organizational Functions

The HSE Manager will act as the evacuation coordinator and perform the following functions:

- approve the evacuation procedures and location of the assembly area(s)
- determine whether there is a need for evacuation
- order the evacuation alarm and direct the evacuation activities
- Supervisors shall also relay instructions from the evacuation coordinator to those in the assembly area as to whether they shall stay, return to work, or leave the project site.
- Missing persons shall be checked against absentee reports and reported to the evacuation coordinator.
- Supervisors shall submit an accounting of their gangs; names, and last known whereabouts of missing people shall be forwarded to the HSE Manager.

7.7  Training of employees

It is essential that all employees are aware of the evacuation procedure. The evacuation procedure shall be discussed at safety meetings and during safety induction training. The emergency plan and procedure is displaced on notice boards and at vantage locations in the plantation.

7.7  Emergency Phone Numbers

The HSE/RSPO Manager is the Manager responsible for all emergencies. Supervisors are to assist him in the event of emergencies. The phone number of the HSE Manager and Supervisors are to be stored on the phones of every employee and should be contacted during emergencies.

7.8  Injury Resulting from Emergency Situations

Any employee who may sustain injury in the event of an emergency situation, shall immediately seek for first aid treatment or shall be transported depending on the severity of the injury to the nearest medical facility for treatment. The Breweniase Government Hospital shall be the first point of call for any severe injury.
Chapter 8

Programme to meet Requirements

- Organisational Structure
- Engagement of Environmental Consultants
- Staff Information and Training
- Documentation
- Document Tracking and Control
- Stakeholder Reporting Arrangement
- Public Participation
- Environmental, Health and Safety Audits
8.0 PROGRAMME TO MEET REQUIREMENTS

An environmental action plan has been developed to guide the company’s operations. The plan takes into consideration all aspects of environmental management to ensure efficient implementation of environmental and social stewardship responsibilities. A well laid out management structure is oriented to help the company achieve its goals and objectives with regard to the environmental, social and health and safety aspects of its operations.

8.1 Organizational Structure

The HSE/RSPO Manager coordinates all environmental and social issues to ensure the implementation of action plans. Figure 8.1 is the organizational structure of VRL showing the management structure for coordinating environment, health and safety and social issues of the company.

![Organizational Structure Diagram]

**Figure 8.1 Environmentally-based Organizational Structure**

8.1.1 Health, Safety and Environment Committee

A Health, Safety and Environment (HSE) Committee supervises, monitors and reviews measures to ensure the implementation of the environmental and health and safety policies and action plans adopted by VRL in all units. The Committee is also promoting the effective co-operation of employees at all levels (both permanent and casual) to maintain an integrated approach to environmentally friendly and safe operations of the plantation.

The supervisor of each unit acts as an internal environment and safety coordinator. The HSE Manager also functions as the RSPO Manager of the company, and guides VRL in complying with all national requirements as well as international obligations (as a member of the Roundtable for Sustainable Palm Oil). The Committee is headed by the General Manager and includes the following Managers:

- Estates Manager;
- Community Relations Manager; and
• HSE/RSPO Manager.

8.1.2 **The Community Relations Manager**
The Community Relations Manager is a liaison between the surrounding communities and the company. The functions of the CRM include:

• Responsibility for implementing the Corporate Social Responsibilities of VRL;
• Liaising with the project affected communities on their concerns with regards to operations;
• Coordinating VRL’s community engagement programmes;
• Processing and management of socio-economic data that is generated with time to be presented in a friendly way to ensure easy consumption and appreciation by Management and the general public; and
• Contribution to all expansion activities of the company to ensure that social concerns are included at the planning stage.

8.2 **Engagement of Environmental Consultants**
As part of the measures to implement the plan, VRL may engage the services of qualified Environmental Consultants on retainership basis to work closely with the HSE/RSPO Manager as well as the Committee. The consultants will among others:

• Advise on all environmental concerns for which the required expertise is not available within VRL;
• Train and create awareness on all aspects of environmental and safety issues for all heads of departments;
• Undertake regular environmental management audits and reporting; and
• Perform the services of Environmental Attorneys to VRL.

8.3 **Staff Information and Training**
The action plans can only be achieved if every worker at VRL is adequately enlightened and environmentally conscious. VRL is intensifying its programme to educate all workers from the Managers to farm hands on environmental, safety, and health issues. This will be done through organized forums and scheduled meetings.

VRL will periodically review and update the HSE Management System for its operations to ensure that current information is available to personnel.

8.4 **Documentation**
Records are kept on all environmental, worker health/safety issues including accident, fire and waste data at site. A form will be developed for documentation of information, both in hard copy and in electronic format.

8.5 **Document Tracking and Control**
VRL will establish and maintain procedures to control all documents and permits that are required to ensure compliance and to make sure that:

• All documents and permits are easily traceable; and
• All permits and approvals are renewed as and when necessary.
8.6 Stakeholder Reporting Arrangement

VRL will comply with statutory reporting requirements to the EPA in compliance with Section 24 and 25 of the Environmental Assessment Regulations of 1999 (LI 1652). VRL will submit an Annual Environmental Report to the EPA each year in fulfillment of Section 25 of LI 1652.

8.7 Public Participation

VRL will continue with its open interaction with the project communities through the Community Relations Manager and will commit to addressing all concerns which might be raised by the community people.

8.8 Environmental, Health and Safety Audit

VRL will undertake quarterly compliance monitoring and annual health and safety audit of its operations to check compliance with all statutory environmental and safety regulations. The findings and recommendations of the monitoring and annual audit will be used to refocus to ensure compliance with relevant environmental and safety laws prevailing in the country.
Chapter 9

Cost/Benefits of Action Plan

- Economic Benefits
- Benefits of the Occupation Health and Safety Action Plan Implementation
- Environmental Benefits
8.0 POTENTIAL ECONOMIC BENEFITS OF ACTION PLANS

The action plan is useful to the company in many respects. It will enable the company to effectively manage potential environmental, health and safety hazards.

8.1 Economic Benefits

The amount of waste produced has a direct relationship to the cost of production; the more the waste, the higher the cost. Minimizing waste implies that production cost will be at the barest minimum. This coupled with the sound environmental practices of the company will accord it the competitive edge and place the company ahead of competitors in the Oil Palm sector. Eventually the nation derives dividends accrued from sound environmental practices adopted the company.

Using resources efficiently, preventing wastage of water and conserving fuel enables the company to make savings.

8.2 Benefit of the Occupational Health and Safety Action Plan Implementation

Prevention of spillage of oil and chemicals will reduce possibility of soil pollution and consequent ground water contamination, which may pose health hazards to those who drink water from boreholes located close to the plantation.

The adherence to health and safety regulations will prevent accidents that may lead to loss of productivity. Eventually the expenditure of the company on health will not impact immensely on profitability.

8.3 Environmental Benefits

Good management practices ensure that the resource is exploited in an environmentally friendly way, waste is minimized and the Asoukokoo River protected. This will ensure that the sustainable development goals of Ghana will be attained.
Chapter 10

Implementation of the Plan

- Implementation Schedule
- Monitoring and Reviews
- Environmental Budget
10.0 IMPLEMENTATION OF THE PLAN

10.1 Implementation Schedule

The implementation of the action (environmental, occupational health and safety) plans will be completed within three years which is the statutory validity period of this EMP. To this effect the implementation is grouped into the respective years i.e. first year, second year and third year. VRL acknowledges its responsibility to the environment and workplace health and safety and is committed to implementing the action plans for its operations. The existing environmental and safety management practices will be enhanced.

10.2 Monitoring and Reviews

VRL will conduct monitoring programmes through the HSE Committee to ensure that targets are achieved. The Committee will hold regular quarterly meetings to evaluate progress and plan ahead. The HSE Manager will prepare annual reports to Management indicating the state of operational compliance. The state of implementation will be reviewed annually by the General Manager of Operations who will work with the HSE committee and Environmental Consultants to rectify challenges with the environmental management systems of the company.

10.3 Budget for Implementation

Financial implications of the action plans have been analysed in order to determine a working budget needed for implementation. The action plans to be implemented have been itemized with cost estimates and year of implementation as shown in Table 8.1. An estimated amount of USD 94,900.00 will be required for strict implementation of the EMP.

Table 10.1 Budget for EMP Implementation

<table>
<thead>
<tr>
<th>Action</th>
<th>Implementation Period and Costs in USD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Environmental Action Plans</strong></td>
<td></td>
</tr>
<tr>
<td>Renewal of Water Use Permit</td>
<td>On going</td>
</tr>
<tr>
<td>Provision of waste bins for prompt evacuation of solid domestic waste</td>
<td>5,000  -  5,000</td>
</tr>
<tr>
<td>Refurbishment of the chemical-mixing shed into a properly engineered facility fitted with fire suppression devices; bunding of chemical storage area</td>
<td>30,000  -  -</td>
</tr>
<tr>
<td>Preparation of Annual Environmental Reports</td>
<td>15,000  15,000  15,000</td>
</tr>
<tr>
<td>Preparation of Environmental Management Plan</td>
<td>20,000</td>
</tr>
<tr>
<td>Environmental media monitoring (ambient air quality and noise levels, biodiversity surveys, surface water quality)</td>
<td>10,000  10,000  Part ESMP Preparation-</td>
</tr>
<tr>
<td>Grievance redress mechanisms (public education campaigns; provision of complaints register; community engagements)</td>
<td>5,000  5,000  5,000</td>
</tr>
<tr>
<td><strong>Sub-total A</strong></td>
<td><strong>65,000  30,000  45,000</strong></td>
</tr>
<tr>
<td><strong>B. Occupational Health and Safety Action Plans</strong></td>
<td></td>
</tr>
<tr>
<td>Acquisition and renewal of fire permit</td>
<td>2,000  2,000  2,000</td>
</tr>
<tr>
<td>Provision of PPE</td>
<td>5,000  5,000  5,000</td>
</tr>
<tr>
<td>Provision of fire safety equipment</td>
<td>15,000  15,000  20,000</td>
</tr>
<tr>
<td>Provision of sanitary facilities</td>
<td>10,000  -  -</td>
</tr>
<tr>
<td>Training in first Aid</td>
<td>5,000</td>
</tr>
<tr>
<td>Fire drills/mock operations</td>
<td>5,000  5,000  10,000</td>
</tr>
<tr>
<td>Action</td>
<td>Implementation Period and Costs in USD</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Sub-total B</td>
<td>42,000, 27,000, 37,000</td>
</tr>
<tr>
<td><strong>C. Programme to meet requirements</strong></td>
<td></td>
</tr>
<tr>
<td>Awareness creation and training</td>
<td>5,000, 5,000, 5,000</td>
</tr>
<tr>
<td>Annual environmental and safety audits</td>
<td>5,000, 5,000, 5,000</td>
</tr>
<tr>
<td>Community sensitization and HIV/AIDS campaign</td>
<td>6,000, 6,000, 8,000</td>
</tr>
<tr>
<td>Sub-total C</td>
<td>16,000, 16,000, 18,000</td>
</tr>
<tr>
<td><strong>Total (A+B+C)</strong></td>
<td>123,000, 73,000, 100,000</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>296,000</td>
</tr>
</tbody>
</table>
Appendices

Appendix 1  Environmental Certificate
Appendix 2  Review Comment
Appendix 3  Statutory Documents
Appendix 4  Materials Safety and Data Sheet (MSDS) for Chemicals
Appendix 5  Company Policies
Appendix 6  Regulations, Training Plans and Procedures
ENVIRONMENTAL PROTECTION AGENCY

Permit No. CA 253/03/12

Environmental Compliance Certificate

(ENVIRONMENTAL MANAGEMENT PLAN)

This is to certify that

SG SUSTAINABLE OILS GHANA LIMITED

Located at Brewoase in the Nkwanta South District - Volta Region has complied with the provisions of Regulation 22 of L.I. 1652 and Regulation 19 of the L.I. 1652 and is hereby authorized to continue operating the oil palm plantation and processing project as per attached schedule.

January 10, 2013
Date issued

January 9, 2016
Expiry Date

I. S. Ansah
(Executive Director)
SCHEDULE TO THE ENVIRONMENTAL PERMIT

1. CONTACT PERSON : THE CHIEF EXECUTIVE OFFICER
2. PROPOSED PROJECT : SG SUSTAINABLE OILS GHANA LIMITED
3. REGISTRATION NO. : CA 253
4. CERTIFICATE NUMBER : CA 253/03/12
5. PROJECT NAME : OIL PALM PLANTATION AND PROCESSING PROJECT AT BREWANIASE IN THE NKWANTA SOUTH DISTRICT - VOLTA REGION

In pursuance of the Environmental Protection Agency Act 1994, Act 490 (Sections 2 (l) and 12 (l)) and the Environmental Assessment Regulations, 1999, L.I. 1652 and on the basis of the information provided in the Environmental Management Plan (EMP) August 2012, this Environmental Certificate is issued certifying SG SUSTAINABLE OILS GHANA LIMITED to be environmentally compliant and authorizing the company to continue operating the oil palm plantation and processing project at Brewaniase in the Nkwanta South District of the Volta Region.

6.0 CONDITIONS OF CERTIFICATE

6.1 COMMITMENT TO PROJECT SPECIFICATION

- Comply with all project specifications, mitigation, and monitoring and other environmental management provisions as indicated in the project’s Environmental Management Plan (EMP). The project involves the following: nursery establishment, land preparation, transplanting, plantation maintenance, harvesting and fruit collection and haulage of fruits to the mill and processing of fruits. It has the following components:
  - The plantation covering a total area of 2,716 hectares
    - 22 hectares as Oil Palm Nursery
    - 1,859 hectares as Oil Palm Plantation and a Site Camp
    - 160.9 hectares reserved as High Conservation Valu (HCV) Forest.
  - Labour force of 860.

6.2 LOCATION

- The project is located at Brewaniase in the Nkwanta South District of the Volta Region.
6.3 Compliance with Mitigation Measures
- Comply with all the mitigation, monitoring and environmental management commitments made in the Environmental Management Plan (EMP).

6.4 Compliance with the Factories and Offices and Shops Act 1979 (Act 328)
- Comply with the requirements of the Factories and Offices and Shops Act, 1979 (Act 328).
- Consult with the Factories Inspectorate Department in order to satisfy the requirements of the Act.

6.5 Liquid Waste Management
- Effluent from the washing, processing and packaging facilities should be directed into the settling ponds and monitored to conform to the following parameters before discharging into the environment.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>6.5</td>
</tr>
<tr>
<td>Temperature</td>
<td>+3°C above ambient</td>
</tr>
<tr>
<td>Conductivity</td>
<td>1500 μS/cm</td>
</tr>
<tr>
<td>Total Dissolved Solids</td>
<td>1000 mg/l</td>
</tr>
<tr>
<td>Turbidity</td>
<td>25 NTU</td>
</tr>
<tr>
<td>Colour</td>
<td>200 TCU</td>
</tr>
<tr>
<td>Total Hardness</td>
<td>5.0 mg/l</td>
</tr>
<tr>
<td>Oil &amp; Grease</td>
<td>5.0 mg/l</td>
</tr>
<tr>
<td>Ammonia</td>
<td>1.0 mg/l</td>
</tr>
<tr>
<td>Nitrate</td>
<td>20 mg/l</td>
</tr>
<tr>
<td>Phosphates</td>
<td>2.0 mg/l</td>
</tr>
<tr>
<td>BOD</td>
<td>20 mg/l</td>
</tr>
<tr>
<td>COD</td>
<td>250 mg/l</td>
</tr>
<tr>
<td>Total Coliforms</td>
<td>400(MPN/100 ml)</td>
</tr>
<tr>
<td>E. Coli</td>
<td>100(MPN/100 ml)</td>
</tr>
</tbody>
</table>

- Physicochemical as well as the bacteriological analysis of the three settling ponds, nearby streams and bore holes should be conducted every quarter and a report submitted to the Agency.
- Oil residues must be stored in safe tanks and collected regularly for appropriate disposal.

6.6 Solid Waste Management
- Solid waste from plant materials should be turned into mature for use on the farm.
- Plastic wastes from the plantation should be disposed of at approved disposal points as directed by the Kwara South District Assembly or incinerated in a well-constructed incinerator.

6.7 Disease Control & Occupational Health
- Collaborate with the EPA and the Ministry of Health to implement malaria control and river blindness activities in the project catchment area.
- Ensure cleanliness at all stages of production to reduce the likelihood of infection.
• Field workers handling chemical products must have adequate training on the appropriate use of products.
• Pesticides should be sprayed very early in the morning when there are few workers on site.
• Provide appropriate personal protective clothing/gear such as rubber, gloves, overalls, safety boots, hand gloves, knapsack sprayers, etc. to workers.
• Provide a well-stocked first aid kit for minor injuries that might occur.
• Adhere to the Health and Safety Action Plan indicated in the project EIA.
• Ensure adequate record keeping and establish an inventory of disease outbreak and treatment on the farm.
• Workers must undergo medical check-up at least twice a year to assess their health status with respect to operations on the farm.

6.8 Management of the Asukokoo River
• Maintain a buffer zone of at least fifty metres (50m) from the banks of the river.
• Embark on afforestation planting along the streams.
• Monitor the water quality parameters of the Asukokoo River monthly and include returns in the Annual Environmental Reports (AER) to be submitted to the Agency.
• The preferred sampling times are close to sunrise and sunset.
• GPS coordinates of sampling stations/locations should be determined and at least 2 of the sampling stations/locations should be within the project area.

6.9 Soil and Water Quality Monitoring
• Monitor the nutrient status of the soil every year.
• Submit the results of the monitoring as part of Annual Environmental Reports (AER).

6.10 Compliance with Ghana National Fire Service Regulations, 2003 (L.I 1724)
• Provide appropriate fire extinguishers and other requirements as recommended by the Ghana National Fire Service.
• Install fire alarm system and smoke detectors at vantage points to give early warning of any fire outbreak.
• No smoking signs should be posted at areas where flammable solvents and fuel are stored.
• Fire belts or boundary lines should be created to prevent fire from spreading to adjoining areas.

6.11 Notification of Changes
• Notify EPA of any changes in the planned development of the project contrary to the specification provided in the project’s Environmental Management Plan (EMP).

6.12 Annual Environmental Report
• Submit Annual Environmental Reports on the company’s operations in accordance with Section 25 of L.I 1652. The next report should be submitted by 9th January, 2014.
6.13 **Renewal of Certificate**
- This certificate should be renewed by 9th January 2016 years upon submission of a revised Environmental Management Plan (EMP).

6.14 **Certificate Transferability**
- This certificate is not transferable and can be used only for the SG Sustainable Oils Ghana Limited oil palm plantation and processing project at Breiwaniase in the Nkwanta South District of the Volta Region.

6.15 **Accessibility to the Site**
- Make all facilities available for inspection and cooperate with EPA officials during inspections.

6.16 **Other Permits**
- Notwithstanding this permit, the project is further subject to other relevant regulations and permits pertaining to the sector and must be observed.

Failure to comply with or observe all the conditions above will attract the necessary penalties prescribed under the Environmental Assessment Regulations 1999 (L.I. 1652) and also render this Environmental Certificate invalid.

[Signature]

**D. S. Asla\o**
**EXECUTIVE DIRECTOR**

**JANUARY 10, 2013**
**Date**

**Notifications:**
The Hon. Minister, Ministry of Environment Science and Technology, Accra
The Executive Secretary, Environmental Protection Agency, Accra
The Director, Climate Change and Biodiversity, Ministry of Food and Agriculture, Accra
The Regional DCEO, Environmental Protection Agency, Volta Region
APPENDIX 2

Review Comment

Volta Red Limited (Environmental Management Plan) Oil Palm Plantation, Brewaniase - Volta Region

General Comments:

i. The change of ownership of company should be communicated officially to the Agency.
ii. Give the Gender disaggregate data of your staff; thus number of male/female workers.
iii. Page iii: Profile lacks some relevant information; therefore company should use the EPA prescribed outline for company profile (Format attached for reference).
iv. Appendix 4: “Occupational Health and Safety Policy should be signed by the responsible officer.

v. Attach a copy of the EPA permit schedule issued to the company in 2012 as an appendix.

vi. The number of appendices as indicated on page 55 was 6. There is no information on appendix 6; thus the accident records. Should be provided accordingly.

Specific Comments:

vii. The EMP excluded relevant chapters required in the EPA- EMP format for Plantations as indicated below:
   - Evaluation of environmental performance
   - Emergency preparedness and response plan/contingency plan
   - Environmental management framework
   - Cost/Benefit analysis of implementing the EMP
   - An Executive summary

viii. Page 1 Section 1.2.1 (Establishment):
   - The information provided on company registration date is not consistent with the certificate of incorporation in page 58.
   - Also the details of cropped area is 2,100 ha and not up to 2,500 ha. The remaining data is provided in page 18 of the document. For consistency, provide the entire detailed breakdown in the introductory chapter.

Page 3: The figure 1.2, Map of the Brewaniase Estate is not legible especially the legend. Make it legible.

a. Section 1.2.5: It is indicated that VRL has been a member of RSPO since 2008 while it was incorporated in Ghana in 2013. Is VRL a subsidiary of a mother company somewhere? Otherwise there is some disconnect. They should clarify that statement.

Page 9:
   - The National Pensions Act 766 (2008) has been the amended Act 883 (2014) this should be corrected.
   - The Plants and Fertilizer Act 803 (2010) should be mentioned.
• A lot of the relevant health and safety laws and regulations mentioned have not been discussed (from page 9 – 13)

xii. Page 17: Section 3.2.3 (Land Preparation): Reference is made to Figure 4.5 to show location of blocks and utilization of concession. This is a wrong reference because the figure is showing weed and erosion control.

xiii. Page 19: Section 3.5.3 (Fuel consumption): Quantity of wood should be estimated in volume and not kg.

xiv. Page 20: Raw water quality; table 3.5 is on “mean air quality monitoring results”. Please make the necessary correction. What is the justification for the monitoring in September 2015 and March 2015? Why mean and not separate figures?

xv. Page 25 Section 4.0 (Environmental Management Practices) Table 4.2: Indicate if all injured were females or male.

xvi. Page 22: Table 3.7: Estimates of quantities of waste generated on plantation is incomplete. The table should be completed. Page 22: Some issues in the table 3.7 are not clear for example, what is the explanation for “no waste generation” in the year 2015. The units for empty chemical containers should be the same for year 2012 and 2015. For domestic waste, the “x” and “y” should be defined.

xvii. Page 41. Section 5.0 (Environmental Action Plan): Table 5.1 is not clear
• Table 5.1; indicate the duration of the Action Plan, state the timelines and output for each action.
• Under environmental monitoring, for each of the mitigation actions, what parameters will be monitored; e.g. for soil fertility monitoring, what parameters will be monitored?

xviii. Page 45: Section 6.7 (Fire Risk Management): Figure 6.2 is referenced which is supposed to show fire extinguishers mounted on walls but the figure is displaying fire response action. This should be corrected.

xix. Page 49, Figure 7.1: The direction of arrow should be looked at again; does the General Manager report to the Estate Officer? Are there no linkages between the RSPO manager and the Estate Officer?

xx. Page 50: Section 7.1.2: The job description of the Community Relations Manager includes coordinating VRL’s smallholder programme. However, the smallholder programme is not mentioned anywhere in the document. If VRL is implementing smallholder programme, it should be clearly indicated.

xxi. Page 53: Section 8.2: Maintain consistency “EHS” is not the same as “HSE”

xxii. Page 53, Table 8.1: State which year is first year, second year and third year.

xiii. Budget for EMP Implementation.
• The allocation for PPE is inadequate for the provision of PPEs for the staff of the estate (total staff strength of 387).
• There seems to be no budget for the store room with washroom facilities indicated in chapter 5.2.
• Provide a planned activity and budget for community sensitization
• Provide a planned activity and budget for HIV/AIDS education/campaigns
• It is clear from the age of the plantation that the estate is entering the production phase of its operations. However, the EMP is silent on it and expected activities and management such as harvesting and post harvest management. Would the fruits be processed into oil? or fresh fruit are to be sold?
• Management of the empty bunches etc. it is important this phase is captured in the document.
Certificate of Incorporation

I hereby certify that the

SG SUSTAINABLE OILS GHANA LIMITED

is this day incorporated under the Companies Code, 1963 (Act 179) and that the liability of its members is limited.

Given under my hand and official seal at Victoriaborg, Accra, this 7th day of October 2008

Registrar of Companies, Ghana
Certificate of the Incorporation of a Company

CA-50,808

I hereby Certify that

VOLTA RED FARMS LIMITED

(originally called SG SUSTAINABLE OILS GHANA LIMITED)

which name was changed by Special Resolution and with the Approval of the Registrar of Companies on the 26TH day of AUGUST Two thousand and FOURTEEN

was Incorporated under the COMPANIES CODE, 1963 (ACT 179)

as a Limited Company, on the SEVENTH day of OCTOBER Two thousand and EIGHT

Given under my hand at Accra, this TWENTY-SIXTH day of AUGUST Two thousand and FOURTEEN

For: Registrar of Companies
GHANA NATIONAL FIRE SERVICE

Fire Certificate

This is to certify that house number 69, J.J. KREESE STR., W/TB has been issued with Fire Certificate for use as

Auction Hall, Municipal Factory, J.J. KREESE STR., W/TB Company Limited

Having upon inspection satisfied the following requirements as to Fire Safety:

1. MEANS OF ESCAPE:
   - Type: Exit Exit
   - Number: 2
   - Location: A U.D.

2. FIRE FIGHTING EQUIPMENT:
   - Type: CO., CHRG.
   - Number: 2
   - Location:

   - Type: DP. (MRG)
   - Number: 2
   - Location:

3. FIRE HYDRANT/SOURCE OF WATER SUPPLY:
   - Type: HYDRANT
   - Source: W/TB
   - Alternate Source: N/A

4. WARNING DEVICE(S):
   - Type: ES (BATT.)
   - Number: 2
   - Location:

   - Type:
   - Number:
   - Location:

   - Type:
   - Number:
   - Location:

   - Type:
   - Number:
   - Location:

   - Type:
   - Number:
   - Location:

   THIS CERTIFICATE IS VALID FOR TWELVE MONTHS

Dated this 18th day of DECEMBER 2014

SIGNED:

[Signature]

[Name]

[Position]
THE MANAGER
VOLTA RED COMPANY LIMITED
AHAMANSU JUNCTION

RENEWAL OF FIRE CERTIFICATE

We write to acknowledge the receipt of your Fire Certificate which expired on 15th December 2015.

Your premises have been re-inspected for renewal of the Fire Certificate.

All relevant documents including receipt of payment of renewal fee and processing fee have been forwarded to our National Headquarters for issuance of a new certificate.

Thank you.

DOIII James A. Okyere
District Fire Officer
APPENDIX 4

MATERIAL SAFETY DATA SHEET (MSDS) FOR CHEMICALS

1 - IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

<table>
<thead>
<tr>
<th>Product/substance name</th>
<th>KALACH 360 SL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product / substance use</td>
<td>Herbicide</td>
</tr>
<tr>
<td>Supplier</td>
<td>Arysta LifeScience SAS</td>
</tr>
<tr>
<td></td>
<td>BP 80 Route d’Artix</td>
</tr>
<tr>
<td></td>
<td>64150 Noguères - France</td>
</tr>
<tr>
<td>Tel.</td>
<td>+33 (0) 5 59 60 92 92</td>
</tr>
<tr>
<td>Fax.</td>
<td>+33 (0) 5 59 60 92 99</td>
</tr>
<tr>
<td>Web Site</td>
<td><a href="http://www.arysta-eame.com">http://www.arysta-eame.com</a></td>
</tr>
</tbody>
</table>

Emergency telephone: Toxic vigilance +33 (0) 5 59 60 92 25 (business hours). Transport accident: +33 (0) 5 59 60 92 92 (business hours). Treatment center for poisoning cases: +33 (0) 1 40 05 48 48.

2 – HAZARDS IDENTIFICATION

Physical and chemical hazards /

Health hazards: Risk of serious damage to eyes.

Environmental hazards: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Others hazards /

3 - COMPOSITION/INFORMATIONS ON INGREDIENTS

Chemical information

Soluble concentrate (SL)

Glyphosate as isopropylammonium salt 360 g/l

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS Number</th>
<th>EINECS and EC numbers</th>
<th>Classification</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glyphosate</td>
<td>38641-94-0</td>
<td>254-056-8</td>
<td>N, R51/53</td>
<td>Circa 31%</td>
</tr>
<tr>
<td>Polyethoxylated tallow amine</td>
<td>61791-26-2</td>
<td>/</td>
<td>Xn, R41, R22, N R51/53</td>
<td>13-16%</td>
</tr>
</tbody>
</table>
For the complete text of some sentences, please refer to chapter 16.

4 – FIRST AID

In general
Remove the affected person from the danger zone to a wellventilated room or to fresh air, and protect from chilling. Do not administer anything by oral route and do not try to make vomit, call a treatment center for poisoning cases or a doctor. Take the label where possible.

After Inhalation
Immediately remove to fresh air. Call a doctor immediately.

After eye contact
Rinse immediately and thoroughly with plenty of water during at least 10 to 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Seek medical advice if pain or redness persists.

After skin contact
Remove contaminated clothing and thoroughly wash the affected parts of the body with soap and water.

After Ingestion
Call a doctor immediately and show the label. Do not induce vomiting.

Medical instructions
Treat symptomatically.

5 – FIRE-FIGHTING MEASURES

Extinguishing means
Water spray, foam, dry chemical powder.

Unsuitable extinguishing means
Water jet.

Special exposure hazards
By thermal decomposition, possibility of formation of toxic gases (sulfur oxide, phosphorus oxide, nitrogen oxide, carbon oxide, chlorides).

Particular protective measures
Intervention personnel should wear mask and individual respiratory equipment.
Retain water or extinguishing media and eliminate safely.

6 – ACCIDENTAL RELEASE MEASURES

Personal protection
Wear protective adapted equipment and take back non protected people.
Withdrawal combustion and ignition sources and block bringing in oxygen (ventilation).
Environmental protection

Avoid sewage, surface water, ground water and soil contamination. Retain spilled liquids and collect them with sand or other absorbent inert material (sepiolite). Absorbent inert material stocks have to be sufficient to face reasonably predictable spillage. Keep sewers from potential spillage to minimize pollution hazards. Do not throw washing waters into sewers. Contact competent authorities when a situation cannot be controlled rapidly and efficiently. In the case of spillage into water, stop dispersion of the product with adequate barrier.

Methods for cleaning up

Collect contaminated products on the surface concerned, transfer to closed drums before sending in a specialized incineration treatment center. Wash the contaminated surface with water and collect washing waters for treatment. Cover the contaminated zone using absorbent materials such as sand or sepiolite. See section 8 for personal protection and section 13 for disposal considerations.

Particular points

/

7 - HANDLING AND STORAGE

Handling

Do not eat, drink or smoke when using. Wear appropriate protective clothes, adequate gloves (nitril), glasses or mask. Avoid all contact of skin, eyes or clothes with new or old product. Respect good hygienic body conditions and cleanliness of the working area. Wash hands abundantly after handling. Do not wash working clothes with household linen.

Storage requirements

Store in a well closed container, in a fresh and well ventilated place. Store under cover, in an appropriate room, away from heat and sources of fire, at temperature <35°C. Keep away from food, drink and animal feeding stuffs. Do not store in room at temperature below –5°C.
8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

General measures
When using refer in priority to information written on the label.

Exposure limits
Not defined

Control of professional exposure
Respiratory
Preferably wear a mask covering all face with filter appropriate to/or vapor, powder or aerosol. A.P. Type filters.

Hand protection
Wear single-use gloves of good quality.

Eyes protection
Preferably wear a mask, a face screen or protective glasses.

Skin protection
Wear appropriate protective clothes, covering all parts of the body.

Control of environment exposure
Respect European and National Regulations in term of environment.

9 - PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Amber liquid</td>
</tr>
<tr>
<td>Odour</td>
<td>Characteristic</td>
</tr>
<tr>
<td>pH</td>
<td>4.5 – 5.5 N.A. N.A.</td>
</tr>
<tr>
<td>Boiling point / range</td>
<td>Nonflammable</td>
</tr>
<tr>
<td>Flash point</td>
<td>Risks of explosion almost none in the recommended conditions of storage see point 7. Real risk in case of fire or accumulation of the emanations N.A.</td>
</tr>
<tr>
<td>Flammability</td>
<td>Miscible with water in all proportions. Gives stable emulsion</td>
</tr>
<tr>
<td>Explosives properties</td>
<td>Miscible with almost all organic solvents.</td>
</tr>
<tr>
<td>Combustives properties</td>
<td>N.A. N.A.</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>N.A. N.A.</td>
</tr>
<tr>
<td>Relative density</td>
<td></td>
</tr>
<tr>
<td>Solubility</td>
<td></td>
</tr>
<tr>
<td>- Water</td>
<td>Miscible with water in all proportions. Gives stable emulsion</td>
</tr>
<tr>
<td>- Organic solvents</td>
<td>Miscible with almost all organic solvents.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>N.A. N.A.</td>
</tr>
<tr>
<td>Vapour density</td>
<td>1.170 N.A. N.A.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td></td>
</tr>
<tr>
<td>Other information</td>
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</table>

10 - STABILITY AND REACTIVITY

Conditions to avoid
Avoid storage at temperature > 35°C in a confined place.
Materials to avoid

Avoid contact with strong oxidant and strong reducing agent.

Hazardous decomposition products

See point 5.

11 - TOXICOLOGICAL INFORMATION

Acute toxicity

by ingestion (rat) \( \text{LD}_{50} > 2000 \text{ mg/kg} \)
byskin contact (rat) \( \text{LD}_{50} > 2000 \text{ mg/kg} \)
by inhalation (rat) \( \text{LC}_{50} (4 \text{ h}) : \text{Not determined.} \)
Skin irritation (rabbit) Not irritant
Eye irritation (rabbit) Irritant
Skin sensitization (guinea-pig) Not a skin sensitizer (M&K)

Subchronic toxicity

Low subchronic toxicity after oral administration.

Chronic toxicity

Carcinogenicity No carcinogenic effect.

Teratogenicity No teratogenic effect.

Reproduction (development and fertility) No effect on reproduction.

Other

/

12 - ECOLOGICAL INFORMATION

Ecotoxicity (\textit{Glyphosate as isopropylammonium salt})

Toxicity for aquatic organism \( \text{LC}_{50} (96 \text{ h, rainbow trout}) > 1000 \text{ mg/l} \)
(acute and chronic) \( \text{EC}_{50} (48 \text{ h}) \text{ daphnia} = 930 \text{ mg/l} \)
\( \text{ECR}_{50} (72 \text{ h, Scenedesmus subspicatus}) = 72.9 \text{ mg/l} \)
\( \text{EC}_{50} (7 \text{ d}) \text{ aquatic plant} = / \)

Toxicity for birds \( \text{LD}_{50} \text{ Bobwhite quail} > 3851 \text{ mg/kg} \)
Toxicity for bees \( \text{LD}_{50} \text{ oral} > 100 \mu\text{g/bee} \)
\( \text{LD}_{50} \text{ contact} > 100 \mu\text{g/bee} \)

Toxicity for soil \( \text{LC}_{50} (14 \text{ days, Eisenia foetida}) > 5000 \text{ mg/kg of soil.} \)

Mobility Low persistence in soil.

Persistence and degradability \( \text{DT}_{50} = 1 – 130 \text{ days.} \)

Potential of bioaccumulation \( \text{Koc} = 300 – 20100. \)

Results of PBT evaluation
13 - DISPOSAL CONSIDERATIONS:

Product/packaging

Disposal of important amounts must be made by duly authorized specialists.
Incineration should be made in authorized and specialized plant.
Eliminate the product and its packaging with care and in a responsible way.
Do not throw near ponds, rivers, ditches or into sewers.
Wash contaminated surfaces with water and collect washing waters for treatment.
Make sure that local Regulations are respected.
For more information, contact your usual salesman or the Worldwide Bank to 1-202-458-2841.

Washing products

Do not throw into sewer. Do not contaminate natural waters.
Clean up application materials on the treated area and eliminate waters by spraying on one area.

14 - TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Regulation</th>
<th>RID/ADR (Terrestrial)</th>
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<th>OACI/IATA (Aerial)</th>
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<td>Wording</td>
<td>Hazardous substance for the environment, n.o.s. (Polyethoxylated tallow amine)</td>
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</table>

15 – REGULATORY INFORMATION

Labelling according to WHO guidelines

Class II: Moderately hazardous.

Risk phrase(s)

R41: Risk of serious damage to eyes.
R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety phrase(s)  
S1/2: Keep locked up and out of reach of children.  
S3/9/49: Keep only in the original container in a cool, well-ventilated place.  
S13: Keep away from food, drink and animal feeding stuffs. S20/21: When using do not eat, drink or smoke.  
S23: Do not breathe vapour.  
S24/25: Avoid contact with skin and eyes.  
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S29: Do not empty into drains.  
S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.  
S46: If swallowed, seek medical advice immediately and show this container or label.  
S51: Use only in well-ventilated areas.  
S60: This material and its container must be disposed of as hazardous waste.

**Other prescriptions**  
To avoid risks to man and the environment, comply with the instructions for use. (Directive 1999/45/EC, Article 10, n° 12)

Storage classification (ICPE): 1173

**16 - OTHER INFORMATION**  
R phrases text of dangerous substances (written in chapter 3):

R22: Harmful in case of ingestion.  
R41: Risk of serious damage to eyes.  
R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

This MSDS completes technical use sheets but does not replace them. Information herein is based on our present knowledge concerning the product, at the edition date. It is honestly given.  
The attention of users is drawn to potential risks taken when the product is used for other uses than those for which it is made.  
The user has to know and comply with all regulations concerning its activity.  
It remains the user’s own responsibility to make sure that the information is appropriate and complete for his special use of this product.  
The aim of all the regulations mentioned is to help the person concerned to comply with the rules which are his own responsibility. This listing cannot be considered as exhaustive. The person concerned has to make sure that he has no other obligations due to texts specific to particular applications.
APPENDIX 5

1.0. OCCUPATION HEALTH AND SAFETY POLICY

Management of Volta Red is vitally interested in the health and safety of its employees. At Volta Red, the safety of our workers and safe working conditions are of the highest priority and every reasonable precaution shall be taken to provide a healthy and safe work environment. All supervisors and workers must be dedicated to the objective of reducing the risk of injury and illness.

It is the responsibility of all supervisors to ensure that safe work practices are observed at all times. All supervisors must ensure their workers are familiar with the actual and potential hazards of the job and with an understanding of the safety standards and regulations that apply to their work.

It is the responsibility of every worker, sub-contractors and employees of sub-contractors to protect his or her own health and safety by working in compliance with: The Occupational Health and safety Act, the applicable regulations and the safe work practices established by Volta Red. Whenever a worker sees an unsafe condition or practice, it must be immediately reported to the supervisor or the safety Manager.

All parties are expected to consider health and safety in every activity. Commitment to health and safety form an essential part of this organization from the CEO to the worker. We welcome any suggestions on how we might improve our safety programs.

Safety is everyone’s business, we expect everyone to work together as a team to maintain and improve our safe working environment.

Daniel Nyame

………………………………

General Manager Date:…………………………
2.0. INTRODUCTION
This manual is to be used by Volta Red in the implementation and maintenance of its health and safety plan by workers, contractors and subcontractors and their employees, for a healthy and safe work environment. The procedures contained in this manual will not be compromised, as some work activities may pose danger to the health of the employee. All personnel are obliged to maintain these procedures toward the goal of outstanding performance in safety on our job sites.

All employees, supervisors, contractors and subcontractors on our job sites are to work at all times in full accordance with the policies, rules and regulations set forth in this manual including the site safety rules and regulations. Safety begins with each and every employee – regardless of position or rank in the Organization. The safe way to do a job must always be found before going ahead. This will continue to reduce and eliminate job site accidents and also will assist us in achieving our common goal and eliminating all job site accidents.

In recognition of its responsibilities, Volta Red Farms Ltd. has adopted a Safety, Health and Environmental Policy that commits it to do the following:

- Comply with all applicable safety, health and environmental laws and regulations and establish programs and procedures to assure compliance.
- Provide employees with appropriate safety and emergency equipment and ensure that they are properly trained in the procedures that will protect themselves and the environment.
- Take appropriate action to correct hazards or conditions that pose a risk to safety, health or the environment
- Consider safety and environmental factors in all operating decisions.

The policy makes all employees responsible for compliance with it. To ensure that its employees are provided an environment free from recognized hazards and to fulfill the requirements of its Safety, Health and Environmental Policy, Volta Red has developed this Safety Manual which addresses the OSHA requirements applicable to the Company and establishes programs to comply with them. The specific safety programs and procedures are detailed in separate documents referenced in this manual.

3.0. DEFINITION OF TERMS
Harassment under the Human Rights Code means engaging in a course of objectionable conduct, comment or display by a person towards another worker (on the basis of race, religion, sex, sexual orientation, family statutes, marital status, disability, physical features, age, ancestry or place of origin) that is known or ought reasonably to be known to be unwelcome.
Workplace Harassment is a form of discrimination and includes behavior or comments that insult or offend based on the list above.

**Discrimination** means any conduct which constitutes discrimination under the Human Rights Code. This includes discrimination based upon race, ancestry, place of origin, colour, ethnic origin, citizenship, creed, sex, sexual orientation, age, record of offences, marital status, family status, or disability as defined in the Human Rights Code.

**Workplace Violence** means
- The exercise of physical force (does not have to be related to a prohibited ground of discrimination, as defined in the Human Rights Code) by a person against a worker in a workplace that causes, or could cause, physical injury to the worker; and/or
- An attempt to exercise physical force against a worker in a workplace that could cause physical injury to the worker.

**Workplace Bullying** means persistent, offensive abusive, intimidating, malicious or insulting behavior, abuse of power or unfair penal sanctions which make the recipient (does not have to be related to a prohibited ground of discrimination, as defined in the Human Rights Code) feel upset, threatened, humiliated, or vulnerable, which undermines their self-confidence and which may cause them to suffer stress.

**Sexual Harassment** means unwelcome sexual advances, requests for favors, and or other verbal or physical conduct of a sexual nature by supervisory or non-supervisory employees.

**Employee:** a person employed under a contract of employment or contracts of training. Unless otherwise stated the term “employee/s” relates to direct and on-hired employees.

**Hazard:** a source or situation with a potential to cause injury, illness or disease.

**Hazard identification:** the process of recognizing that a hazard exists and defining its characteristics.

**HSR:** Health and Safety Representative (employee elected to represent employees of a designated workgroup)

**Injury:** An event that results in physical harm to an employee

**Illness:** A deviation from the normal, healthy, state of the body

**Near miss:** potentially significant event that did not occur due to prevailing conditions, but could have resulted from a sequence of events that did occur.
SO: Safety Manager

4.0 SAFETY RESPONSIBILITIES
The implementation of health and safety at this project will be the shared responsibility of Volta Red’s Plantation Manager (PM), Mill Manager (MM), RSPO Manager, Safety Manager, Field Supervisors, together with Volta Red’s Employees implementing the plantation development activities.

4.1 Plantation Manager (PM)
The Farm Manager (FM) has the overall field management authority and responsibility for all site operations. Some of the Farm Manager’s specific responsibilities include:
- Providing the RSPO Manager with updated information regarding conditions at the sites and scope of site work;
- Providing adequate authority and resource to the Safety Manager (SO) to allow for the successful implementation of all necessary safety procedures;
- Supporting the decisions made by the SO and RSPO Manager;
- Maintaining regular communications with the SO and, if necessary, the RSPO Manager;
- Coordinating the activities of all Contractors, on behalf of the Respondents, and ensuring that they are aware of the pertinent health and safety requirement for the project sites.

4.2 Mill Manager
The Mill Manager (MM) has the overall responsibility and authority for directing work operations at the mill according to work plans. Specific duties of the Mill Manager include:
- Ensuring that all operations incorporate best practices and are in compliance with the requirement of this HASP and halt any activity which poses a potential hazard to personnel, property or the environment.
- Maintaining regular communications with the Farm manager, SO and, if necessary, the RSPO Manager.

4.3 Safety Manager (SO)
The identity of the person who is responsible for the Company’s safety issues is Mr. Nyame Joseph Atta. In addition to other titles, this person is called the Safety Manager. He has the responsibility and the authority to do the following in the name of Volta Red:
Develop and implement rules of safe practices for each function within the company.
• Develop and implement a system to encourage employees to report unsafe conditions immediately.
• Conduct a thorough investigation of each accident, whether or not it results in an injury, to determine the cause of the accident and to prevent recurrence.
• Instruct supervisors in safety responsibilities.
• Develop and implement a program of employee safety education.
• Conduct scheduled and unscheduled inspections to identify and correct unsafe working conditions. Special attention shall be given to notice of serious concealed dangers.
• Maintain records of training, periodic inspections, corrective actions and investigations as required by our policy.

4.4. **Supervisors are to:**
• Ensure the health and safety of all workers under their direct supervision.
• Know the Company’s requirements that apply to the work being supervised and ensure that they are followed.
• Ensure that workers under their supervision are made aware of all known or reasonably foreseeable health and safety hazards where they work.
• Consult and cooperate with joint committee members or worker health and safety representatives, and cooperate with others carrying out occupational health and safety duties.
• Ensure that the appropriate personal protective equipment and clothing are available, properly worn when required, and properly inspected and maintained.
• Investigate unsafe conditions reported to them and ensure that corrective action is taken without delay.
• Ensures that Volta Red’s health and safety policy and procedures are implemented
• Conduct information sessions (safety talks, staff meetings, tail gate meetings)
• Correct substandard acts or conditions

4.5 **Employees are to:**
• Report all identified hazards, near misses and injuries to the supervisor or the safety Manager at site;
• Participate in skills development and training to actively improve competencies;
• Follow all health and safety policies and procedures.
• Follow safe work procedures as set down by Volta Red or the client.

5.0 **SAFETY PROGRAM**

5.1 **Safety Committee**
The objective of Volta Red is a safety and health program that will reduce the number of injuries and illnesses to an absolute minimum, not merely in keeping with, but surpassing the best experience of similar operations by others. Our safety programs will be aimed at achieving an environment free of accidents and injuries. In order to make our working environment free of accidents and injuries, supervisors shall select at least five (4) members from their division. In this situation, the Safety Manager shall form a safety committee of at least 6 persons, four (4) being divisional representatives in addition to the supervisor and the safety Manager, where the Safety Manager shall chair the meeting.

6.0 SAFETY MEETINGS, INFORMATION AND TOPICS

6.1 Safety Meetings
Safety Health and Environment Committee meetings shall be held once every month by a division. These Safety meetings will be chaired by the Safety Manager and convened by your supervisors on site, to provide you with safety information regarding your particular work task and what you are suppose to do as divisional representatives. These meetings are solely intended for safety matters and will not be used to discuss other work problems or general grievances. Other channels of communication are available within established company procedures to deal with these matters.
In addition, the purpose of these meetings is to also answer employee questions on safety matters and discuss, in language understandable to every employee.

6.2. Safety Information
Safety news bulletins on general items of interest will be posted on site Safety Notice Boards or communicated to you during safety talks with your supervisor or during general assembly.
All employees are therefore required to stay updated with all company’s policies, rules and regulations.

6.3 Safety Topics
Monthly safety topics will be introduced at divisional level to educate employees. These will raise the awareness of the employee pertaining to their well-being. The Monthly Safety Topics will include issues on personal hygiene, good housekeeping practices among other topics and will aim at safeguarding the personal health and safety of the worker. All employees are required to provide their full corporation to achieve this aim.

7.0 TRAININGS AND RECORDS

7.1. Safety & Health Training
While Volta Red believes in skills training, we also want to emphasize safety training. Safety training is one of the most important elements of any injury and illness prevention program. Such training is designed to enable
employees to learn their jobs properly, bring new ideas to the workplace, reinforce existing safety policies and put the health and safety plan into action.

Training is not a privilege to be granted or withheld from employees, but should be undertaken after a critical appraisal of the company’s needs in relation to its objectives. Training may take various forms including on-the-job training experience, Workshops or seminars, internal or external training etc this will enable the organization to deliver strategic results while fulfilling the need for personal development and satisfaction. We recognize that such development is a continuing process for every employee at every level of the organization.

Training is required for both supervision and employees alike. The content of each training session will vary, but each session will attempt to teach the following:

- The success of the Company’s health and safety plan depends on the actions of individual employees as well as a commitment by the Company.
- Each employee’s immediate supervisor will review the safe work procedures unique to that employee’s job, and how these safe work procedures protect against risk and danger.
- Each employee will learn when personal protective equipment is required or necessary, and how to use and maintain the equipment in good condition.
- Each employee will learn what to do in case of emergencies occurring in the workplace.

7.2 Records
Volta Red will maintain records of employee training, hazard identification, accident investigation Reports e.t.c.

8.0 PROGRAM IMPLEMENTATION BY RSPO AND SAFETY MANAGER
8.1 Tool Box/Tailgate Talks
The RSPO and Safety Manager shall ensure that workers receive regular toolbox talks concerning their health and safety. Questions and discussions from the Workers concerning any safety matters will be encouraged and all concerns addressed as soon as possible. Such questions are to be recorded on the Tool Box Meeting Form.

8.2 Employees Cooperation Necessary
Volta Red maintains a safe and healthy working environment that enhances our ability to ensure best practices among the workforce on the field. To be successful these practices, must embody proper attitudes towards injury and illness prevention on the part of supervisors and employees. It requires the cooperation in all safety and health matters, not only of the employer and employee, but between the employee and all co-workers. Only through such a cooperative effort can a safe and healthy working environment in the best interest of all be established and preserved. Safety is no accident; think safety and the job will be safer.
9.0 MANAGEMENT OF CHANGES/MODIFICATION TO THE HASM

9.1 Management of Changes to the OHASM

The procedures in this Manual were prepared based on the best available information regarding the physical and chemical hazards known or suspected to be present on the project site. While it is not possible to discover, evaluate, and protect in advance against all possible hazards, which may be encountered during the development of plantation and mill activities, adherence to the requirements of this Manual will significantly reduce the potential for occupational injury. Also, Volta Red Farms and/or their subcontractors may elect to perform certain tasks in a manner that is different from what was originally intended, due to a change in field conditions. As such, this Manual is considered a working document that is subject to changes to meet the needs of this dynamic project.

9.2 Modification to the Manual

Should significant additional information become available regarding potential on-site hazards, it may be necessary to modify this Manual. All proposed modification to this Manual will be reviewed and approved by the RSPO Manager. Any significant modification shall be incorporated into a written document as addendum to the Manual. The SO shall ensure that all personnel covered by this Manual receive an awareness education of all modifications.

10. HEALTH AND SAFETY REPRESENTATIVES

10.1 Selection of Safety Representatives

The selection of safety representatives shall be made by divisional Supervisors. Selected persons shall represent their division during monthly divisional Safety health and environmental committee meetings. From time to time Supervisors will be required to select new persons within their divisions as fresh representatives, this will however, continue within each division until all divisional members has had their turn.

10.2 General Duties of Representatives

Safety representatives with knowledge of the general work activities on the field will help to:

- Make inputs on unsafe conditions during health and safety discussions.
- Shall also serve as coordinators to co-workers on health and safety.
- Give out corrective measures when the unsafe act is performed.

11.0 EMPLOYEES SAFETY SUGGESTION BOX

Your written safety suggestions, from time to time should be dropped into the suggestion boxes provided. All written safety suggestions will be discussed during safety meetings. Good suggestions will be recognized and implemented.
12.0 SAFETY PRIORITY
The personal safety and health of each employee is of primary importance. Prevention of occupationally-induced injuries and illnesses is of such consequence that it will be given precedence over operating productivity. To the greatest degree possible, management will provide all protection required for personal safety and health, but our employees must bear primary responsibility for working safely. A little common sense and caution can prevent most accidents from occurring.

13.0 DISCIPLINARY ACTION PROCEDURE
13.1 Safety Policy Enforcement and Penalty
Failure to comply with Company policies shall be considered grounds for disciplinary action including dismissal. All employees must abide by our Safety Policy and Procedures along with all site rules and regulations.

Some examples of immediate dismissal from site are:
- non-compliance with Volta Red’s Safety Rules & Regulations
- theft
- fighting
- being intoxicated or use of alcoholic beverages on site
- possession of or use of non-prescription restricted drugs

13.2 Employee Discipline Notice
If a discipline notice is required to be issued, a copy must be sent to Management Volta Red at the Head Office and placed on file. This notice will be issued to employees who through their actions or inaction require an employee discipline notice to be issued. The degree of the disciplinary action, including immediate dismissal, will depend upon the severity of the infraction.

- In the event of a safety violation by a worker, a verbal order of compliance will be issued to the worker either by his supervisor or by the Safety Manager. The Safety Manager or the Supervisor is to discuss the violation with the worker and outline how the violation is to be rectified.
- For a second infraction of the same safety violation by the same worker, a notice of violation will be issued to the Worker, signed by both parties. The violation will again be discussed with the Worker, with a mandatory safety talk.
- If there is a third occurrence of the violation with the same worker, the worker will be served with a dismissal letter and will be required to submit all items or equipments belonging to the company to his or her supervisor before leaving the work.
In the process where a worker is being suspended or dismissed the following are to be served with a copy of the suspension or dismissal letter

- Farm Manager,
- Mill manager,
- Relation Manager,
- Agronomist and
- the supervisor of the person been suspended or dismissed

14.0 WORKPLACE HARASSMENT/ VIOLENCE POLICY

14.1 Policy Statement
Volta Red Farms Ltd. is committed to provide a work environment that is safe, secure, and free from all forms of violence and all types of discrimination or workplace harassment, including sexual harassment and bullying. Volta Red Farms Ltd. will operate in an environment that fosters trust and mutual respect.

14.2 Conduct Prohibited
The company strictly prohibits violence, bullying, harassment, intimidating or threatening conduct of a verbal or physical nature, by or between any employees or other persons on company premises or worksite. Such conduct could include but is not limited to: unwelcome, unsolicited encounters, following a request for the encounters to cease; stalking or harassment through electronic means such as e-mail or telephone contact; derogatory comments, slurs, threats, degrading words, offensive objects or pictures; graphic or sexually suggestive verbal or written comments; or flirtations, touching, advances, or propositions of a sexual or aggressive nature. Verbal horseplay and practical jokes can, depending on the circumstances be included within the prohibition.

14.3 Responsibilities
All employees have a responsibility not to engage in harassment, sexual harassment, violence, bullying or discrimination against another worker and/or supervisor.

All employees of Volta Red, in a supervisory role (including headmen, others e.t.c) have a responsibility under this Policy to promote a harassment-free workplace.

14.4 Procedure
All complaints will be taken seriously. The rights of all concerned will be respected. Workers making a complaint are encouraged to use these steps to address incidents of alleged harassment, sexual harassment, violence or discrimination internally.
A person who believes that he/she has been subjected to harassment is encouraged to clearly/ firmly make known to the alleged harasser that the harassment is objectionable and must stop.

Where this cannot be done safely, if circumstances prevent a worker from taking action or if the harassment continues, the person should report the alleged harassment to his or her supervisor immediately. The supervisor in turn will inform the Farm Manager, the RSPO Manager or Senior Management.

Once the RSPO Manager has received a complaint of harassment, he shall immediately bring the complaint to the attention of the Farm Manager or Senior Management of Volta Red Farms Ltd.

Once a complaint has been reported as outlined above, the following procedure will be followed:

- The complaint must be documented, signed, and dated. The complaint should include all relevant information about person(s) involved, nature of incident, date, time and place of incident, names of witnesses, if any, and any other information which the individual feels is relevant to the case.

- An investigation will then be initiated. The RSPO Manager together with the security will conduct the investigation and come up with findings.

- The investigation will include discussion with the complainant, the person(s) against whom the complaint has been laid, witnesses, if any, and anyone else who may be able to provide useful input into the investigation. The investigation and all discussions will be treated confidentially, to the extent possible, and all involved will be so advised.

- All complaints of harassment or discrimination must be investigated to determine the nature and circumstances of the incident(s) and to determine appropriate resolution.

- Following the conclusion of the investigation, the Farm Manager and the RSPO Manager will inform the complainant and the alleged harasser of the results of the investigation.

14.5 Resolution and Corrective Action

Where harassment, sexual harassment, violence or discrimination has been substantiated, the Farm Manager will take appropriate corrective action to resolve the complaint.

Where harassment, sexual harassment or discrimination has not been substantiated, no action will be taken against a worker who has made a complaint in good faith. Complaints filed in bad faith may result in appropriate disciplinary action.

14.6 Confidentiality

All written documentation regarding the incident shall be kept by the RSPO Manager and kept on file.

14.7 No Retaliation or Reprisals
The Company will not permit any form of retaliation or adverse action to be taken against any employee who reports harassment, violence, intimidation, or threatening conduct in the workplace, unless the report proves to be totally unfounded or malicious. All employees are assured that quick action will be taken to resolve complaints, and that the Company is firm in its commitment to eliminate such conduct from the workplace.

15. **SANITATION**

All site personnel shall conduct themselves in a safe manner and maintain a working environment that is free of injuries and illness.

15.1 **Housekeeping**

Good housekeeping is fundamental to good safety. Trips, slips and falls can result from poor housekeeping. It is everybody’s responsibility to ensure that their work areas are kept clean and tidy.

All materials, equipment and tools not in use must be safely stored. All rubbish and waste must be placed in the bins provided. All aisles and access to fire extinguishers must be kept clear.

Liquid spills must be cleaned up immediately with absorbent material. DO NOT wash the spill into a drain.

15.2 **Personal Hygiene**

Personal cleanliness is important in helping to prevent illness and the spread of infection. Wash your hands before eating, immediately after using any chemicals and before and after going to the toilet.

16. **ACCIDENT PREVENTION**

It is the policy of Volta Red to provide a safe and clean workplace and to maintain sound operating practices. Concentrated efforts shall produce safe working conditions and result in efficient, productive operations. Safeguarding the health and welfare of our employees cannot be stressed too strongly. Accident prevention is the responsibility of all of us. Departmental or divisional heads and headmen at all levels shall be responsible for continuous efforts directed toward the prevention of accidents. Employees are responsible for performing their jobs in a safe manner. The observance of safe and clean work practices, coupled with ongoing compliance of all established safety standards and codes, will reduce accidents and make our Company a better place to work.

In addition, each employee has a personal responsibility to prevent accidents. You have a responsibility to your family, to your fellow workers and to the Company. You will be expected to observe safe practice rules and instructions relating to the efficient handling of your work. Your responsibilities include the following:

- Incorporate safety into every job procedure. No job is done efficiently unless it has been done safely.
- Know and obey safe practice rules.
- Know that disciplinary action may result from a violation of the safety rules.
- Report all injuries immediately, no matter how slight the injury may be.
- Caution fellow workers when they perform unsafe acts.
- Don’t take chances.
- Ask questions when there is any doubt concerning safety.
- Don’t tamper with anything you do not understand.
- Report all unsafe conditions or equipment to your supervisor immediately.

17. HAZARD ASSESSMENT AND CONTROLS
17.1 Physical Hazards
There are numerous physical hazards associated with existing site conditions as well as the nature of the work being conducted at the site. Following physical hazards are anticipated to be present on the site.

17.1.1 Slips, Trips, Falls, and Protruding Objects
A variety of conditions may exist that may result in injury from slips, trips, falls, and protruding objects. Slips and trips may occur as a result of wet, slippery, or uneven walking surfaces. To prevent injuries from slips and trips, always keep work areas clean; keep walkways free of objects and debris; and report/clean up liquid spills. Protruding objects are any object that extends into the path of travel or working area that may cause injury when contacted by personnel. Always be aware of protruding objects and when feasible remove or label the protruding object with an appropriate warning. Slippery, uneven footing and tripping hazards will likely be present at the site. Be vigilant, avoid puddles, and wear footwear with slip resistant soles. Walk around, not over or on top of debris or trash piles. When carrying equipment, identify a path that is clear of any obstructions. It might be necessary to remove obstacles to create a smooth, unobstructed access point to the work areas on site. Maintaining a work environment that is free from accumulated debris is the key to preventing slip, trip and fall hazards.

17.1.2 Electrical Hazards
Electrical and powered equipment may be used during a variety of site activities. Injuries associated with electrical and powered equipment include electric shock, cuts/lacerations, eye damage (from flying debris), and burns. To reduce the potential of injury from the hazards associated with electrical and powered equipment, always comply with the following:
Use ground fault circuit interrupters when using electrical powered tools/equipment.
- Ensure generators are properly grounded.
- Wear ANSI-approved safety glasses. Face shields may be required to provide additional face protection from flying debris.
- Wear appropriate work gloves. Work gloves may reduce the severity of burns and cuts/lacerations.

17.1.3 Spill Prevention
Work activities may involve the use of hazardous materials (i.e. fuels, solvents) or work involving drums or other containers. The following procedures will be used to prevent or contain spills:
- All hazardous material will be stored in appropriate containers
- All hazardous commodities in use (i.e. fuels) shall be properly labeled.
- Tops/lids will be placed back on containers after use.
- Containers of hazardous materials will be stored appropriately away from moving equipment.

At least one spill response kit, to include an appropriate empty container, materials to allow for cleaning up the area to minimize the size of the spill, and appropriate clean-up material (i.e. sand) shall be available at each work site (more as needed).

17.1.4 Noise Exposure Monitoring
When heavy equipment is in operation, all personnel working within the location and with the equipment will be required to wear hearing protection during the operation of heavy equipment.

17.2 Biological Hazards
The likelihood of biological hazards being present is judged to be of great concern due to the vegetative growth present at the sites. The sites provide animal habitat so there is a remote chance that wild animals, could be encountered, however, a general discussion of the most common biological hazards found on project sites.

17.2.1 Venomous Animals
Some animals have the ability to inject venom. These include: various types of spiders, and snakes. Snakes have wide distributions at the site location so in most areas you are unlikely to encounter them. If bitten by any of these animals special care should be taken to treat the wound as it may lead to complications due to the toxin. A bite from a venomous snake, which may inject varying degrees of toxic venom, is rarely fatal but should always be considered a medical emergency. To reduce the chance of being bitten by a snake, the following procedures should be followed:
- Never bend down to the ground or sit on the ground before checking your surroundings for the presence of snakes.
- Never put your unprotected hand or foot into a closed space that you cannot check for the presence of hidden snakes.
- Wear knee-high boots (Wellington boot) to help protect from snake bites.

17.2.2 Poisonous Plants
Sensitivity to toxins generated by plants, insects and animals varies according to dosage and the ability of the victim to process the toxin; therefore, it is difficult to predict whether a reaction will occur, or how severe the reaction will be. Employees should be aware that there are a large number of organisms capable of causing serious irritations and allergic reactions. Some reactions will only erupt if a secondary exposure to sunlight occurs.

Plants that field staff should recognize and take precautions to avoid include: Mucuna bean which is a climbing plant with fruit that consist of small hair-like structures which cause intensive itching in contact with the skin. The leaves, roots, steams and fruits of this poisonous plant contain urushiol. Contact with the irritating hair like structures causes an intensely itching skin rash and characteristic, blister-like lesion. Proper identification of this plant is the key to preventing contact and subsequent dermatitis. Wear long sleeves and pants when working in wooded areas.

17.3 Insects
Insects for which precautionary measures should be taken include: mosquitoes (potential carriers of disease aside from dermatitis), black flies, wasps, bees and ticks.

Wasps and bees will cause a painful sting to anyone if they are harassed. They are of most concern for individuals with allergic reactions who can go into anaphylactic shock. Also instances where an individual is exposed to multiple stings can cause a serious health concern for anyone. These insects are most likely to sting when their hive or nest is threatened.

Ticks can be encountered when walking in tall grass or shrubs. They crawl up clothing searching for exposed skin where they will insert mouthparts to drink blood. Most serious concern is possibility of contracting Lyme disease which is spread by the Black-legged or Deer Tick. Occasionally a tick can cause Tick Paralysis if it is able to remain feeding for several days. Full recovery usually occurs shortly after the tick is removed. Risk may be reduced by taking these precautions:
- During outside activities, wear long sleeves and long pants tucked into stocks.
- Use insecticides to repel or kill tick. Repellents containing the compound DEET can be used on exposed skin except for the skin, but they do not kill ticks and are 100% effective in discouraging ticks from biting.
17.3 CHEMICAL HAZARDS
If chemicals become a concern at the site, employees can be exposed by inhalation during intrusive activities. Another route of potential exposure is via direct dermal contact with soils and groundwater during field activities. Although highly unlikely, exposure also can occur via ingestion (hand-to-mouth transfer).
The chemical hazards associated with site activities can be controlled in several ways, including:

- Maintaining a upwind position
- Use of personal protective equipment
- Avoiding direct contact with contaminated media
- Washing hands prior to eating or using tobacco products.

17.4 WEATHER HAZARD
If a severe thunderstorm is heard, employees must be alert for approaching storms. However, some severe weather can also occur with little warning. Employees will be vigilant for the potentials for storms, lightning, high winds, and flash flood events. Additionally, lightning strikes during electrical storms could also be a potential hazard. The following procedures will be implemented once thunder is heard or lightning spotted:

- If you hear thunder, you are close enough to a storm to be struck by lightning. Cease all work and seek shelter immediately.
- If you are caught outside during a thunderstorm and no shelter is available, find a low spot away from trees and poles. Squat low to the ground on the balls of your feet; place your hands on your knees with head between them. Make yourself the smallest target possible and minimize your contact with the ground.

18. PERSONAL PROTECTIVE EQUIPMENT (PPE)
Some jobs have a certain element of risk associated with them (e.g. working in areas of excessive noise or in areas where flying objects may occur). The purpose of personal protective equipment (PPE) is to provide a barrier, which will shield or isolate individuals from the chemical and/or physical hazards that may be encountered during work activities. The Company provides the best protective equipment it is possible to obtain. These items shall be worn and effectively maintained as a condition of your continued employment and part of our mutual obligation to comply with the Occupational Safety and Health Policy.
Personal protective equipment will be provided by the company. Wearing PPE reduces the risk of injury. It is your responsibility to wear this equipment when and where required. The Safety Manager will explain the rules about protective equipment to you. PPE signage will be displayed in areas where it must be worn. You will be required to observe and follow these rules.
18.1 Hearing Protection
Hearing protection must be worn whenever the noise level exceeds the noise exposure standard. You must wear this protection at all times in designated areas to protect your hearing and to protect you from noise induced hearing loss.

18.2 Eye Protection
Eye protection may be required for certain jobs (e.g. when working with chemicals or during brush cutting and sawing operations). It is important that you wear this protection to prevent serious eye injuries.

18.3 Foot Protection
Safety boots or wellington boots must be worn at all times to protect your feet from insects’ bites, cuts etc.

18.4 Other Specific Protection
Other types of protective equipment may be required, depending on the work you are doing. These may include aprons, gloves, hardhats, helmets, respirators etc. You will be advised by the safety Manager of any other protective equipment required and whether specific training is required in the use of this equipment.

18.5 Mandatory PPE
The following safety gear, at a minimum, will be worn once an employee enters the work area:
- Wellington boots
- Protective uniform (long sleeved preferably.)
- Hardhat
- Noise mask

19. EMERGENCY RESPONSE PROCEDURES
It is the responsibility of every employee to familiarize himself with the applicable emergency procedures that apply to the project site. You will receive instruction from the RSPO, Safety Manager and your own supervisor on what action to take in an emergency. Do not be afraid of asking question if you are uncertain, it may eventually save life and possibly the lives of your fellow employees.

The main aim of the emergency plan in place is to ensure that potential life threatening events are handled with maximum efficiency in order to protect people’s lives. It is important that you are aware of your responsibilities in the event of an emergency.
In addition, during new employee induction program and Safety Health and Environmental Committee meetings (SHE), emergency procedures will be discussed with you and also involve you in emergency evacuation drills when they are scheduled to occur. Some general guidelines are:

**KEEP CALM, THINK CLEARLY AND ACT QUICKLY**

- Protection of life is the first consideration in an emergency. Property protection is secondary.
- Learn the emergency telephone number
- Find out where you have to go in an evacuation of the premises.
- Find out who your Fire Warden is.
- Find out who you have to notify if an emergency occurs.
- If you are trained in the use of firefighting equipment, make sure you know the location of it.

The Emergency plan includes the following:
Alarm sounding, Escape routes, Assembly point, employee accounting, Emergency evacuation Rescue and medical duties

19.1 Fire Emergency
- In case of a small fire, try to extinguish with the sand buckets or fire extinguishing equipment available.
- If the fire cannot be extinguished, sound the alarm.
- Call the Safety Manager on 0244460692 or 0207296616.

19.2 Emergency Evacuation
- Stop all work immediately and ensure that all equipment is left in a safe condition.
- Proceed to designated emergency assembly point.
- Remain at the assembly point, as instructed
- Remember, do not enter the area for any reason until you are told to do so

19.3 Emergency Assembly Area
- Employees shall be assigned definite location to assemble. The assembly area shall be located at strategic place, close enough to work areas for access, but far enough away from potential disaster areas to afford protection to employees.
- Procedures shall be established for an orderly shutdown of work at the sounding of the emergency warning signal. Equipment shall be secured and other activities shall be stopped. Employees shall then proceed to designated emergency assembly areas.
• When employees are assembled, supervisors shall immediately do a head count and roll call to be sure everyone is accounted for by name.
• Employees shall remain in the assembly area pending instructions. Supervisors shall inform employees, plans for the resumption or suspension of work.

19.4 Organizational Functions
The Safety Manager will act as the evacuation coordinator and perform the following functions:
• Approve the evacuation procedures and location of the assembly area(s)
• Determine whether there is a need for evacuation
• Order the evacuation alarm and direct the evacuation activities
• Supervisors shall also relay instructions from the evacuation coordinator to those in the assembly area as to whether they shall stay, return to work, or leave the project site.
• Missing persons shall be checked against absentee reports and reported to the evacuation coordinator.
• Supervisors shall submit an accounting of their gangs; names, and last known whereabouts of missing people shall be forwarded to the Safety Manager.

19.5 Training of Employees
It is essential that all employees are aware of the evacuation procedure. The evacuation procedure shall be discussed at safety meetings and during safety induction training. Upon completion of an emergency plan and procedure for the project, notices shall be posted for the information.

19.6 Emergency Phone Numbers
Names and contact numbers of personnel shall be posted; these numbers should be contacted if any emergency situation arises.

19.7 Injury Resulting from Emergency Situations
In the event of an emergency situation, any employee who may sustain any injury in the process shall immediately seek for First Aid treatment or shall be transported depending on the severity of the injury to the nearest medical facility for treatment.

20. General Site Safety Practices
The following measures are designed to augment the specific health and safety guidelines provided in this HASP.
• All work will be conducted under strict safety regulations.
• Eating, drinking, chewing gum, smoking, or any practice that increase the probability of hand-to-mouth transfer and ingestion of materials is prohibited in the immediate work area.
• Smoking is prohibited in all work area. Matches and lighters are not allowed.
• Hand and face must be thoroughly washed upon leaving the work areas and before eating, drinking or any other activities.
• The use of alcohol or illicit drugs is prohibited during the conduct of field operations.

21.   FIRST AID
In the event of an accident, make sure that your supervisor or headman is notified as quickly as possible. It is important that you get these people informed about the condition of your injury or illness, so that immediate attention can be paid to you.

DO NOT treat yourself. This is important to ensure that you have received the necessary treatment from the first aid station or received the necessary medical attention at the nearest medical facility.

21.1  Standard
• First Aid kits shall be provided on site and made available at the first aid station for treatment.
• Supervisors/Headmen will ensure that all employees on the job are aware of:
  ✷ where to find the first aid station
  ✷ who on site is trained in first aid or responsible for first aid treatment
  ✷ what are the local Emergency numbers to contact?

21.2  Employees Responsibilities
• Familiarize yourself with your surroundings.
• If it is your first day on a site, ask your supervisor where the first aid station is located, who is responsible.

22.   ACCIDENT AND INJURY REPORTING
All accidents, incidents including “near misses” must be reported immediately, even if they do not result in injury or damage. In the event of an injury, you must obtain first aid treatment to ensure the injury does not worsen.

23.   ACCIDENT AND INJURY INVESTIGATION
A worker who sustains an injury or becomes ill as a result of workplace conditions or work activity must report the injury to his supervisor or the Safety Manager immediately. Once you have reported an injury or accident, an investigative process to find out the causes or reasons for the accident will commence. You must co-operate with this investigation.

The prime objective of reporting and investigating accidents is to prevent recurrence.
24. **HAZARD REPORTING**
If you identify a hazard report it to the Safety Manager or your Supervisor. If it is within your authority to do so; implement a control to eliminate the risk of the hazard. It is the responsibility of all to take necessary action to control the risk of any possible hazard if it is within your authority to do so.

25. **OFFICE SAFETY**
The office environment has many hazards for the unwary and is as vulnerable to accidents as are workshops, or jobsite areas. Here are a few things to watch out for.

- Good housekeeping promotes safety.
- Keep your desk tidy
- All electrical equipment should be grounded
- Worn or frayed electrical cables must be replaced and destroyed
- Passageways and walkways must be kept clear to provide access and egress in case of emergency.
- Never leave a desk or file cabinet with drawer open
- cables stretched across passageways or walkways are tripping hazards and must be covered securely
- Store heavy files in the bottom of filing cabinets
- Practical jokes and horseplay are dangerous and forbidden
- Do not block fire escape routes or passageways, etc.
- know your escape routes from place of work
- know the nearest location of fire extinguishers and how to operate them efficiently

26. **VEHICLE SAFETY**
Drive carefully. Seat belts are to be worn at all times to and from work. Obey all road rules and regulations including workplace speed limits. **Do not speed**! Drive at a speed of 30km/h

Park your vehicle safely and in a designated parking spot. If you must park the vehicle elsewhere, ensure the vehicle will not present a hazard to other vehicles or to people.

While walking, be aware of vehicles being driven in the work area. Keep to designated walkways.

26.1 **Transporting Employees & Materials**
When operators are transporting either employees or materials, they must have an operator’s license for that classification of vehicle and be trained in the operation of that vehicle. As employees are transported by truck, provisions must be provided to prevent their falling from the vehicle. Vehicles should be in good working condition, inspected on a regular basis and must be equipped with, brakes, horns, mirrors, windshields and turn signals in good working order. If the vehicle transports numerous individuals it must be equipped with
handrails, steps, stirrups or similar devices, placed and arranged so that employees can safely mount or
dismount.

26.2 Signage
- Appropriate signage shall be provided, as required, to ensure the appropriate identification of
construction areas, access routes, parking areas, and overhead dangers.
- Signage shall also be provided to identify hazards to other workers, the general public etc. In addition
to signage, hazardous areas or operations shall be restricted from access by unauthorized persons.

26.3 Refueling Vehicles and Motorbikes
By law you must switch off your engine before and during refueling. Take care when fueling your vehicle.
Always be cautious when fueling your petrol motorbikes, static discharge from some type of clothing can
ignite petrol vapors from your bike tank.
Dropping a mobile phone or switching it on or off can cause sparks, which may ignite petrol vapors.
Using mobile phones while refueling can also cause a lapse in concentration.

27. CHEMICALS SAFETY
Chemicals are used in the workplace. These can range from relatively harmless chemicals such as some
fertilizers through to highly toxic herbicides.
You are not to handle chemicals without the express permission of your Supervisor. Chemicals can affect your
health by entering your body through breathing (e.g. dusts or pesticide sprays), through skin absorption (e.g.
some solvents such as kerosene or petrol) or through ingestion (e.g. by eating or drinking the chemical).
If you are using chemicals, you must follow these safety precautions:
- Identify the chemical you are using – refer to the label;
- Obtain and refer to the Material Safety Data Sheet (MSDS);
- Use the recommended personal protective equipment, including respiratory protection – refer to the
  MSDS;
- Dispose of excess chemicals safely – seek advice from your Supervisor and refer to MSDS.
- Make sure all containers are correctly labelled.
- WASH YOUR HANDS THOROUGHLY AFTER USING ANY CHEMICAL AND BEFORE
  EATING, DRINKING OR SMOKING.

28. ELECTRICAL SAFETY
UNDER NO CIRCUMSTANCES ARE YOU TO ATTEMPT TO MAKE ELECTRICAL REPAIRS
Only qualified electricians can work on electrical equipment and installations. If you find an electrical fault, you must report it to the compound overseer. Only non-conductive fire extinguishers (e.g. dry chemicals, carbon dioxide) should be used around electrical fires.

29. HAND TOOLS
Hand tools present a range of hazards in the workplace (e.g. cutlass, harvesting chisels etc.). Injuries that can be sustained as a result of hand tool use include:

- Cuts and abrasions
- Punctures and bruises
- Broken bones

To minimize your risk of injury with hand tools:

- Choose the right tool for the job
- Wear appropriate PPE
- Inspect tool for any hazards prior to use
- Report any problems or hazards with the tool to your supervisor
- Follow any safe operating procedures provided to you by your supervisor or safety Manager.
- Store tools properly so that they do not present a hazard.

30. TRENCHES AND EXCAVATIONS
Trenches and excavation activities may be carried out during project activities, employees should be careful when working in such locations. Warnings signage will be placed at locations where such activities are carried out. Report to your supervisor or the safety Manager any pit or dugout you may come across during field activities.

It is important to understand, for instance, the terms “trench” and “excavation.” Simply stated, an excavation is a hole left in the ground as the result of removing material. A trench is an excavation in which the depth exceeds the width.

31. AREAS OF RISK
There are some activities that present a risk to health and safety. To help reduce the risk of injury we have produced Risk Assessments and Safe Working Procedures for a variety of the hazardous tasks undertaken and machinery operated. Always know the risks or dangers involved in the job you have been assigned to do and
never stop been conscious of the safe work procedures involved in your work. To be safe, always be conscious of what you do.

32. MANUAL HANDLING

Most materials associated with the project activities are moved by hand. The human body is subject to severe damage in the forms of back injury, muscle strains and hernia if caution is not observed in the handling process. Employees must adopt safe lifting techniques whenever mechanical movement of goods is not possible and should always seek assistance whenever heavy or awkward loads are to be moved manually. In general loads above 25 kg, or weight which you feel is too heavy for your capacity, must be subject to team lifting. Carrying and lifting of objects should always be done with great care. Never attempt to lift anything beyond your capacity – always seek assistance.

Lifting of heavy items should be carried out using safe lifting techniques (i.e. lift with the leg not the back). The first rule for any manual handling job is to use your head. Before you lift, attempt to estimate the weight of the object. If you are not sure, squat down and try lifting a corner. If you do not feel comfortable about the lift or it feels too heavy, don't lift it! Find some help. Ask someone else to help you. Once you have decided that you can lift the object, there are several basic steps that should be followed in making a proper lift.

- First, position your feet with one alongside of the object to be lifted and the other behind. This will provide the balance necessary for a smooth lift.
- Second, contract your stomach muscles and straighten your back to keep your spine, back muscles, and ligaments in correct alignment. This will evenly distribute the load over the entire spine. Remember, a straight back does not necessarily mean a vertical back. Your back can still be straight even if you are lifting at an angle.
- Third, bend your hips and knees by using the sit-down position and draw the object in close to your body. Bending at your hips will aid in keeping your back straight and bending your knees will allow you to lift with your legs.
- Fourth, grasp the object by the opposite corners and position your body so its weight is centered over your feet. Tuck in your chin.
- Start the lift with a thrust of the rear foot and remember that as you lift, use smooth movements and avoid jerking.
- Once the load has been lifted, keep the load close to your body and turn the entire body as a whole unit, including the feet. Remember don't twist!

33. WORKING ON OR NEAR THE WATER (adjacent to Asukorkor or Dibem rivers)
The buddy system should be utilized whenever there is the possibility of falling into water, in which two persons operate as a single unit in order to monitor and assist each other in performing tasks. Whenever there is the possibility of falling into water, personnel must be attired in an internationally approved Type III or Type V work vest. The vest must be properly sized for the individual and must be secured at all times. A throw ring will also be available at each in the stored in work area.

34 SITE CLEARING HAZARDS
Extensive Site clearing of vegetation will be undertaken during plantation development. Clearing operations will likely consist of tree and brush removal, weed clearing, circle weeding, and line clearing. Tree removal will be conducted using chain saw. Once on the ground, the tree will be cut into manageable lengths for removal from the work area.

34 USE OF CHAINSAW
Chain saw will be used to remove trees from the proposed work areas. The following safety measures will be implemented when operating a chain saw:

- Chain saws must be inspected daily to assure that all handles and guards are in place and tight, that all controls function properly and that the mufflers are operative and equipped with a spark arrestor.
- All chainsaw controls must function properly. This includes having a chainsaw equipped with a safety throttle which shuts off power after pressure on the throttle is released.
- The cutting chain must be properly adjusted, such that the chainsaw will not continue to be driven after the throttle is released.
- Chain brakes and all other manufacturers’ safety features must remain operational.
- Chain saw without operational safety devices, in need of repair or parts, or otherwise not safe for use shall immediately be tagged out and marked “out of service.”
- The chain saw will only be started on the ground or when otherwise firmly supported.
- Brush which might interfere with clear footing will be cleared before starting to cut.
- The saw will be shut off when carried for a distance greater than from tree to tree, or when the ground surface is slippery or heavy with underbrush. The saw must be at idle speed when carried short distances.
- The chain saw will not be used to cut directly overhead or at a distance at which the operator no longer has a safe grip on the saw. Two hands will always be used to operate the saw.
- Safety glasses with permanently attached side shields will be worn underneath a steel mesh face shield which will attach to standard hard hats. The brush shield is designed to protect the head and face from debris created by using a chain saw.
- Employees will wear hand gloves and safety boots to protect hands and legs from accidental contact with the saw. The leg protection shall cover the full length of the thigh to the top of the boot on each leg to protect against contact with a moving chain saw.
- Ear muffs or ear plugs with a minimum NRR of 24 dB must be worn.
ALCOHOL AND DRUGS POLICY

Being under the influence of alcohol or drugs can seriously impair an individual’s judgement and reactions leading to an increased risk of accidents and injuries occurring.

Volta Red’s policy is that during working hours and at all times whilst on work premises employees must be free from the influence of drugs or alcohol. This will help to ensure the health and safety of employees and others with whom they come into contact, to maintain the efficient and effective operation of the business. For those reasons, the following rules will be strictly enforced. No employee, worker or contractor shall –

- report or try to report for work when unfit* due to alcohol or drugs (whether illegal or not) or to substance abuse;
- be in possession of alcohol or illegal drugs** in the workplace;
- supply others with illegal drugs** in the workplace such as heroin, cannabis/marijuana, cocaine, ecstasy and amphetamines;
- supply others with alcohol in the workplace;
- consume alcohol or illegal drugs or abuse any substance whilst at work.

In addition, employees, workers or contractors must –

- ensure they are aware of the side effects of any prescription drugs;
- inform their line manager, the safety Manager or a member of the management team immediately of any side effects of prescription drugs, which may affect work performance or the health and safety of themselves or others. For example, drowsiness.

Contravention of these rules is gross misconduct and the Company will take disciplinary action for any breach of these rules, which may include summary dismissal. In the case of agency workers or contractors, services may be terminated immediately upon a breach of these rules.

When there is reasonable belief that an individual is under the influence of alcohol or drugs on reporting for work or during the course of work, (for example if there was a strong smell of alcohol on the person’s breath), they must be sent home immediately. A search may also be carried out in line with the Company’s Staff Search policy.

In addition, possession of or dealing in illegal drugs on Company premises will, without exception, be reported to the Police.

Jonathan Johnson Watt

........................................................ Date:........................................
Managing Director
APPENDIX 6
STANDARD OPERATION PROCEDURE ON PLANTATION WORKS

1. INTRODUCTION
This Standard Operating Procedures (SOPs) have been prepared for all activities conducted as part of Volta Red’s Operations functions, to eliminate or minimize risks to health and safety of individual/persons as well as protecting the work area.

In addition these procedures are established to meet the requirements of the work processes at Volta Red Farms Limited. In regard of this, training will be performed in any area that supervisor and/or employee deems appropriate to ensure competency.

2. OBJECTIVE
The purpose of this document is to provide guidelines to all departments so that all works are carried out safely and the risks of injury to workers and damage of equipment and property are eliminated or minimized.

3.0. SCOPE
These procedures apply to all Volta Red workplaces.

4.0 PROCEDURES
4.0.1. BRUSH CUTTER – PETROL OPERATED
4.0.1.1. Personal protective equipment
The following must be worn before operating

4.0.1.2. Pre-operational safety checks
1. Locate and ensure you are familiar with all machine operations and controls.
2. Check for loose/missing nuts, bolts and screws. Tighten and/or replace as needed.
3. Inspect fuel lines, tank and area around carburetor for fuel leaks. Do not operate if leaks are found.
4. Ensure all guards are fitted, secure and functional. Do not operate if guards are missing or faulty.
5. Ensure the blade unit has a debris shield, either a bar handle or a U-handle, and is suspended from a shoulder harness.
6. Select the correct cutting tool for the task. Refer to manufacturer’s recommendations.
7. Load the nylon line cutting head only with nylon trimmer line of the proper diameter.
8. Thoroughly inspect blades for damage and cracks.
9. When operating the unit with a blade, ensure the blade is attached to the unit as designed (for example, with a locknut and cotter pin) and with the teeth pointing in the direction the blade head rotates.

4.0.1.3. Operational safety checks

1. Watch for ejected material. Ensure no person or animal is endangered when operating equipment.
2. Adjust the handle/s to a position for comfort and balance.
3. When starting, ensure the machine is in a clear area so the line or blade cannot contact the ground or any other obstruction.
4. Make sure the muffler side of the engine is away from your body to avoid burns.
5. Maintain a proper balance and secure footing. Do not work on slippery, uneven or unstable surfaces.
6. Maintain a straight wrist position. Avoid using your wrist in a bent, extended or twisted position.
7. Always keep both hands on the control handles. Do not operate one-handed.
8. Keep machine clear of fences, wires, posts and rocks to prevent kick out and cutter head damage.
9. Shut down immediately if the unit starts to shake or vibrate.
10. Disconnect spark plug wire before you work on the unit or leave it unattended.
11. Take care when refueling to avoid spilling fuel on hot motor or exhaust.

4.0.1.4. Ending operations and cleaning up

1. After shutting down the engine, keep fingers/feet away from the cutting line/blade until all rotation stops.
2. Remove any foreign material from in and around engine, cutting tool and guards.
3. Keep the work area and implement shed in a safe, clean and tidy condition.

4.0.1.5. Potential hazards and injuries

1. The blade can push, pull or kick out.
2. Noise.
3. Ejected materials.
4. Hair/clothing getting caught in moving machine parts.

4.0.1.6. Don’t

1. Do not use faulty equipment. Report suspect machinery immediately.
2. Do not operate if the line cutter is missing.
3. Do not raise the line or blade head above knee height.

4.0.2. CHAINSAW – PETROL OPERATED

4.0.2.1. Personal protective equipment

The following must be worn before operating:

![Icon of protective equipment]

4.0.2.2. Pre-operational safety checks

1. Locate and ensure you are familiar with all machine operations and controls.
2. Ensure the machine is clean so you can see any loose, worn or defective parts and other safety hazards.
3. Inspect fuel lines, tank and area around carburettor for fuel leaks. Do not operate if leaks are found.
4. Check the effectiveness of chain brakes and operating controls.
5. Ensure all guards are fitted, secure and functional. Do not operate if guards are missing or faulty.
6. Check condition of the anti-vibration mountings of the handles.
7. Ensure chain is sharp and correctly tensioned.

4.0.2.3. Operational safety checks

1. When starting the chainsaw on the ground:
2. Ensure no obstructions are present, particularly near the tip of the guide bar.
3. Ensure the chain brake is applied.
4. Place your right foot through the rear handle and place your left hand on the front handle.
5. Operate the starter with the right hand.
6. Keep a firm grip on the chainsaw with both hands and the thumb of the hand holding the front handle wrapped around the handle.
7. Maintain a proper balance and secure footing.
8. Start the cut with the saw chain rotating at full speed and the spiked bumper in contact with the wood.
9. Be aware of the guide bar nose at all times when the saw chain is in motion.
10. Pay full attention to the operation and be alert for movement of the material being cut.
11. Be alert to situations that may cause material to pinch the top of the saw chain.
12. Apply chain brake when saw is at rest.
13. Allow the unit to cool before refueling.

4.0.2.4. Ending operations and cleaning up
1. Remove any foreign material from in and around motor and guards.
2. Keep the work area and implement shed in a clean and tidy condition.

4.0.2.5. Potential hazards and injuries
2. Push-back.
3. Pull-in.
4. Hair/clothing getting caught in moving machine parts.
5. Rotating chain.
6. Flying debris.
7. Trip hazards.
9.

4.0.2.6. Don’t
Do not use faulty equipment. Report suspected machinery immediately.
Never use a chainsaw over shoulder height.

4.0.3. TRACTOR

4.0.3.1. Pre-operational safety checks
1. Locate and ensure you are familiar with all machine operations and controls.
2. Ensure all guards are fitted, secure and functional. Do not operate if guards are missing or faulty.
3. Ensure the seatbelt, roll over protective structure (ROPS), falling objects protective structure (FOPS) (where fitted) and power take-off (PTO) guard are in sound condition.
4. Ensure the 3 point linkage, pneumatic and hydraulic systems are functioning.
5. Use only implements that meet the manufacturer’s recommendations.
6. Before starting the tractor, ensure all levers are in their neutral positions, the parking brake is engaged and the clutch and PTO are disengaged.
7. Ensure you are trained and competent and if driving on public roads, appropriately licensed.
8. If the tractor is used on public roads, ensure all lights and warning devices are functioning and the vehicle is registered.
4.0.3.2. Operational safety checks
1. Pull only from the drawbar or hitch.
2. Drive at speed slow enough to keep control over unexpected hazards.
3. Always reverse when going up a steep slope. Avoid slopes that are too steep for safe operation.
4. Ensure no person or animal is endangered when operating equipment.
5. Ensure bucket (if fitted) is raised above line of sight.

4.0.3.3. Ending operations and cleaning up
1. When stopping the tractor:
   1. Park on even ground, disengage the PTO and lower all implements.
   2. Place all control levers in their neutral positions, apply the parking brake, turn off the engine and remove the keys.
   3. Ensure the tractor has come to a complete stop before dismounting.
   4. Remove any foreign material from in and around engine and implement parts.
   5. Keep the work area or implement shed in a safe, clean and tidy condition.

4.0.3.4. Potential hazards
   1. Hair/clothing getting caught in moving machine parts.
   2. Noise.
   3. Rollover.

4.0.3.5. Don’t
   1. Do not use faulty equipment. Report suspected machinery immediately.
   2. Never start or operate levers from anywhere other than the seat.
   3. Do not operate or idle engine in a non-ventilated area.
   4. Do not operate near ditches, holes or embankments, which may collapse under the tractor’s weight.
   5. Do not operate on excessively steep terrain.
   6. Do not allow any person other than the driver to ride on the tractor.
   7. Do not dismount while the engine is running unless the tractor has completely stopped, the transmission is in park position and the parking brake is fully engaged.

4.0.4. OXY-FUEL GAS WELDING
4.0.4.1. Personal protective equipment
The following must be worn prior to welding
   1. Welding goggles must be worn at all times in work areas;
   2. Sturdy footwear must be worn at all times in work areas;
3. Oil free leather gloves must be worn;
4. Close fitting/protective clothing must be worn.

4.0.4.2. Pre-operational safety checks
1. Locate and ensure you are familiar with all machine operations and controls.
2. Check workspaces and walkways to ensure no slip/trip hazards are present.
3. Keep area clean and free of grease, oil and any flammable materials.
4. Ensure gas hoses are in good condition and do not create a tripping hazard.
5. Before lighting up, check all equipment for damage.
6. Check that the area is well ventilated. Start the fume extraction unit before beginning to weld.
7. Ensure the unit is fitted with working flashback arresters.
8. Ensure work return earth cables make firm contact to provide a good electrical connection.

4.0.4.3. Pressure setting
1. Check that the oxygen and acetylene regulator adjusting knobs are loose.
2. Check that both blowpipe valves are closed.
3. Slowly open the cylinder valves on each cylinder for half a turn only.
4. Screw in the regulator adjusting knobs slowly until the delivery pressure gauges register 70kPa.
5. Purge and check for constant oxygen gas flow:
6. Open the oxygen blowpipe valve for 2 seconds and check the delivery gauge.
7. If necessary re-adjust the oxygen regulator to achieve a 70kPa pressure.
8. Close the oxygen blowpipe valve.
9. Purge and check for constant acetylene gas flow:
10. Open the acetylene blowpipe valve for 2 seconds and check the delivery gauge.
11. If necessary re-adjust the acetylene regulator to achieve a 70kPa pressure.
12. Close the acetylene blowpipe valve.

4.0.4.4. Lighting up
1. Open the acetylene blowpipe valve slightly and light the blowpipe with a flint lighter.
2. Continue to slowly open the acetylene valve until the flame no longer produces soot.
3. Slowly open the oxygen blowpipe valve until a neutral flame is produced.

4.0.4.5. Shutting off blowpipe
1. Close the acetylene blowpipe valve first.
2. Then close the oxygen blowpipe valve.
4.0.4.6. Ending operations

1. Close down both cylinder valves.
2. Open oxygen blowpipe valve to allow the gas to drain out.
3. When oxygen gauges read zero, unscrew regulator-adjusting knob.
5. Turn off acetylene cylinder valve.
6. Open acetylene blowpipe valve and release gas.
7. When acetylene gauges read zero, release regulator adjusting knob.
8. Close acetylene blowpipe valve.

4.0.4.7. Cleaning up

1. Hang up welding blowpipe and hoses.
2. Switch off the fume extraction unit.
3. Leave the work area in a safe, clean and tidy state.

4.0.4.8. Potential hazards

- Burns
- Radiation damage to eyes
- Flying sparks
- Combustible materials
- Fumes
- Explosion by gas leakage
- Flashbacks
- Oil and grease

4.0.4.9. DON’T

1. Do not use faulty equipment. Immediately report suspect equipment.
2. Do not light the blowpipe with matches or lighters.
3. Do not use oil, grease or other hydrocarbons.
4. Do not use oxygen as a substitute for compressed air.

4.0.5. MANUAL HANDLING

4.0.5.1. General safety

Manual handling includes lifting, putting down, pushing, pulling, carrying, moving or supporting a load by hand or bodily force. It is not just the weight of the load that can cause injury: the size, shape, available grip,
and the way you carry the load, where you have to carry it, and how often you have to do the task all play a part.

You may suffer ‘musculoskeletal problems’ – aches, sprains and strains – as a result of manual handling, or through other tasks which involve repetitive movements, force, unusual postures, prolonged pressure on a joint, badly organized working practices or work environment. Effects on your health can include sprains or strains, backache, hernias, arthritis, or swelling of the hand, wrist, forearm, elbow and shoulder.

4.0.5.2. Safe Lifting & Handling Techniques
Before attempting any manual handling operations, consider the following techniques:
  1. Don’t jerk and shove – twisting the body may cause injury
  2. Left in easy stages – ground to knee then from knee to carrying position. Do these in reverse when putting then load down?
  3. Hold weights close to the body. Raise the chin as the lift begins. Lift with the legs and keep the back straight.
  4. Grip loads with palms, not fingertips. Don’t change your grip while carrying.
  5. Don’t let the load obstruct your view. Make sure the route is clear before you move.
  6. Remember Ask for assistance rather than attempting to lift heavy items alone.

4.0.6. LONE WORKING
  1. If you are lone working, ALWAYS MAKE SURE YOU HAVE A MOBILE PHONE.
  2. Keep the phone handy, such as in your pocket, for ease of access in an emergency.
  3. Always check coverage of your mobile phone for dead spots.
  4. No high risk work may be undertaken by lone workers – such as work at height, chainsaw work, weeding etc.
  5. You must be medically fit to work alone – inform the safety Manager of any problems.
  6. Ensure that a colleague knows where you are working for ease of location in an emergency.
  7. Should you feel your personal safety is threatened while lone working – raise the alarm immediately.

4.0.7.CHEMICAL MANAGEMENT
4.0.7.1. Personal clothing and equipment
  - Wear your protective gears prior contact with chemical
  - You MUST immediately clean your PPE after contact with chemical
4.0.7.2. Storage

1. Only store chemicals in the approved store – Never leave chemicals unattended in the yard, fields or other work sites.
2. Incompatible chemicals in stores MUST be Segregate.
3. Check lids/caps are secure before putting in the store.
4. The chemical store MUST be kept locked when not in use to prevent third party access.
5. Good stock management practices must be carried out by store keepers at all times.
6. When away from fixed store, chemicals should be secured against unauthorized access.
7. All chemical MUST be stored in a sound, secured, water resistant, well ventilated and well-lit location away from other materials.

4.0.7.3. Handling at the store

1. Only competent and authorized workers MUST handle chemical
2. Use correct lifting techniques when handling containers.
3. Make sure the correct type/quantity of chemical is drawn from the store.
4. Wear suitable personal protective equipment (PPE) – When handling/pouring concentrate, wear preferably hand gloves, face-shield, overall, apron and wellington boots (follow label recommendation for addition protection). Always read and follow the product label.
5. Do not open containers with bare hands, use gloves. Do not open more than one (1) container at a time.
6. Ensure containers are properly sealed and secure and have product label attached
7. Never eat, drink or smoke when handling a chemical. Always wash your hands after use.
8. If you become contaminated by chemical (concentrate or diluted form) stop work immediately. Concentrated items of PPE and ordinary clothing must be removed and any affected skin washed. Fresh protective clothing must be put on or the original clothing thoroughly washed.

4.0.7.4. Empty pesticide/herbicide containers

1. Empty pesticide/herbicide containers MUST not be reused and their disposal MUST be in a manner that avoids exposure to humans and contamination of the environment.
2. Empty containers MUST be rinsed at least three times with water, and the washings returned to the spray tank before disposal.
3. Rinsed containers MUST be pierced or puncture to prevent reuse and then stored securely until their disposal.
4. Disposal or destruction of containers MUST be in accordance with the Pesticides Control and management Act 1996 and/or any other relevant local regulations.
4.0.7.5. Emergency Precautions:
   1. If accidental contamination during use occurs, stop work, wash off infected area with plenty of clean water and promptly inform the safety Manager.
   2. If you feel ill after handling or contact with chemicals, you MUST notify the safety Manager for medical attention.

4.0.7.6. Spray equipment
Spray equipment MUST be kept in good working condition. Calibration MUST be carried out as and when necessary to ensure accurate delivery of the required quantity of spray.

4.0.7.7. Disposal of surplus spray mix
Surplus spray mix and tank washings MUST be sprayed over an untreated area of the crop as long as the recommended dosage has not been exceeded or on designated fallow land. Records should be kept of such spraying.

4.0.7.8. Obsolete pesticides/herbicides:
Obsolete pesticides/herbicides MUST only be disposed through an approved chemical waste contractor.

4.0.8. MIXING PESTICIDES/HERBICIDE
4.0.8.1. General safety
   1. You MUST never mix chemical when under the influence of alcohol or drugs
   2. You MUST never mix Chemical without your PPE
   3. Never eat, drink or smoke whilst working with Chemical
   4. Never use empty Chemical containers for storing food or water
   5. Never store Chemical in food or drink containers.
   6. Never USE a leaking spraying machine.

NB: When preparing spray mix, the correct quantity, dosage of chemical and the proposed treatment type MUST be calculated, accurately prepared and recorded.

4.0.8.2. Procedure
Before any mixing activity is carried out put on your personal protective equipment (PPE) in the following order:

   1st - Boots (if you are not already wearing a pair)
   2nd - Gloves
   3rd - Uniform and cap (with all buttons closed and trousers hanging over your boots)
   4th - Respirators
4.0.8.3. Carrying out your spraying activity

1. Always safety check the equipment before use.
2. Report worn/faulty parts to your supervisor.
3. When calibrating the equipment: use water not diluted chemicals.
4. When filling the spray tank follow the label/application record recommendations.
5. Always underestimate the amount required, to avoid waste products.
6. Never draw water from ditches or direct from domestic supplies when filling spray tank.
7. Do not add chemicals to the spray tank BEFORE the water.
8. When pouring chemical into the equipment, allow air to enter the container to prevent splashes.
9. Applications should be undertaken when weather conditions are appropriate only. Do not spray in unsuitable weather conditions.
10. Do not allow spray to drift off target.
11. No spraying should be done within 6 meters over all buffer zones.
12. When personal protective equipment is issued for your use, use it as instructed. If in doubt ask!
13. Return all unused chemicals to the store. A Mark part container to show how much is left. Make sure the lid is on tight.
14. Wash / decontaminate sprayer after use and dispose of the tank washings/remaining diluted chemicals safely.
15. Do not operate equipment if feeling unwell or under the effect of alcohol or drugs.
16. Always read and understand or get a supervisor to explain to you the safety data sheet before you use the pesticide/herbicide.
17. First fill the spraying tank with water up to the recommended volume, and check for leakages before adding the measured quantity of pesticides/herbicides.
18. Always put the measuring cup and funnel you used into the wash bucket provided.
19. Headmen, supervisor and managers MUST ensure that precautions are strictly followed and that prohibited actions are avoided.
20. Make sure you are in your FULL PPE before you handle any chemical container.

4.0.9 FIELD MAINTENANCE PRACTICES

4.0.9.1. Weeding (manual slashing)

1. PPE are necessary for weeding activity. You MUST wear your wellington boot and overall.
2. During slashing, stay at least 5m apart. Do not bunch up to weed, because there will be cutlasses flying over the place.
3. Slash all inter row vegetation to be low knee height using a cutlass or slashing knife.
4. Debris, bushes, wood growths can be packed in the front stalks
5. Do not stick the cutlass upright in the ground or lying about.
6. Do not engage in conversation while weeding
7. Do not use your hand in place of stick to pull weeds while weeding.
8. Do not expose your cutlass; always cover it with a piece of cloth after its usage to prevent danger to others and even yourself.

4.0.9.2. Circle weeding (manual)
Always take note of the following hazards when circle weeding
1. Fronds;
2. Slippery ground;
3. Stumps;
4. Bees;
5. Biting insects;
6. Snakes;
7. Holes;

1. PPE are necessary. Wear your wellington boot and overall
2. Slash at a radius of 2cm around the base of the palms using your cutlass at ground level
3. De-creep all over-grown legumes and other creepers on the palm trees with your cutlass to free the palms
4.0.9.3. Circle weeding (herbicide)

1. PPE are necessary for herbicide application. Wear your gloves, noise mask, overall and wellington boot.
2. Prior to actual weeding work, calibrate and check your equipment to ensure the correct dosage of herbicide to be utilized
3. Use the herbicides reasonably, do not attempt to overspray
4. Before spraying, left up fronds of the palms trees to avoid unnecessary scorching and phytotoxicity
5. Spray circles evenly, by walking with a constant speed using the knapsack sprayer in order to keep a circle radius of 2cm around the base of the palms free of weeds
6. Always wash your face and hands with soap after spraying or handling herbicides.

Herbicide spraying of circles

4.0.9.4. Path weeding (manual)

- PPE are necessary. Wear your wellington boot
- Slash weeds using your cutlass at ground level to maintain access to the palms
- Woody target weeds should either be dug out or pulled up and removed.
- All stumps and spikes, which may injure workers, must be dug out and removed
The weeding of path

4.0.9.5. Path weeding (herbicide)

1. PPE are necessary. Wear your hand gloves, noise mask, coverall and wellington boot
2. Ensure that you have the correct dosage of herbicide to be used
3. Walk with a constant speed so that the herbicide can be used reasonably
4. Do no attempt to overspray paths with multiple application
5. Spray emerging plants above the ground level to prevent their re-growth
6. Wash down using fresh water after spraying or wash your face and hands with soap after handling herbicides

Herbicide spraying of path

4.0.9.6. Creepers and vines removal

1. All weeds that invade the palm circles and trunk must be removed as frequently as required depending on the type of weed, in connection with the palm circle.
2. All vines and creepers MUST be removed from the palm leaves and trunk to set the palms free
3. Weeds plants MUST be pulled out or cut back and legume cover plants rolled back and clear of the palm circle
4.0.9.7. Pruning

1. The pruner MUST wear PPE before pruning
2. A wellington boot, hand glove and goggles are essential
3. Workers MUST be equipped with the following tools:
4. A harvesting chisel with a 10 cm wide cutting edge and a 2 meter shaft for palms less than 3 meter in height.
5. A Malayan knife or harvesting sickle attached to an aluminum pole for tall palms.
6. A sharpening stone and a cutlass
7. Starting from the first palm on the south east corner of the field.
8. Look for the fronds arrangement and cut opposite fronds movement.
9. Cut fronds very close to the stem leaving only 1-2 fronds beneath the next harvestable bunches.
10. Remove all aborted and rotten fruits from the palm.
11. Pack fronds nicely in the inter-rows or rejected rows.

A chisel fixed on a 2 meter stick        Good pruning with short stocks
4.0.10. THREE (3) PRUNING METHODS

4.0.10.1 Pruning young palms before harvest
1. Only weak fronts MUST be removed from the base of the palm to provide access for the harvester
2. No green or healthy fronts MUST be removed

4.0.10.2 Corrective or rehabilitation pruning
1. This shall be required where palms have not been pruned for more than one (1) year.
2. It may be necessary to remove a large number of dead and weak fronts from the palms
3. This MUST be carried out before the main production season, usually from November to January in order to achieve a ramped returns on the investment in pruning
4. Once rehabilitation pruning has been completed, all bunches MUST be harvested

4.0.10.3. Maintenance or routine pruning
1. This MUST be carried out two times each year on well-maintained palms. i.e.
2. One cycle in December or January (.i.e. before the peak crop season)
3. One cycle in June to August (.i.e. at the end of the main crop season).
4. During this period, only a few fronts MUST be removed.

4.0.11. PRUNING STANDARDS
1. Young palm produced smaller fronts but more frequently with two (2) to three (3) fronts per month.
2. Older palms produce larger fronts but less frequently with 1 to 2 new fronts per month therefore more fronts are retained on young mature palms compared with old mature palms.
3. Do not remove healthy green fronts from palms aged three 3 to 4 years after planting.
4. Remove only dead and damaged fronts.
5. Bunches MUST be harvested without cutting the fronts beneath the bunch during the first harvesting year termed bunch steelling.

6. At age of 5 to 7 years after planting it is best to retain 48 to 56 fronts that is, 6 to 7 fronts ranks, as a rule, retain two (2) healthy green fronts beneath the bunch until bunch harvest.

7. At age of 8 to 15 years after planting, retain about 40 to 48 fronts i.e. 5 to 6 front ranks, as a rule there should be one healthy green front retained beneath each bunch until bunch harvest.

8. At age above fifteen (15) year after planting, retain about 40 fronts i.e. five (5) ranks, as a rule there should one healthy green front retained beneath each bunch until bunch harvest.

4.0.12. FRONTS STALKING

1. Wear your hand gloves, Wellington boot and overall e.t.c.
2. Cut all pruned fronts into two (2) at the point where thorns change into leaflets
3. Place all thorny fronts base at the palm inter rows
4. Place all leafy parts with the leaf tip facing the path and in between palms within the palm rows to create a three (3) sided box pattern front stalk

NB: Important Points to Remember

Pruning MUST be carried out with very Sharp tools, the recommended tools are:

1. Chisel, 8 - 10 cm blade fitted into 2 meter long galvanized pipe or wooden pole.
2. Sickle should be fitted into an aluminum or bamboo pole.
3. A cutlass is required to cut fronts into two pieces after pruning
4. Old, dead fronts and debris should be raked out from around the base of the palm after pruning and before starting harvest.

4.0.13. FRUIT MANAGEMENT

4.0.13.1. Fresh fruit bunch harvesting and collection

1. Before you harvest make sure access ways, harvest paths and palm circles are cleared of weeds, debris, logs, stone or other things that may obstruct free access.
2. Harvesting of Fresh fruit bunches (FFB) MUST be done at the correct degree of ripeness, as under-ripe fruits have low oil content and over-ripe fruits are rancid (have a high fatty acid content).
3. FFB is harvested according to acceptable industry ripeness standards.
4. There MUST be zero tolerance to unripe bunches.
5. Bunch stalks MUST be less than 5 cm long.
6. Cut fronds MUST be stacked in designated piles.
7. All loose fruits MUST be collected without contamination by ground debris and stone.
8. All FFB along with loose fruits MUST be delivered to the mill within 24 hours after harvesting.
NB: To harvest

1. Proceed down the palm row and inspect each palm circle for fallen fruits and each palm crown for FFB with loose fruit. Sometimes loose fruits are trapped behind leaf butts, remove them.

2. The correct time for harvesting is indicated by the change in fruit colour from black to orange and by the fall of the first individual fruits.

3. Harvest only ripe fruit bunches using the Malayan chisel attached to a strong pole.

4. Cut the exposes bunch stalk and stand clear of the trunk as much as the bunch falls to the ground. Trim the stalk of the harvested bunches.

5. As required take your basin or wheelbarrow and collect the fallen FFB and move them to the established collection point.

6. Arrange the fruit bunches at the collecting point in rows for easy of counting by your harvesting headman.

4.0.13.2 Infield collection

All FFB and loose fruits collected from the palm base MUST be delivered to the collection points with minimal damage, delay and contamination.

4.0.13.3. Loose fruits picking

1. All loose fruits must be collected a day after harvesting to avoid rotten fruits.

2. Proceed down every harvested palm row and collect all fallen fruits and fruits left on harvested palm trees using the metallic bucket provided.

3. To avoid uncollected FFB and loose fruits, inspect all the lines of your harvester.

4. Collect loose fruits using your hand gloves.

5. Loose fruits on FFB platforms MUST be collected as well.

6. Put all collected fruits in the fertilizer sacks provided in order to enable easy pick up by fruit loaders.
Picking of loose fruits

4.0.13.4 Loading

1. During loading, all loaders MUST stand on one side of the lorry so that if there is a fly-over bunch, it will not endanger anyone.
2. Avoid throwing bunches at the same time. It MUST be one after the other.
3. Avoid sleeping under the truck. It may move and crush you to death.
4. Fruit bunches MUST be arranged in an orderly manner.
5. Avoid using spikes to catch bunches being thrown into the truck while loading.
6. Avoid sitting or standing on top of the packed bunches from the field. It may collapse and push you to the ground resulting to either severe injuries or even death.
7. Avoid sitting or standing on the draw bar of the tractor while it is motion.

Loading of fresh fruit bunches. An orderly arrangement of FFB

4.0.13.5 Main line transport of FFB to the mill

1. Vehicles transporting FFB MUST be registered and licensed and secured and MUST not carry other hazardous cargo e.g. chemicals.
1. Vehicle for loading of oil palm bunches MUST be clean. In case where the vehicle is used for handling soils, chemical fertilizers and pesticides, it MUST be appropriately cleaned prior to delivering oil palm bunches.

2. Contamination with dirt, debris or other vegetative matter MUST be reduced as much as possible.

3. Fruits MUST, at any stage of the transport, be handled with care to avoid bruising since this will increase fatty acid content.

4. Fresh fruit bunches and the loose fruits MUST be delivered to the processing unit/mill as quickly as possible and at least within 24 hours of harvest and carefully managed to obtain optimum quality of fruits for palm oil extraction.

4.0.13.6. Intermediate collection centers

1. Collecting Centre/ Site MUST be clean

2. Do not shoveled FFB into vehicles from intermediate ramp floor to minimize bruising.

4.0.14. NUTRIENT MANAGEMENT

4.0.14.1. Loading of fertilizer

1. All loaders MUST be in their PPE/PPC overalls, hand gloves, boots.

2. Arrange some of the fertilizer bags to form a staircase behind the truck.

3. Two people should lift and arrange fertilizer into truck.

4. Load not more than the capacity of the truck.

4.0.14.2. Distribution of fertilizer in the Field

1. Always wear PPE to avoid fertilizer burning the skin.

2. Discharge fertilizer at vantage points for application.

3. Never stand in the moving truck to distribute the fertilizer.

4.0.14.3. Fertilizer application

1. PPE are necessary for fertilizer application. Gloves, boots, overalls and hair cover are essential.

2. Never attempt to apply by measuring the fertilizer while carrying the bag or bucket.

3. Do not carry fertilizer on your head. Never use a broken bucket.

4. Fertilizers must be spread evenly and never in lumps or clumps

5. Empty fertilizer sacks MUST be collected and countered to cross check application rate

6. Collected and countered fertilizer sacks MUST be cleaned and reuse for loose fruit collection

7. Do not wash the empty fertilizer sacks in or near the streams.
8. Do not eat whiles applying fertilizer
9. After applying fertilizer wash your hand thoroughly with soap before eating, drinking or using the toilet.

4.0.14.4. Empty fruit bunch (EFB) application
1. Hand gloves MUST be worn prior to application
2. Apply EFB at the edges of the 2 meter circle made around the palms
3. EFB arranged around the base of the palms MUST be in a circular s

4.0.15. TRANSPORT OF LABOUR TO AND FROM FIELD
4.0.15.1. General safety
1. Never climb into or down from a moving lorry.
2. Never sit or stand on the draw bar of the tractor while the tractor is moving.
3. Never throw tools into a lorry during boarding.
4. Never lean your knife against any vehicle.
5. Always cover your knives with piece of rag
6. Consuming alcohol or any other dangerous drugs before or during work is not allowed.

4.0.15.2. Procedure
1. Driver MUST ensure that nobody is boarding or alighting from the tractor/vehicle before he moves.
2. Driver /headman/supervisor MUST ensure that vehicles are not overloaded.
3. Drivers/headmen/supervisors MUST always ensure that prohibited actions are avoided.

4.0.16. TRANSPORT OF CUTLASS TO AND FROM THE FIELD
4.0.16.1. General safety
1. Consuming alcohol or any other dangerous drugs before or during work is not allowed.
2. Never throw your wheelbarrow into the tractor on truck.
4. Never sit on top of the wheelbarrows during transporting.
5. Never throw your wheelbarrow from the vehicle.
1. Never tip the wheelbarrows from the truck.
2. Never tip Malayan knives from the lorry.
3. Never sit on the fender of the tractor.

4.0.16.2. Procedure
1. Store men/Office clerk must always remove all wheelbarrows from store to the open ground before muster.
2. Always lift up and hand over your wheelbarrows to the appointed receivers in the truck/tractor.
3. Always make sure your wheelbarrows are well packed.
4. Always offload your wheelbarrow by lifting and handing it over to the receiver on the ground.
5. Drivers/operators/headmen/supervisors must always ensure that prohibited actions are avoided.

4.0.17. Boarding and alighting from vehicles

4.0.17.1. General safety
1. Consuming alcohol or any other dangerous drugs before or during work is not allowed.
3. Never board or alight from a lorry/bus while it is in motion.
8. Avoid running to board a bus/lorry.

4.0.17.2. Procedure
1. Always board and alight only when vehicle has come to a complete stop.
2. Always walk towards the Bus/lorry if you must get on board. Avoid running.
2. Always use the railing firmly when boarding.
3. Drivers/operators/headmen/supervisors must always ensure that prohibited actions are avoided.

4.0.18. Communication in the field
1. If you have to talk to someone in the act of any field activity, first draw his/her attention in order that he/she can stop the activity so that communication may occur safely without distraction.
2. If you must communicate to a worker in the field, be clear and brief. Be persuasive if you want him to change the way he/she is going about with work proceedings.
3. Communicate only when you are close to the worker.
4. Avoid shouting instructions to the worker. Shout only to call his attention.

4.0.19. Movement in the field
1. As much as possible, step on spots where the ground is visible.
2. If you have to walk in dense cover crop, lift each foot clearly off the ground before stepping on another spot. Avoid dragging your feet.
3. Beware of holes and tree stumps when walking in dense cover crop.
4. Always remember where there are tree stumps, as there can be holes left by rotten stumps.
5. Avoid walking on or across logs. They could harbour bees. If you cannot avoid going across any log, then sit on it and lift your legs gently over to the other side.

6. If you have to stand at a spot, inspect the ground and make sure there are no ants around.

7. Avoid holding or shaking fronds while walking in the field. Fronds could harbour bees or biting insects.

8. Walk more cautiously along slopes, in steep areas and in swamps, especially after rains.

9. If you have to go over a drain and there are no bridges, step into the drain and climb out if it is not deep.

10. Headmen/supervisors/managers should always ensure strict avoidance of prohibited actions.

4.0.20. RESTING/SLEEPING IN THE FIELD

1. Always stay alert while resting.

2. Always make sure where you are resting is clear and visible.

3. Always inform headman or someone before resting.

4. Workers, headmen, supervisors and managers should always ensure strict avoidance of prohibited actions.

4.0.21. PERSONAL PROTECTIVE EQUIPMENT (PPE)

1. Suitable PPE will be provided for you whenever health and safety risks are not adequately controlled by other means such as gloves, wellington boots, and ear and eye protection e.t.c.

2. You MUST wear your PPE provided when necessary, irrespective of weather conditions.

4.0.22. WORK EQUIPMENT

1. YOU MUST NOT USE any machinery or equipment unless you are trained in its safe operation or being supervised, and you must be authorized by your supervisor.

2. When using machinery or equipment YOU MUST conform with all safety requirements including those relating to personal protective equipment.

3. Any defects noted to machinery or equipment MUST be immediately reported to the safety Manager or your supervisor to assess the damage and arrange for the equipment to be taken out of action and repaired or replaced. To use defective machinery is a breach of regulations and you could face disciplinary action.

4.0.23. TRANSPORT SAFETY

1. ONLY persons who are suitably trained and experienced, and who hold the relevant license, are permitted to operate our vehicles.
2. All vehicles will be regularly serviced / maintained, and every effort will be made to segregate vehicles and pedestrians across the sites. However, as this is not always possible, all vehicles operations are required to remain extra vigilant to the likely presence of pedestrians.

3. Wear a seat-belt on vehicle on the road and where there is a risk of overturn. If you experience any issues or problem with a vehicle, report it immediately to your supervisor or safety Manager.

4.0.24 HYGIENE
1. Due to the nature of the work, it is very important that you ensure a high standard of personal hygiene.
2. Thoroughly wash hands before eating, drinking and after contact with chemical, animals etc.

4.0.25. HOUSEKEEPING
1. Report ANY hazard that could cause a slip, trip or fall injury. Keep all areas and doorways clear – especially where they form part of an emergency exit or pedestrian route.
2. Make sure spilled liquids are cleaned up immediately and made non-slippery.
1. Always dispose of waste frequently and in appropriate disposal bins/areas.
2. Please help to keep the sites clean and tidy – THINK TIDY & BE TIDY

4.0.26. VEHICLE MAINTENANCE
4.0.26.1. General safety
1. Keep all work areas neat & well organized. Sweep up all trash & debris daily or as needed. Label containers, sign procedures, and designate work areas.
2. Conduct daily inspections to ensure that equipment & materials are being handled, disposed and stored correctly. Recycle or dispose of all wastes properly and promptly.
3. Have spill cleanup materials nearby. Clean up spills promptly, with DRY methods; cleanup is completed ONLY after absorbent disposed properly and rags disposed of properly.
4. Keep wastes separated to increase waste recycling/disposal options and reduce costs.
5. Conduct maintenance and repair activities indoors or under cover whenever possible to minimize exposure of fluids to storm water runoff.
6. Park vehicles to be maintained in the designated areas. Monitor parked vehicles closely for leaks; use drip pan as needed.
7. Drain fluids from leaking or wrecked vehicles, and from motor parts, as soon as possible and dispose of fluids properly.

4.0.26.2. General workshop management
The following principals apply to all individuals working within Volta Red workshop:
1. Keep the workshop clean, organized and tidy at all times.
2. Report all hazards, unsafe conditions and work practices to the workshop supervisor.
3. The last person leaving the workshop at any time must ensure that the workshop is locked to prevent unauthorized entry. No employee or other unauthorized persons are to enter the workshops out of hours, unless access has been approved by the relevant Supervisor, and Security is advised of the out of hours work.

4.0.27. GENERAL ELECTRICAL SAFETY IN WORKPLACES
All equipment MUST comply with the relevant requirements of AS 60204.1-2005 - Safety of machinery. Employees MUST implement a safe system of work to deal with potentially unsafe electrical equipment at the workplace. Workers MUST:

1. Undertake a check of the physical condition of the electrical equipment, including lead and plug connections prior to use
2. Do not use electrical equipment if in doubt of its safety.
3. If taking a piece of electrical equipment out of service due to damage, defects or safety concerns, tag the item with the appropriate signage and notify the Supervisor so that it is reported, documented, serviced or decommissioned.
4. Testing and tagging of electrical equipment within the workshop MUST be conducted at regular intervals in accordance with AS/NZS 3760:2010. Electrical equipment Class I (protectively earthed) shall be checked by a qualified electrician at 6 monthly intervals and Class II (double insulated inspection only) on a yearly basis.
INTERGRATED PEST MANAGEMENT PLAN

1.0. INTRODUCTION

This Integrated Pest Management plan (IPM) is aimed to suppress pest populations below the economic injury level (EIL) whenever possible.

Through regular inspections, monitoring and other pest control measures, we are able to identify invading pests, determine when to control these pests and whether to use mechanical, physical, chemical, cultural, or biological means.

Our IPM techniques are also aimed at reducing our use of chemical pesticides and their associated environmental, and food chain impacts.

2.0. THE IPM PLAN

These IPM principles and practices are combined to create our IPM programme. While each situation is different, five major components are common to all IPM programmes:

- Pest identification
- Monitoring and assessment pest numbers and damage
- Guidelines for when management action is needed
- Preventing pest problems
- Using a combination of biological, cultural, physical/mechanical and chemical management tools.

3.0. OBJECTIVE

The main objective of the Plan is to encourage the adoption of more ecologically benign control tactics.

4.0. GOAL

The goal of this IPM Plan is to:

1. Focus on pest prevention
2. Use chemical pesticide only as needed

5.0. PEST IDENTIFICATION

A census of the main pests shall be undertaken. Correct pest identification helps to decide whether management is needed.

Correctly identifying the pest is key to knowing whether a pest is likely to become a problem and determining the best management strategy as well as the best time to use these strategy or method. Undertaking this pest census is also aimed at the following:

- Understanding the pest’s life cycle and its natural enemies
- Determining the best preventive measures
• Reduce the unnecessary use of pesticides.

Additionally, correct identification will prevent the elimination of beneficial organisms.

6.0. MONITORING AND ASSESSMENT OF PEST NUMBERS AND DAMAGE
There shall be continual monitoring and inspections of insect pests. Close monitoring of disease and pest infestation allows them to be more easily controlled with or without few chemical inputs. Monitoring will also enable us to identify areas vulnerable to pests, what levels of infestation cause economic losses and the efficacy of prevention and control methods.

7.0. ACTION THRESHOLDS
This IPM Plan shall establish pest tolerance thresholds for common pests. These thresholds will serve as an indicator for pest population levels and the point at which control measures will be undertaken, this is critical to guiding the pest control decisions.

Control measures will not be undertaken if pest damage or populations are below threshold levels. In such cases, the estate shall use preventive measures such as high standard of palm sanitation or improved FIELD sanitation (the removal of aborted fruits from the palms), physical barriers, mulching, irrigation, fertilization, manual weeding, insect nest removal, pest-resistant plant selection) will be practiced.

8.0. PREVENTING PEST PROBLEMS
In keeping down pest from becoming a problem, the IPM programme shall ensure that disease-resistant plants or healthy crops that can withstand pest attacks are used. Additionally, good in field sanitary practices shall be practiced, this include the remove of aborted fruits from palms among others.

9.0. PEST MANAGEMENT METHODS
The heart of our IPM plan is the IPM methods. Volta Red shall adopt and utilize cultural, biological, mechanical, physical or other less-hazardous strategies as primary controls.

Only products specific to the target pest which have minimal effect on populations of beneficial organisms, aquatic life, workers and consumers and are not detrimental to the ozone layer shall be used when appropriate, along with other management practices or when other pest prevention and non-chemical control measures have failed to reduce pests below tolerance thresholds.

10.0. SELECTION OF CONTROL METHODS
Volta Red shall adopt the following methods/techniques as part of its Integrated Pest Management (IPM) system.

10.0.1. Biological method
• Predatory animals such as barn owls that feed on pests namely rats to control their population shall be adopted. When there is an outbreak of rats, the plantation shall combine the use of these barn owls with safe chemical option.

The key to the success of this pest management strategy is regular census on the population of the barn owls by monitoring occupancy and regular assessment of rat damage to the palms and fruits.

Barn owls keep check on the rodent population. This shall be done by establishing and maintaining owl nest boxes (photograph 1) across the estate.

• Beneficial plants shall be cultivated along roadides to provide shelter and supplementary food such as nectar in encouraging the population of predators and parasites.

10.0.2. Mechanical means
Fixing of wire mesh around the base of young palms to prevent damage by wild pigs and grasscutters.

10.0.3. Chemical application
Environment-friendly pesticides shall be resorted to in outbreak situation where natural enemy pressure is no longer sufficient to manage the pest population. Once the situation is within control, natural controls will be reactivated.

In applying any pesticide the quantity of pesticides applied, the field, number of hectarage and the active ingredient of each chemical etc shall be recorded.

10.0.4. Routine cultural controls
Practices such as the destruction of breeding sites and maintaining good and varied ground cover shall be introduce

![Wire mesh around the palm base](image1)

![Barn owl box](image2)

11.0. PROGRAM EVALUATION
There shall be a regular and periodic review of inspection reports, phyto-sanitary reports, application records, and other records to determine how the program is working, and identify any changes in pest activity (increase or decrease). The review shall note the correlation between actions taken and changes in pest populations. The result should be compared with goals and objectives. The following is a list of questions to consider in measuring success:

- Are all pest populations below action thresholds?
- Have all objectives been met?
- Is the monitoring program adequate?
- Should other action be taken?
- Can time and effort be reduced?
- What problems have been identified?
- What changes are necessary?

**12.0. IMPLEMENTATION**

Cooperative effort, effective communication and education among the workforces shall be prerequisite for success. Employees shall also be provided with training sessions to acquaint them with IPM principles and the role they will play in a successful IPM program.
HEALTH AND SAFETY TRAINING PLAN

1.0. INTRODUCTION.

Training is one of the most important components within our company’s safety management system. It gives employees an opportunity to learn their jobs properly, bring new ideas into the workplace, reinforce existing ideas and practices, and among all it helps to put our Safety and Health Program into action. This training must include information regarding job hazards, possible health effects, and required work practices and procedures. Everyone in our company will benefit from safety and health training through fewer workplace injuries and illnesses, reduced stress, and higher morale. Productivity, profits, and competitiveness will increase as production costs per unit, turnover, and workers compensation rates lower.

2.0. OBJECTIVES

The objectives of the Safety and health Training Plan are:

- Identify all required and recommended environmental, health, and safety training;
- Provide mechanisms to ensure that such training is completed;
- Document all safety training;
- Make training-related records and reports available to managers and regulatory agencies;
- Provide a mechanism to ensure continuous improvement of the Safety and health Training Plan.

3.0. RESPONSIBILITIES

The Safety and health Plan is the shared responsibility of management, supervisors and employees.

3.0.1. MANAGEMENT COMMITMENT.

Management shall provide the necessary funds and scheduling time to ensure effective safety and health training is provided. This commitment shall include training in the language that the worker understands.

3.0.2. EMPLOYEES

At a minimum, employees must know the general safety and health rules of the worksite, specific site hazards and the safe work practices needed to help control exposure, and the individual's role in all types of emergency situations.

We will ensure that all employees understand the hazards to which they may be exposed and how to prevent harm to themselves and others from exposure to these hazards.

Additionally, we will commit available resources to ensure employees receive safety and health training during the circumstances below.
• Whenever a person is hired - general safety orientation including an overview of company safety rules, and why those rules must be followed.

• Whenever an employee is given a new job assignment - during formal classroom training, and again, when the supervisor provides specific task training. It’s extremely important that supervisors emphasize safety during initial task assignment.

• Whenever new work procedures are begun - during formal classroom training and supervisor on-the-job training.

• Whenever new equipment is installed - if new hazards are introduced.

• Whenever new substances are used - hazard communication program may apply.

• The bottom line - train safety whenever a new hazard is introduced to the employee.

It is extremely important that employees must know they are responsible for complying with all company safety rules, and that most accidents will be prevented by their safe work practices. They must be very familiar with any personal protective equipment required for their jobs. They must know what to do in case of emergencies.

Each employee needs to understand that they are not expected to start working a new assignment until they have been properly trained. If a job appears to be unsafe, they will report the situation to their supervisor.

3.0.3. SUPERVISORS

Supervisors will be given special training to help them in their leadership role. They will be taught to look for hidden hazards in the work under their supervision; insist on the maintenance of the physical protection in their areas; and reinforce employee hazard training through performance feedback and consistent enforcement when necessary.

We will commit necessary resources to ensure supervisors understand the responsibilities below and the reasons for them:

• Detecting and correcting hazards in their work areas before they result in injuries or illnesses

• Providing physical resources and psychosocial support that promote safe work

• Providing performance feedback and effective recognition and discipline techniques

• Conducting on-the-job training

Supervisors are considered the primary safety trainers. All supervisors will complete train-the-trainer classes to learn training techniques and how to test employee knowledge and skills. They will also receive training on how to apply fair and consistent recognition and discipline. Supervisor training may be provided by the supervisor's immediate manager, by the Safety Department, or by outside resources.
2.0.3 MANAGERS
All line managers must understand their responsibilities within our Safety and Health Plan. This may require classroom training and other forms of communication. Formal classroom training may not be necessary. The subject can be covered periodically as a part of regular management meetings.

Managers will be trained in the following subject areas:

- the elements of the safety management system, and the positive impact the various processes within the system can have on corporate objectives;
- their responsibility to communicate the Safety and Health Program goals and objectives to their employees;
- Their role that includes making clear assignments of Safety and Health Program responsibilities, providing authority and resources to carry out assigned tasks, and holding subordinate managers and supervisors accountable; and
- Actively requiring compliance with mandatory Safety and Health Program policies and rules and encouraging employee involvement in discretionary safety activities such as making suggestions and participation in the safety committee.

Training will emphasize the importance of managers' visibly showing their commitment to the safety and health program. They will be expected to set a good example by scrupulously following all the safety and health rules themselves.

2.0.4 INCENTIVES, RECOGNITION AND REWARD
The purpose of an effective incentive/recognition process is to motivate employee involvement and build ownership in our safety culture. When employees make suggestions that improve our safety training, we will formally recognize their contributions. When employees make a significant contribution that meets established criteria, we will recognize and award tangible rewards. Employees will submit all suggestions directly to immediate supervisors. Employees shall be rewarded when their suggestion substantially improves the training process or content.

3.0 TRAINING AND ACCOUNTABILITY
We understand that training without accountability is ineffective. Our safety culture must support training. A culture of consequences is essential. To help make sure our efforts in safety and health are effective we have developed methods to measure performance and administer consequences. Supervisors and managers must
understand that their first responsibility is to make sure they have met their obligations to their employees before considering disciplinary action.

Managers and supervisors will be educated on the elements (processes) within the safety accountability system. The safety committee will be trained on, and continually evaluate, our safety accountability system. Training will focus on improving the Safety and Health Program whenever hazardous conditions and unsafe or inappropriate behaviours are detected.

Safety orientation will emphasize that compliance with safety policies, procedures, and rules as outlined in the safety plan is a condition of employment. Discipline will be administered to help the employee increase desired behaviours, not to in any way punish. An explanation of the natural and system consequences of behaviour/performance will be addressed in every safety training session.

4.0 TYPES OF TRAINING
Required rules-related training will be conducted according to guidelines detailed in OSHA Publication, 2254. We will also make sure additional training is conducted as deemed appropriate.

Mr. Nyame Joseph Atta (the safety Manager) will ensure Safety and Health Program training is in full compliance with OSHA standards. In general, safety training will be conducted on the following levels:

4.0.1 General Safety Education
General safety information shall be communicated to employees.

4.0.2 Specific Safety Training
Specific safety information and instruction on performing safe procedures and practices shall be established and communicated to employees for successful implementation.

4.1 New Employee Orientation
The format and extent of orientation training will depend on the complexity of hazards and the work practices needed to control them. Orientation will include a combination of initial classroom and follow-up on-the-job training (OJT).

- For some jobs, orientation may consist of a quick review of site safety and health rules; hazard communication training for the toxic substances present at the site; training required by relevant OSHA standards, e.g., fire protection etc; and, a run-through of the job tasks. This training will be presented by the new employee’s supervisor or delegated employee (headman or head lady).
- For larger tasks with more complex hazards and work practices to control them, orientation will be structured carefully. We will make sure that our new employees start the job with a clear understanding of the hazards and how to protect themselves and others.
We will follow up supervisory training with a buddy system, where a worker with lengthy experience is assigned to watch over and coach a new worker, either for a set period of time or until it is determined that training is complete.

Whether the orientation is brief or lengthy, the supervisor will make sure that before new employees begin the job, they receive instruction in responding to emergencies. All orientation training received will be properly documented.

4.2 On-the-Job Training (OJT)
OJT training relates principles and theories to work skills that are then taught and applied in the work environment. OJT is designed to reinforce formal classroom training. All new employees require training to perform their jobs effectively. In this regard, OJT is an essential supplement to formal classroom training. OJT assignments may be provided concurrently with formal training.

The employee’s supervisor should assess the employee’s ability to successfully complete OJT training.

4.2.1 Casual workers
Contract workers will receive training to recognize our specific workplace hazards or potential hazards.

4.2.2 Experienced workers
Experienced workers will be trained if the installation of new equipment changes their job in any way, or if process changes create new hazards or increase previously existing hazards.

4.2.3 All workers
All workers will receive refresher training as necessary to keep them prepared for emergencies and alert them to ongoing housekeeping problems.

4.3 PERSONAL PROTECTIVE EQUIPMENT (PPE)
Workers needing to wear personal protective equipment (PPE) and persons working in high risk situations will need special training. Supervisors and workers alike must be taught the proper selection, use, and maintenance of PPE. Since PPE sometimes can be cumbersome, employees may need to be motivated to wear it in every situation where protection is necessary. Therefore, training will begin with a clear explanation of why the equipment is necessary, how its use will benefit the wearer, and what its limitations are. Remind your employees of your desire to protect them and of your efforts, not only to eliminate and reduce the hazards, but also to provide suitable PPE where needed.
Individual employees will become familiar with the PPE they are being asked to wear. This is done by handling it and putting it on. Training will consist of showing employees how to put the equipment on, how to wear it properly, and how to test for proper fit and how to maintain it. Proper fit is essential if the equipment is to provide the intended protection. We will conduct periodic exercises to find out how personal protective equipment are donned and used by workers on the field.

4.4 VEHICULAR SAFETY
All workers operating a motor vehicle on the job (on or off premises) will be trained in its safe vehicle operation, safe loading and unloading practices, safe speed in relation to varying conditions, and proper vehicle maintenance. We will emphasize in the strongest possible terms the benefits of safe driving and the potentially fatal consequences of unsafe practices.

4.5 EMERGENCY RESPONSE
We will train our employees to respond to emergency situations. Every employee at every worksite will understand:

- emergency telephone numbers and who may use them;
- emergency exits and how they are marked;
- evacuation routes; and
- Signals that alert employees to the need to evacuate.

We will practice evacuation drills at least semi-annually, so that every employee has a chance to recognize the signal and evacuate in a safe and orderly fashion. Supervisors or their alternates will practice counting personnel at evacuation gathering points to ensure that every worker is accounted for. At sites where weather or earthquake emergencies are reasonable possibilities, additional special instruction and drilling will be given.

4.6 PERIODIC SAFETY AND HEALTH TRAINING
At some worksites, complex work practices are necessary to control hazards. Elsewhere, occupational injuries and illness are common. At such sites, we will ensure that employees receive periodic safety and health training to refresh their memories and to teach new methods of control. New training will also be conducted as necessary when OSHA standards change or new standards are issued. Where the work situation changes rapidly, weekly meetings will be conducted as needed. These meetings will remind workers of the upcoming week's tasks, the environmental changes that may affect them, and the procedures they may need to protect themselves and others.

4.7 IDENTIFYING TYPES OF TRAINING
Specific hazards that employees need to know about will be identified through total site health and safety surveys, job hazard analysis, and change analysis. Accident and injury records may reveal additional hazards and needs for training. Near-miss reports, maintenance requests, and employee suggestions may uncover still other hazards requiring employee training.

5.0 MONITORING THE TRAINING PROGRAM.
Monitoring the employee’s progress through the developmental period is critical to ensure success of the training program. Monitoring provides information to the supervisor regarding the benefits and effectiveness of the training received. In addition, it provides information on the ability of the employee to achieve training goals and objectives. Both the employee’s supervisor and training staff (Safety Manager) play major roles in the monitoring process. To ensure adequate monitoring of the safety training program the actions below must occur.

- The supervisor will ensure that each employee has completed the necessary prerequisites before the start of work.
- The supervisor will review the employee’s performance of task assignments.
- The supervisor will conduct a review with the new employee following each required training activity. This review provides the supervisor with information on the progress of the employee and can assist in identifying areas requiring further training.
- When the supervisor determines that the new employee has sufficient experience to successfully complete a task, the OJT review may be discontinued.
- The supervisor and employee will complete training documentation.

6.0 SAFETY AND HEALTH TRAINING PROGRAM EVALUATION
An evaluation of the effectiveness of the training program will be conducted periodically. The safety Manager will interview managers, supervisors and employees who have participated in the program to determine the effectiveness of the training, and to obtain suggestions for program improvement. Evaluation will help determine whether the training provided has achieved its goal of improving employee safety and performance. When carefully developed and carried out, the evaluation will highlight training program strengths and identify areas of weakness that need change or improvement.

- Evaluation will include analysis of employee attendance at training sessions. Training will not work for an employee who does not show up. Absenteeism can signal a problem with the worker, but it can also indicate a weakness in training content and presentation.
• We will compare pre-and post-training injury and accident rates overall. The periods of time being compared must be long enough to allow significant differences to emerge if training has made a difference.

• We will determine whether the training provided has achieved its goal of improving employee safety performance. Evaluation will highlight training program strengths and identify areas of weakness that need change or improvement.

• The safety Office will evaluate training through the following methods:
  • observing employee skills;
  • surveys and interviews to determine employee knowledge and attitudes about training;
  • reviewing the training plan and lesson plans;
  • comparing training conducted with hazards in the workplace;
  • reviewing training documents; and
  • Comparing pre-and post-training injury and accident rates.

If evaluation determines program improvement is necessary, the safety committee/Manager will develop recommendations.
TRAINING PROGRAMME FOR CHEMICAL HANDLERS

1.0. Introduction

Employee training is a cornerstone of safety and loss control. We believe that proper training will develop worker confidence and competence, promotes efficiency and profitability, and facilitates compliance with Company standards and legislative requirements.

Hence, we will provide training for new employees including casual employees, or when an employee is assigned to a new task or work area.

Training can be formal or on-the-job. It shall take into account literacy levels, work experience and specific skills required for the job. It shall be practical and hands-on where this is relevant. For example, hands-on training shall be used for the use and fitting of PPE.

2.0. Objective of the training

- To enable the worker acquire the relevant knowledge and skill needed before any handling task.
- Relay how chemical products can be used safely and efficiently.
- To educate the worker on ways to avoid some of the inherent risks of sometimes harmful or toxic chemicals they often handle.

3.0. Training about the requirements of legislation

The training program shall cover all of the following:

- Duties under the OHS Act and OHS Regulation
- Applying this Code of practice
- Advice regarding the specific hazardous substances or dangerous goods that may be stored or used in the workplace.
- The legal significance of a label and any restrictions resulting from it any other relevant legislation or guidance material relating to the transport, use, storage and disposal of chemicals.

4.0. Information on a substance

Where relevant, training shall also cover:

(a) Recognising and interpreting the information on a label including:

- Safety directions and risk phrases
- Poison scheduling, dangerous goods and hazardous substances classifications and symbols
- First aid and emergency procedures, and special directions
- Application rates, compatibility and withholding periods for chemical.

(b) The importance of being able to:
know the parts of the label and the significance of the information in each part
extract and interpret information from a product label
relate the hazard to the poison schedule, dangerous goods classification and risk phrases
Calculate the amount of pesticide to use to give the correct application rate.

(c) How to obtain access to the MSDS, and the information each part of the MSDS can provide.
(d) The selection, use, maintenance and storage of safety equipment required.
(e) Any work practice or procedure to be followed in any aspect of the use of a chemical in the workplace, including any appropriate Standard, Code of practice or national Code to be followed.
(f) Re-entry periods.

5.0. Personal safety

Where relevant, training shall also cover:
- The routes of entry into the body of chemicals
- The risks posed by chemicals commonly used
- The precautions to be taken for a particular task
- Signs and symptoms of common types of chemical poisoning
- Safe use of chemical near waterwaterways.
- Control measures and maintenance
- The correct selection, use, fit and maintenance of protective equipment and clothing, including respirators and filters
- Exposure controls
- Air monitoring
- Health surveillance
- First aid and incident reporting procedures

6.0. Refresher training

The programme shall also aim at reinforcing and recall of previously acquired skills and knowledge among sprayers from time-to-time.

7.0. Implementation of the programme

This programme shall can into effect whenever there is the need to employ new employee whose task pertains to chemical handling.
TRAINING PROGRAMME FOR HARVESTERS

1.0. INTRODUCTION
The harvesting of our oil palms begins when they reach maturity which is approximately three (3) years after being planted in the fields. As our oil palms continue to mature, we deem it necessary to assign harvesting duties and tasks to persons who will harvest Fresh Fruit bunches (FFB) at their optimum maturity stage to optimise the quality of palm oil.

We believe that, in order to harvest all these available fruits at their optimum ripeness, we need to train people on the job to adopt best practices that will be relevant to their assigned duties and tasks.

2.0. MAIN OBJECTIVE OF THE TRAINING PROGRAMME
- To enable the harvesters acquire the requisite knowledge or competency toward their job.

3.0. TRAINING APPROACH
Prior to the peak and lean season, all new harvesters shall receive practical field training on the job by competent field supervisors and other field experts. This field training is aimed to expose the harvester to the standards, procedures and best practices established, forming an essential foundation for their role as harvesters.

The basic standards, procedures or instructions shall be delivered in a way that is readily understandable by persons to whom the field training is being provided for.

4.0. THE ROLE OF THE HARVESTER
The training programme will emphasize on the role of the harvester as been important in relation to profitability.

Harvesting is an important role as it exerts considerable influence on both oil extraction rates and the final oil quality (CPO). The quality of fruits harvested depends on the ability of the harvester to harvest fruits bunches at their optimum ripeness that conforms to best practices.

Hence, the training programme shall clearly spell out the role of the harvester as:
- to harvest all available fruit at their optimum ripeness
- to maintain optimum frequency of harvesting rounds
- to stack all harvested FFB neatly on the roadside for collection
- to locate every available ripe fruit on the block or field being harvested

5.0. THE STANDARDS, PROCEDURES AND INSTRUCTIONS
This training programme shall establish standards, procedures and instructions for harvesting, with which every harvester has to abide by.
Regular checks shall be made by field headmen in charge of the harvesting gang to ensure that these standards, procedures and instruction are strictly been adhered to, this is aimed at measuring the success of the training programme.

Additionally, to ensure that these standards, procedures and instructions becomes part of the daily routine of the harvester, senior staff from time to time may deem it necessary to embark on field visits to the harvesting gang and where necessary, improper practices shall be dealt with appropriately.

4.0.1 STANDARDS
The training programme shall recommend the following as the necessary standards practices with which all harvesters must comply.

- Harvesting of Fresh fruit bunches (FFB) **MUST** be done at the correct degree of ripeness, as under-ripe fruits have low oil content and over-ripe fruits are rancid (have a high fatty acid content).
- Mature bunches **MUST** only be harvested when an appropriate quantity of fruit becomes detached from the FFB, indicating peak ripeness. Meaning FFB **MUST** be harvested according to acceptable industry ripeness standards.
- There **MUST** be zero tolerance to unripe bunches.
- Bunch stalks **MUST** be less than 5 cm long and stack neatly on the road for collection.
- Pruned fronds must be cut and stacked neatly in the inter row.
- Harvesting rounds should be maintained at 7-10 day intervals.

4.0.2 PROCEDURES
The training programme shall institute the following procedures

- Each harvester must be issued with a complete set of harvesting tools.
- Harvesting always takes priority over other work, and workers from upkeep sections may be transferred to harvesting when the need arises as required to maintain harvesting standards.
- Each harvester is allocated a number of rows. The number of rows issued will depend upon the age of the palms, yield, the time of year and the skill of the harvester.
- New rows must only be issued when previously allocated rows have been harvested to the required standard.
- Harvesting pans or wheelbarrows are issued to each harvester at the start of work so that FFB can be loaded directly to the collection point (e.g. roadside harvesting platform).

4.0.3 INSTRUCTIONS
The training programme shall set in motion the following instructions prior to the harvesting of FFB.

- The harvester must proceed down the assigned row and inspects each palm circle for Loose Fruit (LF) and each palm crown for ripe bunches (sometimes LF is trapped behind frond butts).
When a ripe bunch is located, the harvester must cut the frond subtending the bunch. Chisels shall be used to harvest palms until harvester productivity is reduced by palm height. Sickles are then issued promptly.

The thorny rachis base of the cut frond must be cut off and placed in the centre of the frond stack or in the interrow space, but not on or near the harvesting paths or circles. This will help to minimize leg and foot injuries to harvesters and maintenance workers.

In younger areas (< 4 years), it is preferable for harvesters to ‘steal’ the bunch and maintain 2-3 fronds below the harvested bunch. This helps to maintain the leaf area of young palms and improves early vegetative growth and yield. Other fronds must be pruned neatly and placed in the frond stack.

The exposed bunch stalk must then be cut and the harvester must stand clear as the ripe bunch falls to the ground.

After harvesting to the midpoint of the palm block, the harvester must retrieve his harvesting pan or wheelbarrow, collects the FFB and puts them at the collection site by the roadside.

FFB must be stacked properly at the collection point. Fertilizer bags containing LF should be placed next to the FFB.

When harvesting has been completed in the assigned rows, the headman in charge of the gang must check the rows, count and record the FFB, and assign more rows to the harvester.

**NB**: The harvesting headman must not mark the harvester when the specified standards are not been adhered to by the harvester. This include when:

- the rows has not been harvested fully
- FFB have not been collected
- FFB have not been arranged neatly for collection
- there are long stalks, dirt, rocks or debris in the stack
- the harvester has left redundant fronds on the palm
- pruned fronds have not been properly stacked or
- Ripeness standard has not been maintained.

**6.0. REFRESHER TRAINING**
Harvesters will be taken through refresher training from time-to-time; this is aimed to remind the harvester of established standards, procedures, instructions e.t.c, and the need to adhere to innovation being introduced.

**7.0. IMPLEMENTATION**
This training programme shall immediately come into effect when there is the need to bring in more labour for harvesting.
WORKSHOP TRAINING PROGRAMME

1.0 INTRODUCTION
This training programme is aimed to assist those who work at the workshop or persons who are newly employed at the shop to acquire the knowledge relevant to the nature of the work carried out, particularly the nature of risks and control measures associated with the work.

It is to be used in addition to, and not as a substitute for, general safety principles applicable to all types of workshops, e.g. Fire precautions, and correct use of personal protective equipment (PPE), hygiene standards, risk management, workshop noise and hazardous manual tasks.

2.0 PURPOSE
The training program will enable employees and others to:

- Understand and follow all standards, procedures and practices related to their assigned duties and tasks as they work at the workshop.
- The training programme will also assist Volta Red employees and the users of the workshop facility to eliminate or minimise risks to health and safety of individual/persons working within the workshop.

3.0 PROGRAM DESCRIPTION

3.0.1. Programme approach
During the training programme, information or instructions shall be delivered in a way that is readily understandable by any person to whom it is provided. This is to ensure that the training programme achieves its expected intent.

1.0. ELEMENTS OF THE TRAINING PROGRAMME
The programme shall include induction and instructions on relevant key areas. It shall focus on the following topics:
- workshop safety procedures;
- emergency procedures and location of emergency equipment;
- correct and safe operating of machinery;
- risk management;
- wearing and care of PPE;
- good housekeeping; and
- other statutory requirements.

The training activities will be designed to provide the necessary knowledge and skills tailored to specific needs of employees and others.

5.0 TRAINING PROGRAMME COORDINATING TEAM
The Training Programme Coordinating Team would be responsible for the coordination of the implementation of the Training Programme. The team would be mainly made up of the Safety Manager (Mr. Nyame Joseph...
Atta) and the Workshop supervisor (Mr. Alfred Anguah). The Training Program Coordinating Team shall provide training, induction and instructions on the key areas outline in 4.0 above.

6.0. RECORDING ATTENDANCE
For each training attendance will be recorded using a signup sheet which will include the date of the training and the employees who attended. Similar methods will be used to verify other training received.