

FORM GHANA LIMITED

**ENVIRONMENTAL MANAGEMENT PLAN FOR FORM GHANA
REFORESTATION PROJECT IN
ASUBIMA AND AFRENSU- BROHUMA FOREST RESERVES
NEAR AKUMADAN IN THE OFFINSO NORTH DISTRICT OF
ASHANTI REGION.**



VALIDITY PERIOD: August 2021 - August 2024.

DATE OF SUBMISSION: July, 2021

ENVIRONMENTAL PROTECTION AGENCY



ENVIRONMENTAL MANAGEMENT PLAN
FOR FORESTRY SECTOR PROJECTS (EMP-FSP)

IN ACCORDANCE WITH THE

ENVIRONMENTAL ASSESSMENT REGULATIONS, 1999 (LI 1652)

Read These Instructions Carefully Before Completing The Form

1. All necessary information required must be provided in full in order to avoid delays in processing the application. Where separate or additional sheets are used and other technical documents provided these must be labelled appropriately.
2. ***Processing and permit fees are payable in accordance with the Fees and Charges (Amendment) Instrument, 2019 (LI 2386) or subsequent amendments that may be promulgated. Permits will only be issued after full payment of the required processing and permit fees.***
3. ***Attach Certificate of incorporation, Certificate to commence business, Material Safety Data Sheets (MSDS) for chemicals and other relevant attachments (if any)***
4. Submit the completed form with relevant supplementary information ***in triplicate and an electronic copy*** to:
The Executive Director
Environmental Protection Agency
P O Box M326 □ Accra-Ghana
Tel: 233 (0) 302 662465; 233 (0) 302 664697/8662465
Fax: 233 (0) 302 662690 □
E-mail: support@epa.gov.gh
Web-site: <http://www.epa.gov.gh>
5. For any other information relating to this form, contact the ***Natural Resources Department*** of EPA via ***natural.resources@epa.gov.gh*** or ***info@epa.gov.gh***
6. ***Failure to fully complete the form and attach all relevant document may lead to a delay in Processing***



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SIGNATURE, STAMP & DATE: _____

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LUD/ASR/3061/12

FORESTRY COMMISSION

LANDS COMMISSION KUMASI
DOC NO. 36-11-2012

**LAND LEASE FOR ACCESSING DEGRADED
FOREST RESERVE LANDS FOR FOREST
PLANTATION DEVELOPMENT**

BETWEEN

FORESTRY COMMISSION

AND

MESSRS FORM GHANA LIMITED



Appendix 5: Certificate to commence business

No. CA-37,338 TIN-824V025997

COMPANIES CODE, 1963



REPUBLIC OF GHANA

**CERTIFICATE TO COMMENCE
BUSINESS**

I hereby certify that

FORM GHANA LIMITED

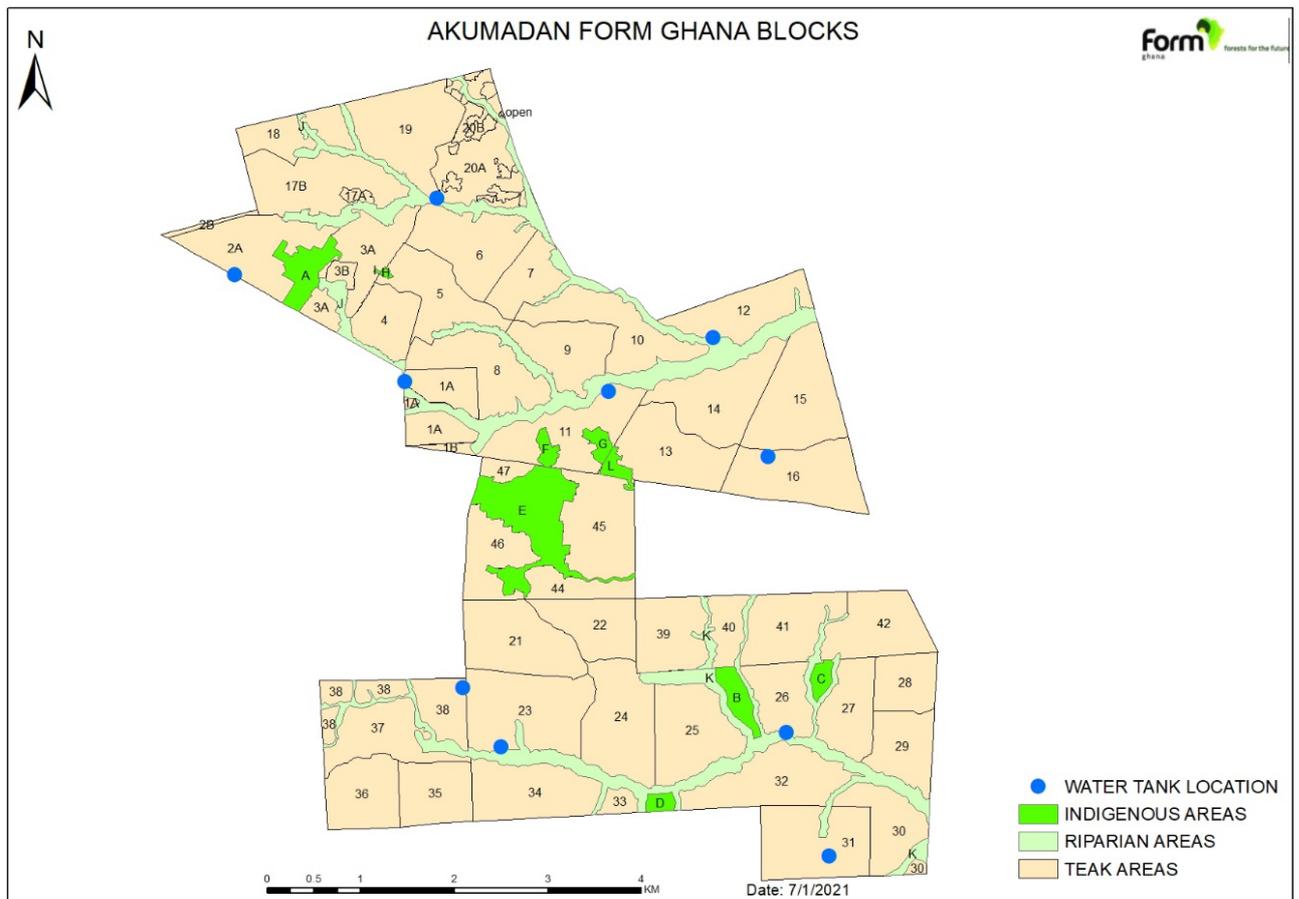
having complied with the provision of Sections 27 and 28 of
the Companies Code, 1963 is entitled to commence business
with effect from 28TH AUGUST, 2007.

Given under my hand at Accra this 28TH day of
AUGUST, 20 07.



[Signature]
Assistant Registrar of Companies

Appendix 6: Layout Plan/Compartment Plan



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MATERIAL SAFETY DATA SHEET

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations.

16. OTHER INFORMATION

REVISIONS:

The following has been revised since the last issue of this MSDS: New.

ADDITIONAL INFORMATION:

Abbreviations used throughout the MSDS are: NA = Not available
NAp = Not applicable
N/E = None Established.

This MSDS summarises our best knowledge of the health and safety hazard information of the product and how to safely handle and use the product in the workplace. Each user should read this MSDS and consider the information in the context of how the product will be handled and used in the workplace including in conjunction with other products. If clarification or further information is needed to ensure that an appropriate risk assessment can be made, the user should contact this company. Our responsibility for products sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available on request.

CORTA®: Registered Trademark of SSI

END OF MSDS

CROP PROTECTION DEPARTMENT



**FORM Ghana Limited
Training Certificate**

Waste Management Training

We FORM GHANA, herewith certify the following having been trained in waste management;

1	Ngmenebon Felicia	Permanent
2	Boamah Charity	Permanent
3	Adwoa Achiaa	Permanent
4	Hawa Seidu	Permanent
5	Naabare John	Permanent
6	Yeboah Gifty	Permanent
7	Fati Mahama	Permanent
8	Felix Ngozi Blessing	Permanent
9	Afia Linda	Permanent
10	Joyce Oppong	Permanent
11	Cecilia Agyeiwaa	Permanent

Topics:

- Origin of Waste
- Types of Waste
- Waste storage and collection
- Means of disposal

Facilitators:

Ransford Nkuah

Monitoring Supervisor

Akumadan, 20th April, 2018



FORM Ghana Limited Training Certificate

First -Aid Training

Salifu Moses has successfully completed training on the following subjects:

Definition of first aid

Aims and objectives of first aid

Responsibilities of the first aider

Qualities of the first aider

Contents in first aid box

JUNE 17, 2020.

Facilitator:

Baffoe Patricia

Plantation Manager:

Essuman Matthew

FORM Ghana Limited Training Certificate

Waste Management Training

Miss. Faabalongna Naalozume has successfully completed training on the following subjects:

- Source of Waste
- Waste segregation
- Types of Waste
- Waste storage and collection
- Means of disposal

4th June, 2020.

Monitoring supervisor:



Form Ghana Management



Essuman Mathew
Plantation Manager

TUFFOUR FIRE SAFETY SERVICE



Post Office Box 202
Techiman B/A
Tel: 0503185779 / 0244787279

Our Ref..... Your Ref..... Date.....

THE MANAGER
FORM GHANA LTD
AKOMADAN
ASH – REGION

The following staffs of Form Ghana Limited had successfully completed training on Domestic Fire Fighting, Fire Prevention and use of Fire Extinguishers on 8th December, 2020.

1. MOHAMMED UMAR
2. FAARBELOG NAALOZUME
3. KOFI DIGIME
4. AKWASI MOSES
5. HANNA MANU
6. DORA OWUSU
7. ERNEST BAAH
8. MAVIS KABA
9. YEBOAH DAVID KWARTENG
10. MOSES NJENYA
11. FELICIA NGMENEBOU
12. BLESSING NGOZI FELIX
13. EMELIA ZAGA
14. MATHEW ANDOR
15. APAM ATULE
16. JOHN BOSCCO SEGKULU
17. DAVID SATINA
18. MOHAMMED ALHASSAN
19. CECILIA AGYEIWAA
20. FRANCIS MARFO
21. RANSFORD NKUAH
22. ERIC AMO PARKU
23. MICHAEL APPIAH KUBI
24. NASHIRU ISSAH
25. KWAME OPOKU
26. MATHEW ESSUMAN

Yours faithfully,

.....
OPPONG GYAMFI JOHNSON
(Director)



FORM GHANA LIMITED

TRAINING CERTIFICATE

We, FORM Ghana Limited, herewith certify that:

Mr. AYABA JAMES

Has successfully been trained in ***FIRE FIGHTING AND SAFETY*** under the following topics.

- ❖ FIRE FIGHTING TECHNIQUES
- ❖ SAFETY IN FIRE FIGHTING
- ❖ DIRECT AND INDIRECT FIRE ATTACK
- ❖ FIRE PREVENTIVE MEASURES
- ❖ DANGERS IN FIRE FIGHTING
- ❖ FIRE TOOLS AND PPE'S

Nov 16, 2020

FACILITATOR

Mr. AMOH PARKU ERIC

(HARVESTING SUPERVISOR)

PLANTATION MANAGER

Mr. ESSUMAN MATTHEW



FORM GHANA LIMITED

TRAINING CERTIFICATE

We, FORM Ghana Limited, herewith certify that:

Mr. NANG ALBERT

Has successfully been trained in *FIRE FIGHTING AND SAFETY* under the following topics.

- ❖ FIRE FIGHTING TECHNIQUES
- ❖ SAFETY IN FIRE FIGHTING
- ❖ DIRECT AND INDIRECT FIRE ATTACK
- ❖ FIRE PREVENTIVE MEASURES
- ❖ DANGERS IN FIRE FIGHTING
- ❖ FIRE TOOLS AND PPE'S

Nov 16, 2020

FACILITATOR

.....
Mr. AMOH PARKU ERIC

(HARVESTING SUPERVISOR)

PLANTATION MANAGER

.....
Mr. ESSUMAN MATTHEW



Plate 6: Training on firefighting with beaters



Plate 7: Chainsaw training on tree felling



APPENDIX 14: Extract of Protocols

Protocol 01 Follow-up of legislation and international conventions

Protocol purpose

Form Ghana needs to be aware of all applicable legislation. This protocol describes the system implemented to collect relevant Ghanaian legislation and international conventions ratified by Ghana, and keep these texts up to date.

Keep Ghanaian legislation up to date

Changes in Ghanaian legislation are published in an official journal. The Finance and Administration Manager is responsible for checking the official journal for changes in legislation. A copy of any such notification is sent to the relevant person(s) within Form Ghana and the original articles are kept in the Form Ghana office. Also, regular contact with the Domestic Tax Revenue Division (DTRD) of the Ghana Revenue Authority (GRA)) and the Social Security & National Insurance Trust (SSNIT) in Ghana ensures that Form Ghana is up to date with updates in laws and regulations with regards to Tax & Pension issues respectively.

If there are changes in laws applicable to Form Ghana, the new texts are read carefully to check for possible conflicts with FSC™ (FSC-C044035) regulations. Changes in legislation may necessitate modification of the management protocols. In this case, senior management must be notified.

The laws applicable to Form Ghana are listed in Annex 2-15. The table is based on the work done by Client Earth in 2013. The relevance of each law for Form Ghana is indicated in the right column. Laws that are relevant in general are indicated with “relevant”. If specific elements are relevant, they are specified. Laws that are not directly relevant for Form Ghana are indicated with “X”.

Keep international conventions up to date

Changes in international conventions are not published in a centralized way. Form international will keep track of any changes in the conventions that are ratified by Ghana and apply to Form Ghana.

The relevant international conventions are mentioned in the Annex 1. This list will be updated regularly.

Archiving of texts and distribution

Legislative texts and conventions are kept in the office at Sunyani and maintained by the accountant, in hard- and softcopy. Hardcopies of relevant legislation are kept in the Plantation Managers’ Office in Akumadan and Berekum.

Whenever a new regulation is found, it is added to the list (Annex to this protocol), and a message (with summary of the law), is sent by the Accountant to all relevant staff, including

reference to the full text. Records of these messages, including the addressees, (e.g. Emails) are kept in a separate file.

Protocol 04 Waste Management

Origin	Type	Reduction	Disposal	Tracing
Workshop	Tyres		Are stored on site and collected by a private waste management company upon request.	Waybills
	Batteries (dry cell)	Use rechargeable batteries.	Are stored on site and collected by a private waste management company upon request.	Waybills
	Batteries (vehicle)		Are stored on site and collected by a private waste management company upon request.	Waybills
	Used oil	Recycled for treating wood against termites.	Are stored on site and sold out to used oil dealers.	Waybills
	Oil filters		Are stored on site and collected by a private waste management company upon request.	Waybills
Workshop, plantation	Used cables, wreckage and other metal waste (scrap)		Are stored on site and collected by a private waste management company upon request.	Waybills
Stores, nursery, plantation	Non-hazardous chemical waste (pesticides, paint etc.)		Are stored on site and collected by a private waste management company upon request.	Waybills
	Hazardous chemical waste		Are stored on site and collected by a private waste management company upon request.	Waybills
	Waste from harvest operations	Felling technique	Left in the forest.	
Office buildings	Fluorescent Light Bulbs	Best possible quality.	Are stored on site and collected by a private waste management company upon request.	Waybills
Stores (containers), nursery	Plastic waste	Reusing containers, trays	Skip containers of a private waste management company	Waybills



(bags, trays)				
Base	Domestic waste	Awareness raising	Skip containers of a private waste management company	Waybills
First-aid post	Medical waste		Are stored on site and collected by a private waste management company upon request.	Waybills



Protocol 05 Responsible use of chemicals

Protocol purpose

Form Ghana's company policy is to minimize the use of pesticides and to avoid possible risks for the safety and health of the employees. This is also valid for situations in which dangerous or toxic material is used.

Use of weedicides and pesticides

Three types of chemicals are used by Form Ghana: herbicides, fungicides and insecticides. Form Ghana aims to use biodegradable products that affect only the target and leave no traces in the environment or in the food chain. All products are applied according to the instructions for usage. The use of chemicals is minimized and if there is a possibility to reduce or stop the use of chemicals over time, this will be done. The quantity to be used in the field is based on recommendations from the manufacturers and/or determined based on field studies performed by Form Ghana.

All products in use have been evaluated against the FSC™ (FSC-C044035) list of highly hazardous chemicals. The FSC™ (FSC-C044035) contact person of Form Ghana regularly reviews the chemicals in use to verify whether they still comply with FSC™ (FSC-C044035) standards.

Administration

There is an up-to-date MS data sheet of the used chemical products present at the sites, both at the stores and in the clinics. The name, directions for use and characteristics of each product are registered, as well as the used quantities of the products.

The employees working with the chemicals and their supervisors are aware of the directions for use of the products. It is the supervisor's duty to train the employees on relevant PPE and handling of the chemicals.

Storage of chemical products

Products are stored as described in Protocol 16: treatment of fuels, lubricants and toxins.

Protection of personnel

The use of Personal Protection Equipment (PPE) is mandatory for applicators of chemicals. Details are described in Protocol 10 (Personal protection).

Protocol 08 First aid procedures and emergency evacuations

Protocol purpose

This protocol describes the procedures for first aid training, usage and composition of the first aid kit and handling of accidents.

First Aid Training

Every year training in first aid is given to all relevant staff.

First aid kits

The first aid kits must always be available at the working site: one in every car and truck and one with each supervisor or foreman of every team in the field.

Contents of field first aid boxes must be checked weekly by the occupational health practitioner and completed when needed. The minimum contents for field first aid boxes are listed in table 1, and this list must also be included in the first aid box. The first aid boxes used in vehicles have the same contents with exclusion of the crêpe bandages. First aid boxes in vehicles are checked monthly. The operational health practitioner is responsible for the contents of the kit.

Table 1. Contents of the field first aid boxes.

Medicine	Category	Minimum quantity
Gauze	Wound Dressing	3 pieces
Gauze Bandages	Wound Dressing	2 rolls
Crêpe Bandages	Wound Dressing	1 roll
Cotton Wool	Wound Dressing	3 pieces
Plaster	Wound Dressing	1roll
Scissors	Cutting Dressing Material	1
Surgical Blades	Wound Cleaning	2
Methylated Spirit	Disinfectant	half bottle
Iodine	Disinfectant	half bottle
Gentian Violet Solution	Disinfectant	half bottle
Disposable Gloves	For Safety When Treating Wounds	1 pair
Tri Silicate	Abdominal	1 blister
Paracetamol	Painkiller	1 blister

Medicines at the dispensary

Medication and medical appliances are kept at the dispensary. Supplies should be adequate to treat ill people and to supply the first aid kits. The medicines available at the dispensary and the minimum quantities to remain available are listed in annex 2. The expiry dates are checked by the nurse every month.

Accident recording



All work-related injuries, even those not requiring medical attention, must be reported and recorded by the operational health practitioner. A summary is presented to the Management every month, and an annual summary of these reports is presented in the Public Monitoring Report.

The operational health practitioner will present an analysis of accidents to the Management. This analysis includes:

- The cause of the accident
- Ways to prevent this in the future
- Actions required

Accident procedure

A vehicle is always available in the plantation or at the nursery to rapidly evacuate any injured or gravely ill person. Serious accidents are reported on the radio to alert the operational health practitioner.

A radio can be reached within 10 minutes and a person trained in first aid is present in each block where operations take place. Mobile phones work in most of the plantation area and function as a back-up system in case of emergency.

Wounded or otherwise hurt people that cannot be treated on site (accidents too grave, seizures, heart attacks etc.) are transported to the nearest hospital as soon as possible.

Form Ghana has an agreement with the Berekum Health Centre and the Holy Family Hospital in Berekum. This agreement assures treatment of Form Ghana workers in case of an emergency, so that there will be no delay due to formalities.

Nursery

When an accident occurs at the nursery, a foreman and a first-aider are immediately informed. The trained first-aider assesses whether the wounded person needs special hospital care. First-aiders stabilise the wounded person.

The accident is reported to the dispensary. If necessary, the operational health practitioner makes arrangements to transport the victim to the Holy Family Hospital in Berekum. A first-aider accompanies the wounded person during the trip.

Plantation

When an accident occurs at the plantation, a foreman and a first-aider are immediately informed. When a first-aider or foreman is distant, these are urgently called. A trained first aider assesses whether the wounded person needs special hospital care. The accident is reported to the office where arrangements are made with the hospital, if necessary.

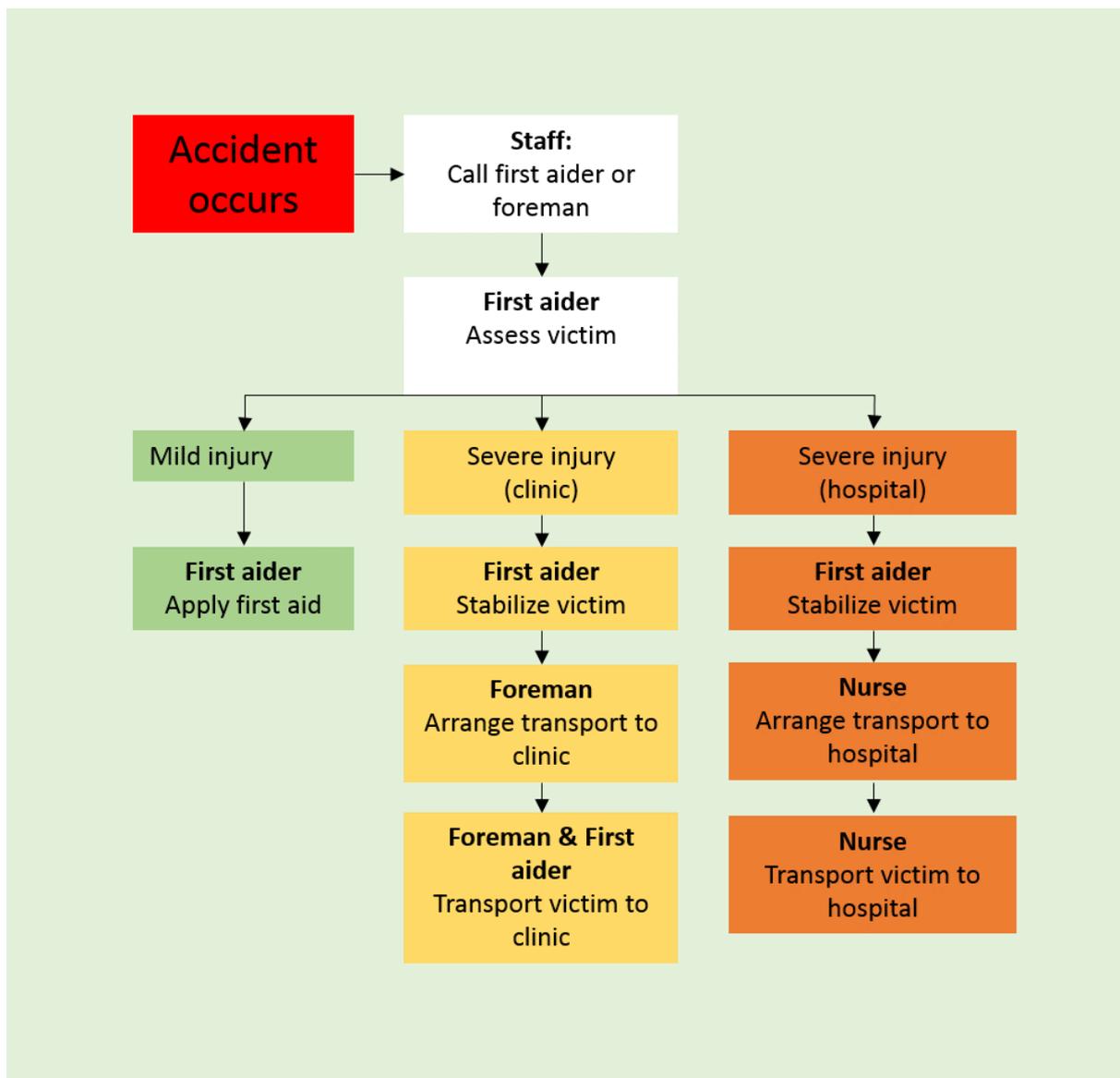


First aiders stabilise the wounded person, while the foreman arranges for transportation to the clinic. The first aider stays with the injured person.

Lesser injuries and sicknesses

People who cut themselves or do not feel well and need to be transferred to a doctor or hospital but not urgently can get a forwarding slip at the nursery dispensary. The nurse will issue a slip if he deems a visit to a doctor necessary. The slip is a guarantee for the doctor that the person in question is a Form Ghana employee. An example of such a slip is attached as annex 1.

A schematic representation of the Form Ghana accident procedure is presented below.



Environmental Management Plan – Asubima and Afrensu- Brohuma Forest Reserves



Protocol 09 Employee transport and vehicle and equipment policy and procedure

Purpose

The aim of this policy is to ensure safety and effective maximum utilization of company's employees and fleet respectively.

1.1 Authority

The Managing Director is the rightful authorization of the usage of any company vehicle. In the absence of the Managing Director, the Forest Manager gives right authorization. Any other usage of Vehicle that does not belong to the company, but operates in the company environment has to be authorize by the Managing Director.

1.2 Responsibilities

The plantation managers, Supervisors, HR office. Fleet Management Officer, Driver Training Officer and drivers are to manage and review effectiveness of this policy. Again, they are to make sure that vehicles are in good state and employees transport systems are in accordance with the policy. The plantation manager is to ensure that, the usage of company vehicles is in respective with the right authorization.

The Chief mechanics is to receive a weekly checklist from all driver operators at the end of the week and act accordingly. The mechanics is to repair and maintain all faulty vehicles and report to the plantation manager.

Only Employees with valid driver's license and company authority (Listed on company registry) are allowed to drive or operate company vehicle. Eligible employees are to observe all company vehicle forms and checklist.

2. VEHICLE UPKEEP AND MAINTENANCE

2.1 Daily check

- Driver to ensure that he/she has their valid driver's license on their person or in the vehicle.
- Each driver should inspect his vehicle on a daily basis before use to ensure the safety of its operation.
- Any faults are to be reported to the senior driver.
- The senior driver is to record all faults on the white board provided in the stores for each specific vehicle. The senior driver is to bring these faults

to the attention of the workshop engineer and to follow up on the progress of the work. The workshop engineer must resolve the faults recorded on the board ASAP.

- For serious faults influencing the safety of the vehicle’s operation, the vehicle should be parked and repaired before use.
- If any parts are required this must be discussed between the storekeeper and the workshop engineer, these required parts must too be recorded on the board as that the storekeeper can ensure the parts are ordered if not on hand at the time.
- A job card must be created by the storekeeper for each job and signed off by management once the work has been completed.

2.2 Weekly check

- All vehicles are inspected weekly by the workshop engineer following a set checklist as a preventative measure and to solve any minor/major problems.
- The driver should be present during this inspection to assist the workshop engineer in identifying any problems.
- A specific checklist is elaborated for each type of vehicle (pick - up, truck for labour transport, motorcycle, tractors, trailers and timber trucks).
- Vehicles that are not in the workshop do not have to return there for the weekly checks. This can be done in the field.

2.3 Monitoring and Evaluation

- Daily check of vehicle parts by drivers to maintain good condition of vehicles
- Quarterly spot check of vehicles
- Quarterly review of vehicle maintenance and any other reported cases
- Communicating outcome to concerned employees

2.4 Company Vehicle Checklists

There are various company vehicle checklists available at the mechanical workshop. Necessary information to check and maintain safety and efficient use of vehicles are in the forms. The checklists include;

- Daily Vehicle checklist
- Spot check list



- Rental vehicle check
- Fuel checklist

2.5 Service schedule

- There is a service schedule for all vehicles that is based on daily kilometres or hours, depending on the vehicle.
- From the schedule, a list of vehicles due to be serviced is issued on a monthly basis.

2.6 Tyres

- The Original Equipment Manufacturer recommended tyre sizes must be adhered to. (Eg. Toyota)
- Tyres must be replaced with at least 1 mm. tread left.
- For all trucks, tyres should be changed with about 2mm of tread left.
- The correct tyre pressures must be maintained at all times. (Under or over inflated tyres show accelerated wear and are significantly less safe than correctly inflated tyres).
- Tyre life should be monitored and appropriately managed.

2.7 Vehicle Security

- All vehicles must be kept secure at all times. Ensure that all the anti-theft devices fitted to all vehicles are at all times functional.
- The following security measures must apply when any vehicles is left unattended (without physical attendance):

During the day:

- (i) Lock the gear lock (if equipped)
- (ii) Lock the vehicle and arm the alarm (if equipped)
- (iii) Keep the ignition keys safe.

During the night – as for the day plus:

- (iv) Keep vehicles behind gates or booms that can be locked.
- (v) Store all vehicles in an appropriate lockable, and if possible, enclosed area.
- (vi) if Necessary, station a guard during the night.
- (vii) Park at designated areas in Berekum, Akumadan & Sunyani

3. SPECIFIC CONDITIONS FOR DRIVERS OF COMPANY VEHICLES AND EQUIPMENT

3.1 Personnel transport truck

- Trucks may carry a maximum number of passengers, as per DVLA registration details.
- Use side mirrors to ensure all workers are on the truck, before start driving off
- Park to the side of a road in the plantation
- Ensure the Motorola is switched on and respond when called
- The driver shall not allow people to ride on the roof of the vehicle, on a load on the vehicle, or on a trailer drawn by the vehicle. (LI2180 – clause 100)
- Chainsaws, chainsaw blades and tools shall be stored and transported in a box with a cover.
- Only persons with a valid driver's license are allowed to drive in a vehicle
- The vehicles are not to be used for private purposes
- Maximum speed is 50 km/h off the tarmac road and 40 km/h within the plantation. Adjust your driving speed according local conditions (e.g. visibility, approaching a curve, road surface)
- Drivers are compelled to wear sturdy shoes, provided according to P10 (Personal protection).
- Whenever the seats of a vehicle are equipped with seatbelts, it is compulsory to use them.
- The drivers of company vehicles are responsible for the technical good state of the vehicle and the conformity of the documents. Report and faults immediately.
- All vehicles and equipment should be cleaned at regular intervals, so as to portray a professional and neat image at all times.
- The drivers of company vehicles are responsible for the presence of a first-aid kit in the vehicle.
- The drivers are responsible for the respect of all regulations stated in this protocol and applicable legislation, especially the requirements from the LI 2180 Road Traffic Regulations, 2012 that apply to the driver.
- The drivers shall not hold, use or operate a cellular or mobile telephone (other than a two-way radio), whilst driving the vehicle. (LI2180 – clause 107)
- Operational managers (plantation managers, foresters, supervisors and team leaders) will be held accountable if they were aware of driver misconduct or any procedures not being followed and no disciplinary action were taken.



3.2 Tractor and power tillers

- Tractors and power tillers are used only for tasks they are designed for.
- The management may decide to use them for other uses (e.g. transport of wounded persons).
- Nobody is allowed to sit on the mud guards of any vehicle or equipment.

3.3 Motorcycles

- The use of a crash helmet is compulsory (also for passengers).
- Luggage is carried and fixed in a safe way and the motorcycles can carry maximum one (1) passenger.

3.4 Cars / pick-ups / Mini Bus

- Employees in the back of a pick-up may never sit on the rim of the body but only sit (not stand) in the inside of the bin, and can only get off when the vehicle has come to a complete stand-still.
- Pick-ups can carry a maximum of 10 persons.
- No driving allowed on Main roads between 18H00 and 05H00 except with direct approval by Managing Director
- Only Form Ghana employees may be allowed on the vehicle except by approval of Managers

3.5 Cars / Pickups allocated to senior management

- No driving allowed on Main roads between 18H00 and 05H00 except with direct approval by Managing Director
- Individual is responsible for the vehicle
- Individual (Senior manager) is personally responsible for any non-Form Ghana employees carried as passengers
- With prior approval from Managing Director, the allocated vehicle can be used for private use. (However, the individual will be responsible for any travelling cost – Fuel, Driver, Toll etc)

4. SPESIFIC CONDITIONS FOR RENTAL TRUCKS

- If necessary, the company may rent a vehicle with authorization from the Managing Director. A contract letter is served and the vehicle will be laid off as agreed in the letter.
- Before any rental vehicle operators or drivers start operating, they should have a valid driver's license and successfully pass the vehicle check for rented cars.
- Maintenance of hired vehicles are not the responsibilities of the company



- In case of any damage of rental cars and hence cannot operate within the agreed contract, owners of rental cars must find an alternate immediately or otherwise their contract will be terminated with the company



Protocol 10 Personal protection

Protocol purpose

Safety is of the utmost importance to Form Ghana. To ensure that everybody works in a safe manner in a safe environment three approaches are used:

- Use of individual protective gear
- Training of personnel in the safe use of equipment and in safe working techniques (see protocol 11)
- Regular safety assessment of the workplace

The use of protective equipment is based on the ILO Standard ‘Health and Safety in Forestry Work’. This can be modified due to local conditions.

Risk assessment

A risk assessment of the company is described in the table below. This risk assessment is reviewed every year and updated if necessary. If there is a significant change in the workplaces, the risk assessment is adjusted instantly. Risks related to harvesting operations are assessed prior to harvesting, as part of the Operational Plan (see P25 Harvesting).

Activity / site	Risks	Preventive measures	ILO prescribed PPE ²	Deviations (if any)
Manual planting³	People working in the plantation may be bitten by snakes or other dangerous animals. People working in the plantation may harm their feet wearing improper footwear.	Wellington boots	Safety boots or shoes	Wellington boots provide better protection, as the lower part of the leg is also protected
Manual weeding (with smooth-edged tools)⁴	People working with cutlasses may hurt themselves and others.	Sufficient spacing between cutters (minimum 6 metres)		

² ILO code of practice Safety and health in forestry work (1998) Table 1 Personal protective equipment (PPE) appropriate for forestry operations

³ ILO prescribes gloves when planting spiny seedlings or chemically treated plants, but Form Ghana is not planting spiny seedlings or chemically treated plants

⁴ ILO prescribes goggles for this activity, but interviews and medical records do not provide evidence for a risk here, while sweat and humidity might increase the risk as it will reduce visibility and comfort when using goggles.

	<p>People working in the plantation may be bitten by snakes. People working in the plantation may harm their feet wearing improper footwear.</p>	Wellington boots	Safety boots or shoes	Wellington boots provide more protection of the lower leg, where there is the highest risks of cuts and snake bites.
	<p>Splinters and thorns may hurt hands The hand not holding the cutlass might be hit with the cutlass</p>	Instruction on the use of a cutlass when weeding in order to protect hands	Gloves	Gloves do not stop or slow down a cut with a cutlass Gloves are felt to be uncomfortable when hands are used to work with a cutlass Gloves may reduce grip on the tool handle
Weeding / cleaning / singling with a chainsaw	<p>People working with chainsaws may hurt themselves and others with the chainsaw or falling wood.</p>	Sufficient spacing between operators (minimum 2 tree lengths)		
		Chain-saw boots	Chain-saw boots with protective guarding at front vamp and instep	
		Safety trousers	Safety trousers	
		Close-fitting clothing with high visibility vest	Close-fitting clothing	
		Gloves with cut-resistant material	Gloves (with cut-resistant material)	

			incorporated in the back of the left hand)	
		Safety helmet equipped with visor and ear muffs	Safety helmet	
			Goggles	The visor on the helmet protects the eyes. Goggles will reduce visibility and comfort.
		Safety helmet equipped with visor and ear muffs	Visor (mesh)	
		Safety helmet equipped with visor and ear muffs	Ear muffs	
Pruning with hand tools	People pruning may hurt themselves and others.	Sufficient spacing between workers (minimum 9 metres)		
	People working in the plantation may be bitten by snakes. People working in the plantation may harm their feet wearing improper footwear.	Wellington boots	Safety boots or shoes when falling branches are likely to cause injury	It is unlikely that falling branches cause injury, but to protect feet from snake bites etc. wellington boots are prescribed
	Splinters and thorns may hurt hands	-	Gloves	Pruning is normally done in stands with limited undergrowth, and teak does not have



				<p>thorns. Therefore, the risk of splinters and thorns is negligible. Gloves are felt to be uncomfortable for hands that are used to work with a smooth handle of the pruning saw. Gloves may reduce grip on the tool handle</p>
	<p>Falling branches might hit the head of the worker</p>	<p>Safety helmet when pruning to a height exceeding 5m</p>	<p>Safety helmet when pruning to a height exceeding 2.5m</p>	<p>Pruning at a lower height is done from a certain angle, which implies that the worker is not standing under the falling branch. When pruning at higher pruning heights the angle from which the worker is working is reduced, and also the impact of a falling branch will be more severe.</p>

	Dust and splinters may hurt the eyes when pruning to a certain height	Goggles when pruning from 5m and higher	Goggles	Pruning at a lower height is done from a certain angle, which implies that the worker is not standing under the branch that is pruned. Splinters and dust will therefore not hurt the eyes. When pruning at higher pruning heights the angle from which the worker is working is reduced, and as a consequence dust and splinters might hurt the eyes.
Chemical weeding	People that work with chemicals may get the chemicals on their skin or on their own clothes.	Cotton overall buttoned to the neck and wrist for all applicators of weedicides and pesticides except Mankar operators. Mankar operators must wear long sleeves, long pants, socks, boots and gloves (optional: goggles and nose mask).	To comply with those specified for the particular substance and application technique	



	People that work with chemicals may inhale the toxic agents.	Face mask for all applicators of chemicals, except Mankar operators.		
	People mixing the chemicals may get the chemicals on their hands.	People mixing chemicals must wear impermeable gloves, in addition to PPE for chemical operators.		
Fire fighting	Fire fighters are exposed to heat radiation and sparks Fire fighters may slip-off during fire fighting	Fire fighters must wear heat resistant clothing and hand gloves (cotton). Head mask (Balaclava) and goggle ⁴ Safety boots		
	Overexertion that can results in injury	Rest period for fire fighters		
	Fire fighters may be dehydrated	Fire fighters must drink clean water frequently to replace water loss due to dehydration.		
Manual road works (cracking of rocks)	People working with tools (e.g. pick axes) may hurt themselves and others.	Sufficient spacing between workers (minimum 6m)		
	People may drop heavy materials such as rocks on their feet.	Safety shoes		



	Road material (e.g. rocks) might hurt hands	Gloves		
	Flying rock particles might hurt the eyes	Goggles		
Workshop	People working in the workshop may drop heavy materials on their feet.	Safety shoes		
	People working in the workshop may have to work with harmful liquids that can damage clothes or skin	Rubber gloves		
	People working in the workshop may get flying particles in their eyes while working with the portable grinding machine or other equipment	Eye and face protection (Face shields/Safety glasses)		
	People welding may get burned while welding	Welding apron, industrial gloves		
	People working with fuel and lubricants may be hurt by frequent exposure to these substances.	Training		
	People working in the workshop may damage their hands while working with machines and repairing equipment	Gloves		



	People working in the workshop may suffer a hearing impairment after working with noisy engines and the portable grinding machine.	Ear protection (Earmuff/earplugs)		
	People working in the workshop may be exposed to smoke	Nose Mask		
Electricals	People/person working on electricity/electricals may be exposed to electrical shock, falling, burning	Insulated gloves, sturdy leather shoe, helmet, eye protection (safety glasses), safety belt, overall		
Construction works (masonry/carpentry)	People may slip and/or drop heavy material on their feet.	Safety shoes		
	People may hurt their hands by sharp objects or tools.	Gloves		
	People may be exposed to potentially falling objects	Safety helmet		
	People may suffer a hearing impairment after working with noisy engines	Ear protection (Earmuff/earplugs)		
	Flying particles from construction materials can hurt the eyes.	Eye protection (goggles)		
Nursery	People working in the nursery may be exposed to toxins sprayed to kill weeds / insects	Spraying time schedule		



	People working in the nursery may hurt their feet wearing improper footwear	Wellington boots		
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*** General plantation work requires wellington boots as PPE



Personal Protection equipment

Personnel employed at Form Ghana receive personal protection equipment (PPE) according to their task. For applicators of chemicals, the recommended PPE is based on the recommendations in the MS Data Sheets for the applied chemicals. The use of this equipment on the job is compulsory. All senior personnel are responsible for the appropriate use of safety equipment.

Personnel receives the PPE when the work is to be done, and renewal of the PPE is done when needed. The state of the equipment has to be observed by senior personnel, and it is their responsibility that only PPE is issued that is in a good condition.

Intermediate replacement can only take place when presenting the old equipment. In case of loss the employee will compensate the company (pay for the equipment). Issuance is registered by the storekeeper.

In the case of Wellington boots, the following conditions apply:

- Each employee will be issued with one pair of boots, twice per year.
- If the boots are damaged or lost before the next pair is issued, the employee will be responsible to replace the boots.
- No employee will be allowed to be at the workplace without a serviceable pair of boots.
- After the first pair issued, contract teams will receive a new pair of boots after each 6 months worked.

Training & Sensitization

The Plantation Manager of Form Ghana Ltd. is responsible for the instruction of each new employee on the use and care of the PPE issued to him/her (see P 11: training of personnel). Training is refreshed annually. The plantation manager has the right to delegate part of his training and sensitization work on PPE's to workers' delegates.

The Plantation Manager is also responsible for the provision of the equipment to the new employee and for the correct use of the equipment. He/she will regularly check if workers wear the equipment issued to them and is entitled to sanction workers that do not wear the equipment issued to them. The sanctions are stipulated in the internal regulations.

The foremen/supervisors are responsible to ensure that the people they lead have and use the proper equipment.



Protocol 13 Monitoring

6 Water quality

Water quality is monitored by Form Ghana to assess the effect of the various stages of plantation establishment on the rivers and streams in the plantation. The quality of the water is expected to improve due to the restoration of buffer zones and reduction of erosion on the plantation surface. As part of Form Ghana's commitment towards FSC™ (FSC-C044035), Form Ghana should be able to prove that water quality is not degrading due to plantation establishment FSC™ (FSC-C044035) Requirement 10.6.3: Plantation activities shall not degrade water quality, and impact negatively on local hydrology).

Form Ghana will measure water quality 2 times a year: once during the dry season, once in the rainy season (after rainfall). This frequency is chosen because rainfall has a strong effect on water characteristics because of influx of sediment. Measurements on one catchment should be completed in 1 day to make sure differences between water entering and water exiting the plantation are not due to differences between days.

The measurements are done at strategic points where water enters the plantation and at the point where it exits plantation boundaries again, to assess the changes in water quality on plantation site only. Water monitoring is done in the morning and GPS handhelds are used to mark the sampling locations.

The following parameters are measured:

- pH
- Temperature
- Total Dissolved Solids (TDS)
- Conductivity
- Turbidity

These are measured with a multi-parameter meter (pH, temperature, TDS and conductivity) and a turbidity tube.

Two members of the Form Ghana monitoring team will do the measurements at a set number of locations in the plantation. At each location, they will take a series of 6 measurements with the multi-parameter probe and the turbidity tube by measuring every 5 min for 30 min. Measurements are completed 1 day in for each catchment, meaning one day for Asubima, one day for Afrensu-Brohuma and one day for Tain.

The average values of the series of measurements are calculated. Averages can be compared for upstream and downstream results and over time. Results in the dry season and in the wet season can be compared but should not be mixed.

In addition to this system, samples will be analysed in the lab for their chemical composition, to assess relevant components such as Glyphosate, which is used for weed control.

Water consumption monitoring

Quarterly report on quantity of water consumption, borehole water quality and height of water table (Ghana Water Resource Authority)

Pump ID	Location	Capacity	Total volume pumped (per year)	Action time
Ground FOS	Site Berekum	2Hp	m3	Daily
Ground FOS	BII Berekum	1 Hps	m3	Daily
Ground FOS	B46 Berekum	1.5Hp	m3	
Xtra	Site Akumadan	2Hp	m3	Daily
Saer	Site irrigation Akumadan	30Hp	m3	Daily

Borehole water quality and water table height

- Bore hole water quality (see water quality) (quarterly; January, April, July, October)
- Water table (quarterly; January, April, July, October) Read water table depth at meter

Protocol 14 Nursery Management and Propagation

1. Teak production

1.1 Stump production

The land is prepared for stump beds by ploughing. If needed, either a mixture of cow dung and chicken manure (3:1) (1m³ per 200m²) or artificial fertilizer can be applied. Seed beds of 1m x 10m are constructed 20cm above ground level with a slight incline to facilitate drainage. The distance between the sowing lines is 10cm. The beds are sprayed with a Glyphosate-based herbicide to combat weeds. Compost, manure or fertilizer should be added to replenish the soil nutrients throughout the growing season.

After 3 years of stump production, the beds should be left to ‘rest’ for one or more seasons to replenish the soil nutrients. In the fallow season, a leguminous cover crop or green manure (e.g. cow peas during) should be planted on the beds.



Stump bed preparation



Stump production area

1. Sowing and germination

Only fresh seed from the current harvesting year is used. Seeds are soaked in water for at least two full days before planting. The seeds are pre-treated with insecticide.

Seeds are sown along sowing lines of 10m length and 10cm distance (at 15cm x 7cm), or in a low density of ca. 100 per m². This balanced density reduces competition for water, light and nutrients and improves seedling growth. Teak seeds are sown directly in the prepared bed in the beginning of July. The seeds are pushed slightly into the ground, so that they are stuck but not covered. The seeds are only slightly covered with fine soil. The bottom of the seed should not be deeper than 10 mm.



Sowing seeds along lines



Germinating seeds

Seeds germinate between 15-105 days after sowing.

During the germination period the beds are irrigated. During the seed germination and seedling establishment period, watering is essential. In dry-spell periods, seed beds must be watered to maintain both soil moisture and air humidity. The watering is checked daily, to ensure sufficient water and to avoid over watering, which can lead to diseases.

In November and December, the seedlings are watered according to a watering schedule. This schedule is variable depending on the weather conditions. Watering is progressively decreased to 2 times a week and finally stopped completely from mid-February to stump harvest in April for hardening off. The exact schedule is determined by the nursery supervisor, based on several factors such as sowing date, rains etc.

1. Seed germination beds

Remaining teak seeds are strewn on germination beds to provide seedlings for beating up in the nursery. This is done immediately in areas of low germination. The germination beds have raised edges to help contain moisture. They are located in full sun light because teak requires to be fully exposed to the sun for germination. The germination beds are watered daily. In a 10m² bed, 20kg seed can be broadcasted.

Young seedlings can be transplanted if germination success is not high enough or if seeds germinate irregularly. Transplanting is done in October-November, not in December or January. Watering before and after transplanting is crucial in this phase.



Germination beds



Germinated seeds

2. Weeding and maintenance

The stump beds are first weeded 3-4 weeks after sowing, when weeds hinder germination and growth. Weeding is done manually between the rows, loosening the compact soil. Stump beds are weeded on average six times before harvest. Weeds should never be allowed to compete with the teak seedlings. Sometimes - after heavy rainfall - beds have to be slightly reconstructed.

Termite attacks are handled with insecticides that have been approved by FSCTM (FSC-C044035). The stump production site should be free of debris and other flammable material at all times to prevent fires and insect attacks. Beds are sprayed several times with fungicides,



approved by FSC™ (FSC-C044035), against damping off disease. Beds are inspected daily to see if any disease is present. If found the disease is treated immediately.

Leaf pruning is done as soon as the leaves of dominant plants cover smaller plants and areas that are still germinating.

3. Monitoring seedling development

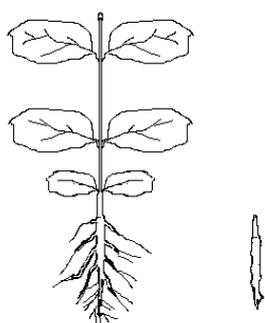
The number of teak seedlings is monitored 5 times a year by the monitoring supervisor / manager in week 6, 16 and 40 after sowing. Monitoring plots are established in the stump beds (1m²/1000m²).

Germination beds are checked daily for pests, weeds and water availability.

4. Stump harvesting

Stumps are harvested after 8-9 months (April). Beds are harvested systematically. This means whole beds are harvested and then prepared for resowing. The seedlings are pulled out by hand. In case the soil is dry and hard, a pick can be used to loosen the soil before pulling out the seedlings. Care should be taken not to damage the roots. Seedlings should be cut into stumps immediately, not allowing for the leaves to dry out before trimming them.

The stem is cut off 3-5cm above the root collar, leaving one or two pairs of buds for sprouting. Lateral roots are all cut off close to the taproot. The main taproot is cut off at a length of ca. 15cm with a sharp cutlass, secateurs or pruning knife.



Seedling and stump



Stumps

Stumps can be stored in sacks in a cool place for a maximum of 2 weeks, if watered daily. The stumps should be covered with palm leaves or grasses to protect them from direct sunlight. Water is sprayed on the stumps during hot and dry periods. Out-going stock of the stump production is registered. Provenance is recorded on every sack and provenances are kept together during planting.



Digging out seedlings



Preparing stumps

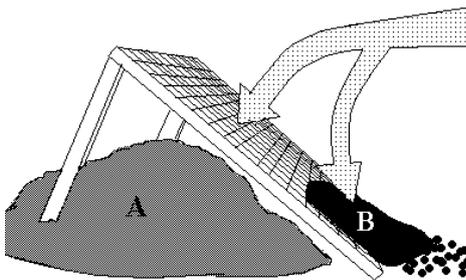
2. Production of indigenous seedlings

Indigenous seedlings are produced in polybags of 10cm x 16cm or other, depending on the species, with 8-10 aeration holes for drainage. A polybag with seedling weighs ca. 600gr.

1. Potting mixture

The potting mixture consists of 75% loamy topsoil or black soil, 20% sand, 4% decomposed cow manure and 1% chicken manure. A good potting mixture consists of both coarse and fine particles to provide adequate but not excessive air spaces. It contains enough organic matter and nutrients and has a pH between 4.5 and 6.5.

Black soil or loamy topsoil should be sieved before use. The different components are mixed with a concrete mixer. The substrate-components are obtained in December/January for the following year and stored in the soil storage shed.



Sieving soil

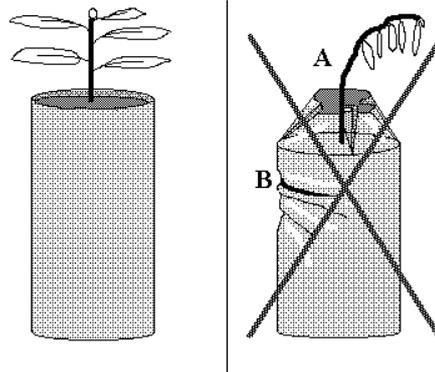


Mixing soil components

The poly bags must be filled completely in order to keep the pot open for watering. 1000 poly bags can be filled by hand per man-day. The soil must be moistened if dry before filling the polybag. The pots are placed tightly in beds with a wooden frame to support each other.



Filling polybags



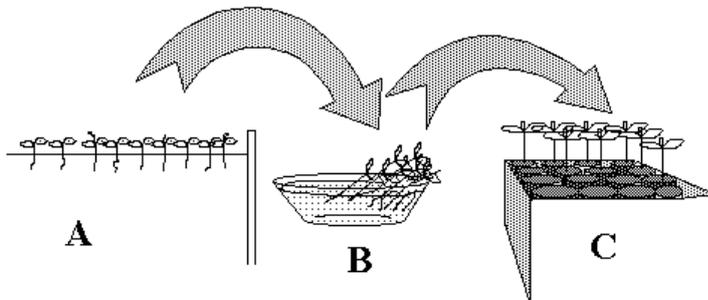
Filling instructions

2. Germination beds

Only fresh seed from the current harvesting year is used. Pre-treatment of the seeds with insecticide is done if needed. Seeds with an average germination rate $<80\%$ should not be sown in polybags but in germination beds. After broadcasting the seeds, the soil is moistened and covered with palm leaves. Germinated small plants are pricked out when the tap root emerges but before secondary roots are formed, and carefully transplanted into polybags.

The seed beds should be watered the night and one hour before pricking them out, so that water penetrates to the bottom of the seedbed. On hot and sunny days, pricking out should be done in the early morning or/and late afternoon.

Pricking out is done with the help of a dibber. Seedlings are lifted by their cotyledons or lower leaves, not by the stem. Any seedling that appears sick or deformed should be discarded. As soon as a little plant is taken out it is put in a bucket of water, to prevent drying during the process. Transplanted seedlings should be kept in a shaded

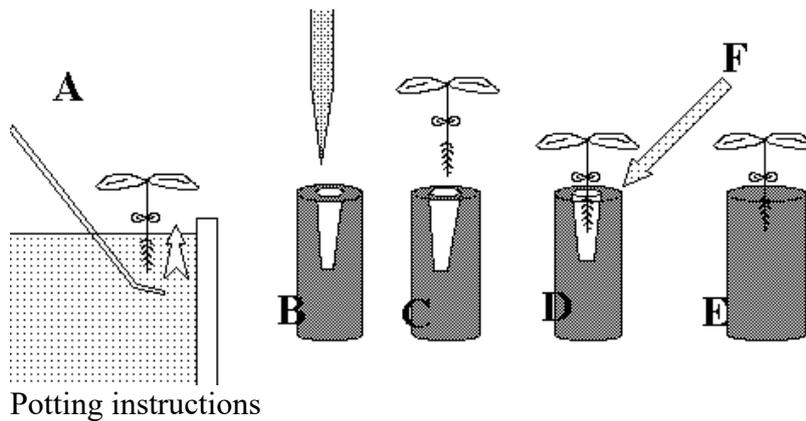


Pricking out



Germs in bucket

A sufficiently deep hole is made in the poly bags with a stick. Seedlings are planted in the middle of the poly bags. The soil around the roots is packed carefully so that no air pockets are left around the roots. Seedlings should be lifted upwards after placing them in the hole, to straighten out roots; roots should not curl upwards. Long and branched roots are clipped to ensure they are pointing downwards. Transplanted seedlings should be watered immediately and again when they wilt.



Transplanting seedlings

3. Irrigation

Plants should be watered when needed, based on turgidity of the leaves. If watering is necessary it should be done in the early morning or late afternoon. Water should be directed to the soil, not to the leaves. The water should properly penetrate the soil.

If the soil is covered by moss or algae, seedlings are overwatered. Overwatering weakens plants, making them more susceptible to fungus attacks and other diseases. Watering and shading should be reduced.

Four weeks before planting out, watering of the seedlings should be reduced. On the day before transporting and planting out, seedlings should be watered well. Seedlings are transported early in the morning or late in the afternoon to avoid drying out during transport.

4. Shade and hardening off

Pricked out seedlings in polybags require heavy shading for a period of 2-3 weeks (e.g. double shade nets with 60% shade intensity, or palm fronds). Depending on the species, shading is then reduced by 30%. In week 5, shade nets are removed completely and watering is reduced for hardening-off.



Seedlings under shade nets



Hardening-off, shade nets are removed

5. Weeding & root pruning

Weeding starts two weeks after pricking out. The polybags are weeded. Frequency depends on the intensity of weed growth.



Polybags are checked weekly after 5 weeks for extensive root growth and pruned if necessary. This must be checked every month.

Root pruning is part of the hardening-off process of the young seedling before planting.

The polypots are filled to the brim at all times to prevent the bags from folding at the top, which stops water from entering the polypot. If soil is taken out with weeding practices, it will be refilled. This is checked regularly.

Leaf pruning is done when plants shade out smaller plants of non-germinated pots. Plants are pruned when they grow bigger than twice the height of the poly-pot. Leaf-pruning of teak seedlings is done to open space for suppressed seedlings to grow and develop.

5. Packing and transportation

The plants are watered at least one day before transportation. Seedlings are best transported early morning or late afternoon, when it's cool outside. During transportation, the polybags are placed tightly in the trucks to keep them in place and prevent damage. When plants are transported over a long distance, the trailer should be covered.

Protocol 15 Technical Performance in the Plantation

Terrain preparation

Terrain preparation before planting consists of demarcation, land clearing, construction of baselines and pegging. The process takes place between January and April.

Demarcation and terrain inventory

The terrain is divided in 128ha compartments by the Forestry Commission. The forestry map is digitalized, and the corners of the compartments are marked. The coordinates of these corners are uploaded on a GPS handheld device. With this device, quadrant poles are placed on the corners of the compartments in the field. Quadrant poles are 2.5m high and the top is painted red.

During demarcation, the terrain is inventoried. Soil depth is determined using a soil auger. Characteristics of the terrain are recorded, such as remnant forest, streams, slope, vegetation, rocky outcrops, protected tree species, swamps and teak plantations. These features are mapped with the GPS.

Terrain preparation

The land is cleared, weeded and sprayed with Glyphosate-based herbicides and/or other weedicides that are not on the FSC™ (FSC-C044035) list of highly hazardous chemicals, using Knapsack/Mankar sprayers. The approach depends on former land use, teak plantation, savannah vegetation or farmland, as is outlined below.

Baselines and pegging

The 128 ha compartments are divided in two 64 ha blocks. Blocks are divided into 1 ha units, see figure 2.1. Each 1 ha unit is marked by corner poles with a white top. This means that at the corner of each block, both a red and a white pole are placed. In between the hectare poles are pegs at 3 m intervals to indicate the place where trees are to be planted. The border lines of each 1 ha unit are called “base lines”.

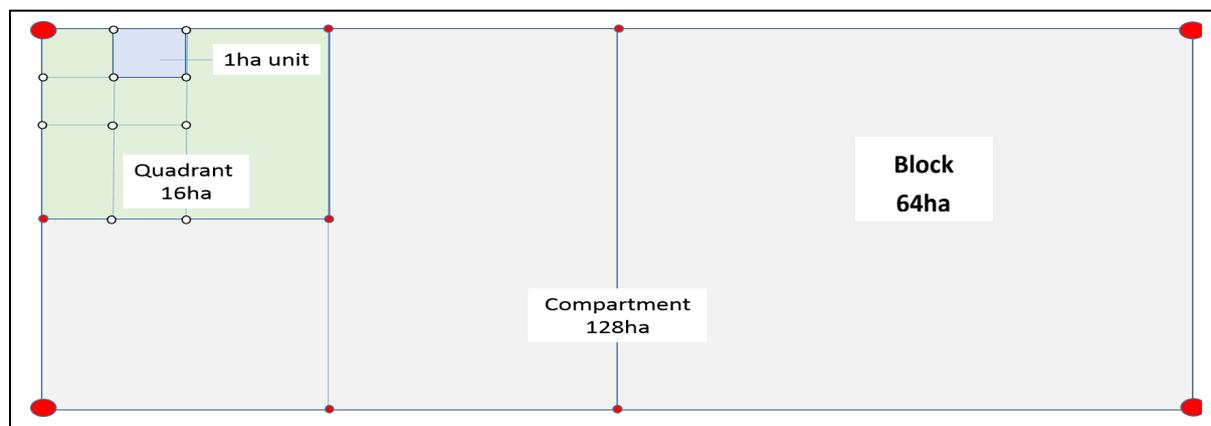


Figure 2.1. Division of terrain in compartment (grey), blocks and 1 ha units (blue). The red dots represent the quadrant poles. Large red dots indicate the quadrant poles at the



compartment corners, placed with GPS during demarcation. White dots are the 1ha unit corner poles.

Starting from one of the compartment corners poles that were placed during demarcation, a 100 m long rope is laid out in the direction of the next corner pole, using a compass. The rope has knots tied at 3 m intervals. At each knot, a peg is placed in the ground. A hectare pole is placed at the end of the rope to demarcate each 1 ha unit. This is repeated until the next compartment corner is reached. Once the outlines of the 128 ha compartments are pegged, the new quadrant poles can serve as the starting point for the baselines of the other 1ha units.

Due to irregular terrain and measurement inaccuracy the compartment corner is likely not to coincide with the end of the rope. Regardless of this measuring mistake, the new baseline will start from the next corner pole. This way the ‘mistake’ is limited to the end of one compartment and cannot increase over multiple compartments.

Roads of 4 m wide are constructed around each 64 Ha block. Therefore, the first peg is placed two meters from the corner pole.

Protocol 16 Storage of fuel lubricants and toxins

Protocol purpose

This protocol describes procedures for the purchase, storage and distribution of all fuels and chemicals used by Form Ghana.

Storage of fuels and lubricants

The filling station is located in a shed that is well aired, has a roof and an impermeable floor and thresholds that are high enough to contain the stored volume. The filling station is equipped with fire extinguishers and a sand bucket and shovel.

Diesel is stored in the tanker-trailer, parked in the filling station. The filling station is locked afterhours. Petrol, mixed petrol (for the chainsaws) and lubricants are stored in the lockable compartment of the filling station. Petrol is stored in drums or containers, mixed petrol in canisters.

The brand, type, volume and source of all diesel, petrol and lubricants are registered. The fuel clerk registers purchased volumes and usage.

Storage of chemicals

Chemicals are stored separately from oils, fuels and lubricants in a secured and watertight place. In case the packaging is damaged, the product should not drain off in the environment. The storage room is locked and opened only by the storekeeper. Only authorised personnel may have access to the chemical products. A sheet indicating how to mix the chemicals, as well as appropriate PPE and measuring equipment is kept in the storage place.

Persons taking chemicals out of the storage room have to sign off in the register. The brand, type, volume and source of all chemicals are registered. The storekeeper registers purchased volumes and usage.

A copy of the Material Safety Data Sheet (MSDS) of each product is kept with the product at stores as well as at the clinic.

Transport of fuels and lubricants

Fuel is collected at the order of Form Ghana management only. Lubricants are collected in drums or in plastic containers. Petrol is collected in drums and loaded on a pick-up. Diesel is collected with the tanker-trailer at the fuel station in Akumadan. Speed limit for vehicles transporting fuel is 20km/hr.

For transportation of diesel, the fire extinguisher is hooked off the tanker and placed in the vehicle. The following is checked:

- The vehicle is operational (brakes, coolant, lights etc.)



- The tanker-trailer is operational (tyres, warning sign rear)?
- The tanker-trailer is hooked correctly to the vehicle
- The tanker top and tap are closed
- The fire extinguisher is present and operational

The following prohibitions apply:

- No passengers are allowed on top of the tanker-trailer
- Smoking is prohibited near the tanker-trailer and/or while driving the vehicle

Firefighting procedures for transport and storage of fuels are specified in Protocol 21: Fire prevention and fire-fighting.

Environmental protection / spills

In case of a minor leakage of fuels, lubricants or chemicals the spillage is soaked up with sawdust until the floor is dry. The saturated sawdust is disposed off into the refuse container.

In case of a major leakage of diesel from the tanker trailer, the diesel is removed with hand pumps and stored in empty drums. The remaining diesel is soaked up with sawdust and disposed off into the refuse container.



Protocol 24 Road construction and maintenance

Protocol purpose

Form Ghana makes use of their road network for different purposes:

1. For the transport of workers and equipment to the field and back
2. For the rapid movement of the firefighting units to battle wildfires within and around the plantation premises
3. For the efficient evacuation of harvested timber

Gravel deposits

Laterite gravel is used for road construction and maintenance. Deposits of laterite gravel in the area are identified and recorded. Gravel deposits are selected by Form Ghana management based on their importance related to the location, quantity and quality. The selected sites are cleared. Topsoil is shoved aside for future use.

Demarcation of New Road Networks

The centreline of the road is marked and pegged. This is done in a sensible way, taking into account all the characteristics of the landscape and working with the terrain. The road is then constructed two meters on each side of the pegged line.

All the vegetation is removed from the pegged area, including shrubs, plantains, fruit trees and other bush. Stumps and large roots are removed. Ant hills and termite mounts are removed to ground level.

Preparing the roads in full dry season means working with very dry and loose material once cut by the grader blade. The created profile can then not be compacted enough and will be spread out again by the passing of vehicles. It is therefore strongly advised to work on a moist road, just after **step 1: Scraping and levelling** and before **step 2: profile and drainage**.

Road construction

The TLB or motor or towed grader is used to make the road profile if the soil is flat and soft; sandy or clayey, without deep gravelled laterite. A bulldozer can be used if the terrain is rough (rocky and compacted laterite) for clearing, grubbing, and right-of-way timber removal.

The roads are constructed following steps. Each step is 1 performed in run of the machine, go and return. The steps are described below.

Step 1. Scraping and levelling

The roots of the weeded vegetation are scraped off and shoved aside with a TLB or a motor or towed grader. The ground is levelled over the entire width of the road. This is done in two runs: go and return. One person is in front of the machine to check for stumps or rocks.

Position of the blade:

- Tilt: 0 ° (flat),
- Horizontal angle: 60-75°

Step 2: Profiling

Drainage channels, or side drains, are constructed on each side of the road, with a TLB or grader (figure 1). They are 20-30cm deep, measured from the top of the road deck, and 50cm wide. The soil from the drainage channels is brought to the middle of the road.

Position of the blade:

- Tilt: Max. 15°
- Horizontal angle: 60-75°
- The right-side edge of the blade must stick out of the alignment between the rear tractor tire and the rear grader tire

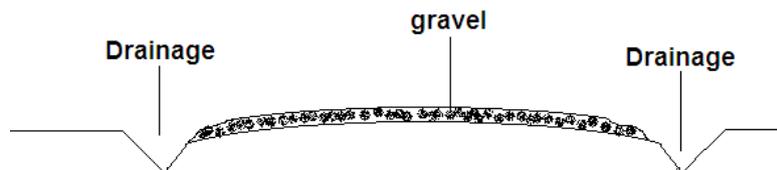


Figure 1. Road construction with drainage.

Step 3: Finishing profile

After construction of the drainage channels, the soil from the channels is levelled with a grader. Grader levels off in a convex profile the soil brought up towards the middle of the road from the gutters, thus completing the surface of the road.

If the original soil of the deck or the soil dug up from the gutters consists of material that is susceptible to erosion (loose sand) or muddy when wet, a layer of laterite with gravel and at least 10-15 cm thick, may be applied on the deck before finishing the profile to stabilize the deck.

Step 4: Drainage

Mitre drains serve to lead rainwater off the road and prevent erosion of the road deck. The number of mitre drains is related to the length and/or steepness of the slope. Mitre drains shall never lead directly into running streams in order not to increase turbidity, harming aquatic life and degrading quality for human use.

Mitre drains are constructed by the motor grader with outlets opening done manually. However, in case of towed grader for road works, drains are made manually because the towed trailer is not suitable for entering the bush, farm or plantation and reversing. The positions of the mitre



drains are marked by pegging and then dug with pick axes and shovels. Roots are cut with a cutlass. The mitre drains are as deep as the side drains and lead into the undergrowth under an angle of 45° of the road, taken downhill.

If there is a bank uphill of the road, it is not possible to make a mitre drain. In this case, a cross drain is constructed across the road in an oblique angle towards the gutter on the downhill side.

Cross drains are dug at an angle and not straight across the road in order to spare the vehicles passing on the road, and reduce vehicle maintenance. For a road of 4m width, a cross drain is built from one side of the road to a point 11m away on the other side of the road, using an 11m long rope.

Road maintenance

Road Surface

Surface maintenance of roads are done with motor or towed grader. The scheduling for blading varies and depends on the climate, traffic as well as required level of serviceability. Regravelling is also done with the use of TLB, grader and Tipper truck depending on the traffic and maintenance programme.

Potholes and drains

During the rainy season, potholes are filled according to the following procedure. First, the rainwater is drained from them, then the wet mud is removed completely and then the hole is filled with dry laterite gravel or crushed anthill. This is done manually or with a TLB. Boulders are not used to fill the holes because they will deepen the hole when vehicles drive over them.

All side drains and mitre drains are cleared from silt and debris, so that water can be drained from the road without obstructions.

Profile and gutters

Whenever a stretch of road shows signs of wear by hollow tracks caused by passing vehicles or furrows caused by erosion, the towed grader smooths off the surface. It starts with the blade on the right side in the drainage channel, under a horizontal angle of 60-75° with a tilt of 15°, clearing it down to its original depth and depositing the silt or laterite from the gutter back on the road deck, restoring the original profile.

In the peak of the rainy season, the roads are not touched as this causes more damage than good.

Road side vegetation

All the vegetation hanging over the side drains or casting shade on the road is removed because it reduces visibility in bends of the road and it prevents the road deck to dry in the sun.

Bridge construction

Bridges are allowed to cross the buffer zone along the water courses but should not obstruct the natural water course and have a minimum impact on the vegetation along the water (Figures 2 and 3).

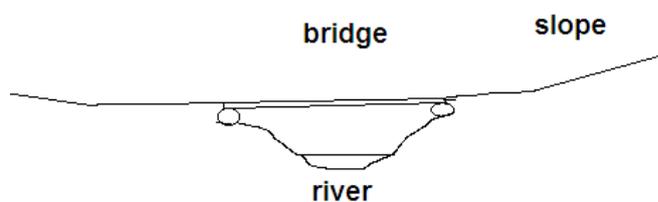


Figure 2. Bridge construction on slopes

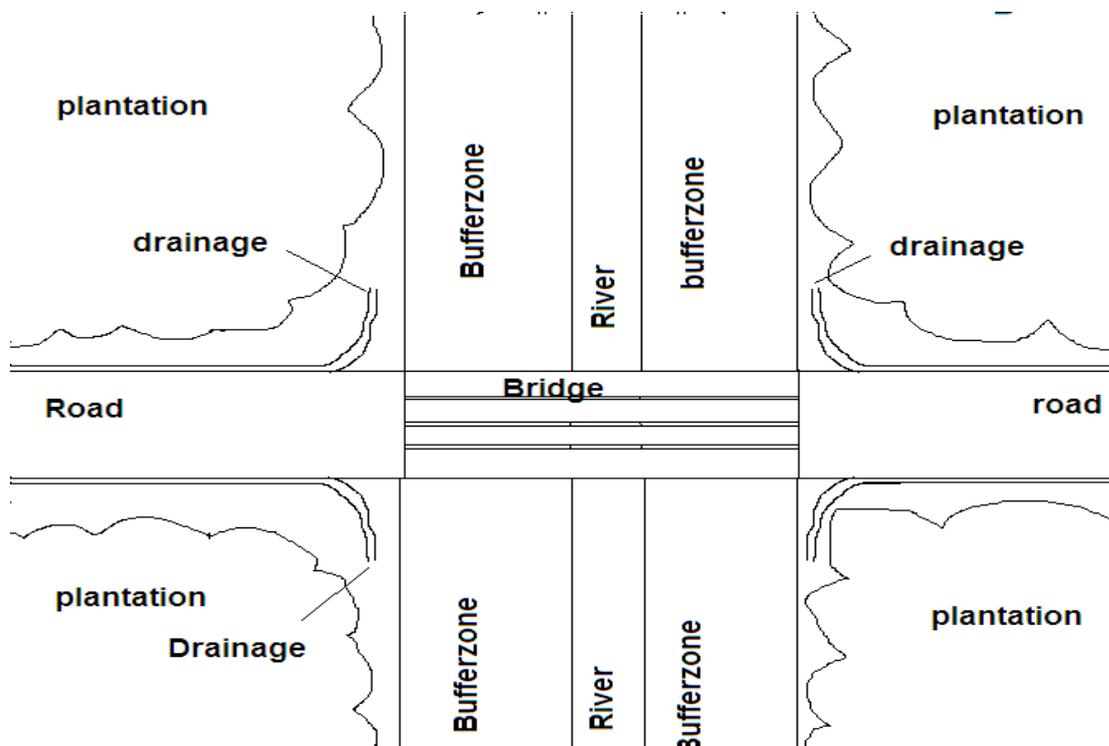


Figure 3. Bridge construction in bufferzone.

Road signs

Signs indicating bridges and roads are placed at areas where bridges are located. Signs indicating sharp curves and sandy areas are also placed 100m away from sharp curves and sandy areas to guide first time users of the roads.



Protocol 21 Bushfire prevention and firefighting

Protocol purpose

The plantations of Form Ghana are situated in a landscape with savannah characteristics. Grass species such as Elephant grass, Guinea grass and Spear grass, that grow up to 5m tall, cover most of the area. This vast area of combustible material easily catches fire in the dry season (November-March), either naturally or human-induced. Due to a strong desert wind from the North (harmattan), these fires can spread extremely fast. Fire-fighting and fire prevention are therefore a major part of Form Ghana's operations. Proper instructions and appropriate firefighting tools are crucial to prevent the plantations from burning and to stop bush fires before they reach the plantations.

Fire prevention

Prevention of fires entering the plantation is done in 3 ways: educating people, monitoring activities and creating fire breaks. The procedures are described below.

Education

Risks of fire in the plantation are discussed with local communities and intercroppers through the following media:

- Stakeholders meetings
- Intercroppers meetings
- Visits to fringe communities and neighbours

Monitoring

Form Ghana security guards monitor all activities that take place in and around the plantation. Rapid response fire teams are stationed at strategic areas within the plantation and one back-up rapid response team patrols the plantation and guards look out over the terrain from the permanently manned watch towers. In addition to the manned towers a camera system has been installed to monitor and send signal to the operations room on site for further action. They enforce a no-fire rule in plantation, identify high risk areas and notify management in case of fire outbreaks. All observed fires are recorded and analysed as described in Protocol 13: Monitoring, and in the monitoring plan.

Fire breaks

The purpose of firebreaks is to stop or slow down fires. In addition to natural firebreaks such as rivers and indigenous forest, three types of man-made firebreaks are constructed: defensive, external and internal fire breaks.



Defensive fire breaks:

In high risk areas, access roads and fire breaks are constructed to ensure access and slow fires that threaten the plantations. In case of fires, these zones are used to facilitate back burns.

External firebreak:

A 40-meter-wide belt is constructed around all planted areas/external boundaries of planted areas. This belt is cleared of any combustible material through weeding and clearing, early burning and ploughed in some cases. Chemical weeding is done throughout the year to keep the external breaks clean.

Internal firebreaks:

Under planted trees - There are different internal fire belts constructed as part of fuel load management strategies. A 30-meter belt is constructed along some plantation roads to serve as a blocking line to facilitate back burns of fires which could not be attacked directly. Again a 10-meter belt is constructed along all plantation roads, 5 meters on each side of the road. This area is cleared of all combustible material except planted trees by weeding and clearing.

Fire fighting the plantation

Once a fire is close to or inside the plantation, a number of measures are in place to fight it.

Fire Detection Systems

There are two fire detection system (camera detection and manned towers) currently in Tain II plantations. These systems work concurrently.

Electronic detection system

Three (3) electronic fire towers are stationed at different strategic locations (B44, Labour Camp and A20) in the plantation to serve the purposes of weather reporting, fire detection and dispatch of fire teams. Towers with the cameras detect fires and send signals to the operation room. The operations room reports the fire location to the fire boss for further action. *In case the Fire Boss is not reached, the operators will dispatch the Rapid Response Team (RRT) on duty.* First arrival team at the fire must report back to the operations room.

Manned Fire Towers

The security guards in the fire towers detect smoke or fire and report size and compass direction to the operations room via radio communication. In the operations room the location of the fire can be determined at a very exact level on a fire map (annex 1) if all fire-towers report their directions.

Training

All Form Ghana employees that are involved with fire-fighting are trained in fire-fighting practices before the start of the dry season. Training is done by Form Ghana Management and supervisors. The training includes the procedure in case of fire, risks and safety and use of



equipment. The Berekum Fire Service Department provides an annual training in the use of fire extinguishers.

Fire teams and equipment

Fire teams consist:

- A fire boss who coordinates all the activities of the fire teams.
- Rapid response teams who are the first to respond to fires.
- Flank teams who support the rapid response teams in firefighting.
- There are other support staff who assist the fire teams.

There are 5 rapid response teams; 3 teams on duty and 2 on stand-by. Each team consists of 7 people with a Bakkie-Sakkie (pick-up with water tank and hose) and 4 Knapsack sprayers. The teams work from 10:00 to 22:00 from Sunday to Saturday. Each team patrol a different part of the plantation.

In addition to the RRTs there are three flank teams; 1 team on duty and 2 on stand-by. Each team consists of 33 people including team leader and driver with a set of equipment. All the security guards on duty are also part of the team. Fire-team compositions are finalized before the start of the dry season.

Equipment

4 fire-fighting units (pick up with Bakkie-Sakkie)

3 trucks for the transportation of workers (flank teams)

2 1 Fireboxes with flashlights, fire map, list of emergency numbers, first aid box, firelighters and other firefighting tools at the stores.

Water supply system

There are two water supply systems: Static water points and mobile water supply system.

The static water points are designated locations in the plantations (Annex 1) where water tankers can refill.

The mobile water supply consists of:

- 4 pickups with 400 litre capacity each
- 2 trucks (Tipper and Rhino) with 6000-liter capacity each
- 1 Canter truck with 3000-liter capacity
- Water knapsacks with 20-liter capacity

Each of the fire units has a checklist which is checked daily by the fire teams.



Communication

There is a Motorola radio system present in all the fire towers (fixed station), at site and in all vehicles. Hand-held Motorola's are carried by key personnel. In case of fire, the fire towers alert the operations room. The operations room reports the fire location to the fire boss for further action. *In case the Fire Boss is not reached, the operators will dispatch the RRT on duty.* First arrival team at the fire must report back to the operations room.

Fire fighting at permanent site

Fire extinguishers are installed at designated locations at permanent site. Fire is extinguished by trained Form Ghana personnel. If a fire cannot be extinguished by Form Ghana personnel, the Fire Brigade in Berekum must be warned. For each fire, the Chief Security makes an accident report and transmits this to the management.

Fire fighting in the filling station

In case of fire, alarm is raised by the first person to discover it by ringing the kitchen bell. Security personnel, trained in fire-fighting, is alarmed. Power to the fuel pump should be switched off immediately. The fuel clerk and all workshop personnel are also trained to use the fire-extinguisher.

Fire fighters use the fire-extinguishers to extinguish the fire. Untrained personnel use shovels to spread sand over the fire.

If the fire is larger than 1m², only trained fire fighters are allowed to approach the fire. All other persons remain at a safe distance from the fire. The nurse and a pick-up with driver are stand-by for treatment and/or transportation of injured personnel to the hospital.



Protocol 23 First aid envenomation and rabies

Protocol purpose

There is a serious risk of encountering venomous snakes, scorpions and centipedes while working in the nursery and in the plantation areas. Rabid animals also form a serious threat to the workers. People may be bitten or stung by either venomous or rabid animals, causing serious or less serious damage to their health.

Form Ghana has several measures in place to minimize this risk. This protocol describes the preventative measures as well as procedures in case of an emergency. The venomous and rabid animals that can be encountered at Form Ghana are listed and described below.

For the first aid and for the extended medical treatment it is of utmost importance that the animal having caused the envenomation is identified as accurately as possible. Antivenin should only be administered by a medical officer as the physical reactions to the antivenin may be very violent and even life-threatening.

Emergency procedures

The following procedure is followed if a person has been **bitten or stung by a venomous or rabid animal**:

1. A foreman and a first-aider are immediately informed.
2. The first-aider stabilises the victim, following the instructions in this protocol.
3. The incident is reported to the nurse. He/she arranges transportation to the hospital. It has to be ascertained that an artificial respirator is available.
4. The nurse informs management of the situation.
5. The victim is transported to clinic or hospital. A first-aider accompanies the victim during the trip to stabilize, monitor and soothe the victim and put his/her mind at ease.
6. The first aider informs the medical personnel exactly about the circumstances of the incident and the physical and mental symptoms of the victim.

Envenomation and bite incidents are administered according to the first aid protocol (Protocol 8).

Every year, a training in first aid with envenomation by snakes and insects is given to all permanent workers.

A person with a snake bite must be taken to hospital immediately and should not be kept at the clinic or allowed to proceed home.

The following procedure is followed if a person has had **venom from a spitting cobra in the eye**.⁵

1. Expect severe local pain to occur instantly. The eye will probably begin to water and there may be ulceration of the cornea (figure 1).
2. Treat the same as for a chemical injury to the eyes: irrigate the eye(s) with generous volumes of fluid for at least 10 minutes. The types of fluids that are acceptable include CLEAN water, milk, and even urine.
3. Reassure the patient. Fear can simply make things worse and cause the patient to panic.
4. Provide painkillers to ease the pain. If you have paracetamol, this is a good painkiller to use.
5. See a doctor as soon as possible. The attacked eye or eyes will need to be examined to see if there is any damage, such as corneal abrasion. There may also be a need for the ingestion of antibiotics for a few days to calm any possible bacterial infection.

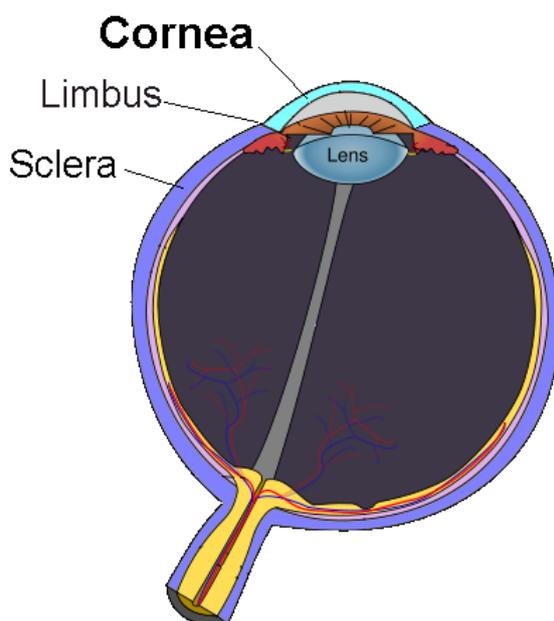


Figure 1. Schematic diagram of the human eye, showing the location of the Cornea. The Cornea is the transparent front part of the eye that covers the iris, pupil, and anterior chamber.

⁵ Source : <http://www.wikihow.com/Remove-Spitting-Cobra-Venom-from-Eyes>

Snakes

Both Berekum and Akumadan lie at the transition zones between evergreen forest, semi-deciduous forest and woodlands. In this zone, 13 venomous snake species can be identified that may be dangerous to humans (see table 1)

Table 1. Snake species that occur in Form Ghana plantations

Family	Species (common name)	Species (scientific name)
<i>Colubridae</i>	Boomslang	<i>Dispholidus typus</i>
	Slender Burrowing Asp	<i>Atractaspis aterrima</i>
	Dahomey Burrowing Asp	<i>Atractaspis dahomeyensis</i>
	Blanding’s Tree snake	<i>Toxicodryas blandingii</i>
	Herald snake	<i>Crotaphopeltis hotamboeia</i>
<i>Elapidae</i>	Western Green Mamba	<i>Dendroaspis viridis</i>
	Forest Cobra	<i>Naja melanoleuca</i>
	Black-necked Spitting Cobra	<i>Naja nigricollis</i>
<i>Viperidae</i>	Puff Adder	<i>Bitis arietans</i>
	Gaboon Viper	<i>Bitis gabonica</i>
	Western Bush Viper	<i>Atheris chlorechis</i>
	West African Carpet Viper	<i>Echis ocellatus</i>
	West African Night Adder	<i>Causus maculatus</i>

Preventative measures

In the plantation, all workers should wear adequate footwear (e.g. Wellingtons or safety boots) and always check the ground before sitting down. Security guards keeping chickens should install the chick coop away from their housing facility. People should not sleep on the bare ground, climb in trees with foliage, throw a club into a fruit tree for fruit collection or stick your hand in a hole in the ground. Workers should not go off on their own trying to hunt rats in anthills.

In the nursery site, the yard around the houses should be kept clean from scrub, leaf litter, piles of firewood, rubbish and termite mounds as the snakes are likely to house in them. Branches of trees and bushes should be cleared from the walls because snakes can use them as a means to enter the house. Also, the yard should be kept clean of rubbish, maize and food scraps to avoid mice and rats from colonizing the area. They can attract snakes as an easy source of food. Taps should not be left dripping because snakes may be attracted to the water.

When encountering a snake, move backwards slowly until you are out of its reach. Give the snake the chance to escape. Never tease a snake, play with it, or pick up a supposedly dead snake. Some snakes can sham death but bite when picked up. Snakes rarely attack without feeling threatened.



Identification

If a snake is longer than 2m it is likely to be venomous. Below are some characteristics of specific venomous snakes or snake types.

Boomslang

- Longer than 1.20m with a grey or green body (also: mamba or cobra)
- Inflating the front part of the body

Viper

- Conspicuous bars, rings or chevrons
- Fat-bodied, lying quietly when approached
- Head shaped like an ace of spades or a triangle
- Small, mostly green and/or yellow and black body with broad head and thin neck in trees or bushes (tree viper)
- Rectangular or triangular markings on the back and/or sides
- Forms C-shaped coils, rubbing its scales together and making a sizzling noise when approached (carpet viper)

Cobra

- Dark bars or blotches on the underside of its neck (cobra)
- Spreading the hood or flattening the neck and raising the front part of the body (also: night adder)
- Longer than 1.20m with a grey or green body (also: mamba or boomslang)

Burrowing asp

- Small black body with very small eyes and no obvious neck

Symptoms

General: Local pain, swelling and (progressing) discoloration, tenderness of regional lymph nodes (armpit or groin), an hour or more after the bite. Vipers' bites cause swelling. Mambas and cobras cause drooping eyelids, facial paralysis, and tightness across the chest.

First aid

Inform the nurse of the incident. The nurse will inform the nearest hospital with snake-bite experience of the arrival of the victim. In case of a cobra or mamba bite, artificial respiration may be necessary. This should be available at the hospital. The nurse will arrange immediate transport to that hospital. When transport is arranged, the nurse will inform management of the situation to enable monitoring of procedures and assistance and guidance where possible and needed.

A person with a snake bite must be taken to hospital immediately and should not be kept at the clinic or allowed to proceed home.

In the field, make the victim lay down immediately. Keep him/her quiet and reassure him/her that 95% of the snakebites are not fatal. Keep talking to the victim if you notice that his/her attention is fading. Immobilize the bitten limb with a pressure bandage and apply a splint (stick or board). Start the bandaging from the bite site upwards. Elevate the bitten limb. Administer a pain-killing drug (**No Aspirin**). Sucking out the wound can be useful, especially with bites from Cobras and Mambas, but only by someone who has no wound in his mouth.

Take notes of the circumstance of the incident: time, location, symptoms, snake characteristics, fang punctures. If the snake is dead, bring it to the Medical Officer for identification.

Don't make cuts. Some venoms have a strong anticoagulant effect and the wound may continue to bleed seriously. Don't apply a tourniquet or massage or rub the bite. Don't put ice on the bite. Don't use traditional medicine or give the victim alcoholic drinks.

Scorpions

No information can be found on scorpion species in Ghana, with the exception of the Emperor Scorpion (*Pandinus imperator*). The sting is painful and deserves medical treatment.

Preventative measures

In the plantation, all workers should wear adequate footwear (e.g. Wellingtons or safety boots) and always check the ground before sitting down. People should not sleep on the bare ground. Workers should not go off on their own trying to hunt rats in anthills.

Identification

The Giant Scorpion of West and Central Africa is black and up to 20cm long. The tail with sting is about 10cm long. The two large pincers are used to catch prey or predators and hold them while the scorpion stings. When moving, the pincers are bent and the tail is bent over its body with the sting forward, ready to strike.

Symptoms

The venom of the Giant scorpion consists of a neurotoxin to paralyse its prey and an enzyme inhibitor to pre-digest the tissues of its prey. This venom causes an immediate pain and swelling on the site, comparable to a bee's sting.

First Aid

To reduce the swelling and the pain, an ice pack can be placed on the site of the sting and antihistamine tablets should be administered.

Centipedes

The only venomous centipede in the region is the Giant Centipede (*Scolopendra subspinipes*). Bites from the Giant Centipede are very painful and can cause severe swelling, weakness or fever. Its venom is a histamine type, like bee venom. Some people are allergic to this poison and will need urgent attention after a bite in order not to suffer from an anaphylactic shock.

Preventative measures

In the plantation, all workers should wear adequate footwear (e.g. Wellingtons or safety boots) and always check the ground before sitting down. People should not sleep on the bare ground.

Identification

The Larger Centipede is grey to brown and has a flattened body with 18-20 pairs of legs and clearly visible fangs. It can be up to 15cm long. It moves swaying from side to side in a rather fast and nervous pace.

Symptoms

The bite site shows a V-shaped mark, caused by the fangs. The wound is haemorrhagic, meaning that it bleeds profoundly. Sharp pains occur at the bite site, local swelling, redness, painful lymph nodes in the region of the bitten limb, possible local ulceration.

First Aid

Reassurance of the victim, pain relief with an ice pack and analgesics (**No Aspirin**), Antihistamines (if an allergic reaction occurs) in tablets and a Tetanus toxoid vaccination. If the bite becomes infected and necrotic, a broad-spectre antibiotic should be administered.

Bees and wasps

Preventative measures

Bees and wasps only tend to be aggressive when one gets too close to their hive or nest. Solitary bees and wasps are no threat as long as they are left alone.

When encountering a bees' or wasps' nest, or when hearing the loud buzzing of a group of bees or wasps, one should withdraw quietly and choose one's way far around the nest. Swarming bees or wasps should at all times be avoided.

The sting of a honey bee releases a pheromone that prompts other bees nearby to attack. It is therefore important to get quickly away from the bees to avoid more stings.

Identification

Bees and wasps are encountered all over the country, both wild colonies and those kept in hives.

Wasps (with a black and yellow striped body) are far more aggressive, also when flying alone.

Symptoms

The venom of bees and wasps, Apitoxin, is a mixture of proteins and contains melittin and histamine. If people are allergic, the venom may trigger an anaphylactic reaction, which can be life threatening. An allergic reaction to bee stings shows by rapid swelling, dizziness and difficulty with breathing.

The symptoms of a sting are an immediate sharp pain, rapid swelling of the region and severe persistent itching, that can last up to a week. Multiple stings may cause an anaphylactic shock, which can become fatal.

First Aid

Remove the sting(s) immediately by scraping over the bite site with an object with a hard edge (e.g., a knife). Don't press the sting with your fingers, as more poison will be pushed into the body of the victim. Use cold compresses or ice packs to cool the bite. If the victim shows allergic reactions, send him/her to hospital immediately. Don't give aspirin.

In case of severe allergic reactions, a medical officer may choose to administer an anti-histamine injection, adrenaline and Epinephrine, against an anaphylactic shock.

Rabid animals

Many animals can be infected with rabies and transfer the disease through bites or scratches. Dogs are the principal vector of the disease but cats, bush animals, herbivores, rats and bats are also high-risk species.

Preventative measures

Try to stay clear of any dog or cat that shows 'rabid' behaviour, as described below. A rabid animal should be killed as soon as possible, preferably with a gun. Never touch a suspected rabid animal, dead or alive, as the skin and especially the saliva are highly infectious. Dead animals with foam around their muzzle are most likely rabid.

Identification

Rabid animals can behave aggressively, fearless, or even idiotic. Domestic animals can be strangely afraid, foaming or drooling muzzle. A clear sign of rabies is "Hydrophobia", an excessive fear of water.

Symptoms

Early symptoms are malaise, headache and fever, progressing to acute pains, violent movements, uncontrolled excitement, depression and hydrophobia. The final stage of the disease is characterised by mania, lethargy, coma and leads to death by suffocation.

Victims usually get sick about 1-2 months after infection. Death invariably occurs two to ten days after the first symptoms.



First Aid

People that have been bitten by a suspect animal should be brought to the hospital immediately and treated with anti-rabies vaccines. The infection by this viral disease is always fatal, if not treated with a prophylaxis before the first symptoms appear.



Protocol 25 Harvesting

Harvesting Operations

At Form Ghana the various harvesting operations can be broken down into three separate operations namely the first, second and third thinning. During all thinning operations the felling of trees that are non teak species growing amongst the teak is permitted. This is provided that the DBH of the non teak species tree is smaller than 20cm and that the crown of the tree is of such a nature that it will not cause any damage to the surrounding teak when being felled. Should these parameters not be present the non teak species tree should not be felled. Below is a description of the various thinning methods used by Form Ghana.

First thinning: The first thinning is a selective thinning. The trees are marked in accordance to specifications highlighted in Protocol 15.

In terms of harvesting this operation can be classified as a non-commercial harvest where the trees that are marked will be felled to waste. In terms of operational planning the harvesting plan is necessary to ensure that all relevant block information is at hand and that the necessary risk assessment has been done, to ensure a safe operation. The planning map will comprise of little detail as no timber will be extracted and felling direction is not specified. However, the felling sequence should allow for space to be opened in the tree canopy and the next tree should be felled into this space thus minimizing damage to the residual trees and reducing hang ups that could lead to decreased productivity.

Second thinning: The second thinning is a combination of row and selective thinning. The second thinning can be classified as a commercial thinning thus the felled timber would need to be extracted for processing into various products. Every eighth row of trees will be marked for removal and then the inter rows between every eighth row will be selectively thinned. The removal of the eighth row is to facilitate extraction and to help eliminate damage to the remaining stand of trees.

Here the planning map will be more complex as the timber will be extracted. Due to the use of the eighth row as an extraction route/skidding trail, the directional felling of the four rows of trees to either side of the skidding trail will be felled at an angle between 10 and 45 degrees relative to the skid trail. The but-ends should be facing the skid trail, which creates a fishbone felling pattern as indicated in figure 1 below. Rows one and two should utilise a smaller angle and rows three and four should utilise a greater angle, however still maintaining the range between 10 and 45 degrees. The trees felled in the eighth row should be felled as close as possible to being parallel with the skid trail. The trees must be felled in such a manner that the butt ends of the trees face the direction of extraction (face towards the landing). The skid trails should be kept free of felled trees and branches.

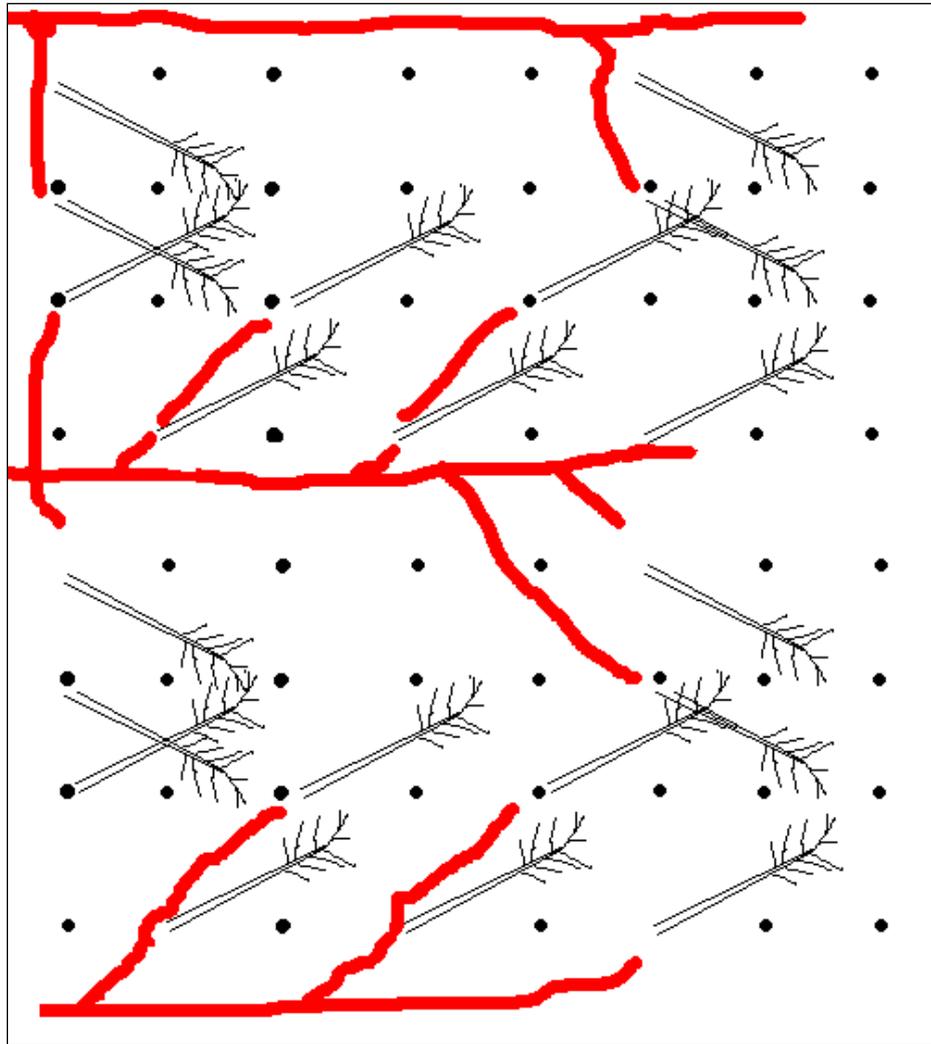


Figure 1.1. Fishbone felling pattern.

Once the tree has been felled the tree must be de-branched and topped to prepare the tree length for extraction. This will help to reduce damage to remaining trees and prevent the build-up of harvesting slash on the landing thus reducing congestion and providing a safer work environment.

Third (and successive) thinning: The third and sometimes successive thinnings will be selective thinnings of the inter rows between the eighth rows that were opened in the second thinning. These thinnings are also classified as a commercial thinning thus the timber would be extracted to roadside for further processing into various products.

Here the eighth row that was opened in the second thinning will again be used as an extraction route/skidding trail. The felling pattern will be the same as described in the second thinning.

Protocol 27 Information on contagious diseases

Protocol purpose

This protocol is to assist FG in the information of people on contagious diseases. The information is tailored to the workforce, to regular and to occasional visitors to FG and to people wanting to visit FG while coming from an area where there is a contagious infection.

Avoidance of problems with contagious diseases at FG is done by informing the people, training medical staff to recognize and act when a contagious disease is observed and by avoiding visits from people who may spread contagious diseases.

Educating the work force

Infectious diseases are diseases that people can get from other people. The spread of most of such diseases can be avoided by proper behaviour. This protocol treats the most common or most serious diseases that can be avoided. The protocol treats these diseases according to the way in which they can be avoided.

Diseases to be avoided by vaccination

There are many diseases that can be prevented by vaccinations, for instance Yellow Fever, Diphtheria, Polio, Meningitis, Typhoid, Tetanus and Hepatitis (A and B). Vaccinations should be obtained and repeated according to the protection they offer. Hepatitis will provide lifelong protection after a series has been completed.

Diseases that can be avoided by sleeping under a mosquito net

Diseases like Malaria and Dengue fever can mostly be avoided by sleeping under a mosquito net. Use a net over every bed and make sure to patch up any holes as they appear. Treatment of the nets with an insecticide can help its effectiveness. When going outside of the house at night wear a repellent and long sleeves and pants to avoid getting stung.

Diseases that can be avoided by hygiene

Some diseases are spread by contact between humans or between humans and animals. Some of these diseases are relatively harmless like flu. Some others like Ebola are very serious. These diseases are: Ebola, Tuberculosis and Cholera. These diseases can be avoided by avoiding contact with people that are sick. Wash your hands regularly. Do not touch people that are sick. Avoid eating animals such as monkeys and bats. Drink purified water. Seek medical attention.

Sexually transmitted diseases

Diseases like HIV/AIDS, but also Chlamydia and Herpes or Syphilis can be contracted by having unprotected sex with people that are infected with these diseases. As you cannot see if a person is sick until very late during their disease it is important to always use condoms when having sex with persons of whom you do not know their test results. It is important to get tested.



Training of medical staff to recognize and act when a contagious disease is observed

Medical staff of FG have to make sure they stay up to date with the recognition and actions to be taken when contagious diseases are observed. To do this they have to stay in contact with Ghana Health authorities and assure they receive updates every month. When training is available for specific subjects they have to discuss with management and sign up for the training when granted the approval. Materials that may be needed when new information is available on the identification and acting on diseases can be bought after management approved it. Medical staff has to ensure that workers that are found ill with a contagious disease are taken to hospital without getting into contact with other workers. When this has occurred, they have to make sure all the workers that may have come into contact with the person in question are properly briefed on the measures they have to take in order to minimize the risk of falling ill.

Visitors from outside the company

Visitors coming to FG have to be aware of the diseases that are present in the area. FG will send all new visitors a short briefing note which states the diseases that are present in the area. The visitor is then responsible for ensuring to take the prophylaxis and vaccinations needed to avoid falling ill.

The diseases on which a visitor will be briefed are:

Disease	Medication
Malaria	Prophylaxis (Malarone)
Dengue Fever	X
Yellow Fever	Vaccination (compulsory for visitor from outside Ghana)
Typhoid	Vaccination
Hepatitis A	Vaccination
Hepatitis B	Vaccination
Meningitis	Vaccination
Polio	Vaccination
Diphtheria	Vaccination
Tetanus	Vaccination
Cholera	X
HIV/AIDS	X

Visitors are warned that these diseases may be present at sites they visit. They need to inform themselves carefully on how to avoid these diseases. Visitors are strongly advised to get the vaccinations stated above and should have the prophylactic medication for malaria and take it. Malaria is very prevalent in Ghana and someone not taking medication is almost sure to contract it. Concerning HIV/ AIDS the visitor is informed that HIV is present in the area and that care should be taken when visiting hospitals and when having intercourse.



Visitors are invited to present a form with the basic medical information (blood type, medication used, insurance policy) as well as contact information in case of emergency.

Visitors from areas where there is a contagious disease

Visitors coming to Ghana should indicate which countries they have visited prior to their visit to FG. If one of those countries has a problem with a serious and contagious disease the visitor should wait until the incubation period is over, before visiting FG.

Protocol 29 Integrated pest management

Document purpose

This procedure describes how to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment.

Pest Identification

Pests (e.g. insects, mammals, fungi, bacteria) are usually observed during ongoing field operations, site patrols or during monitoring activities (e.g. PSP monitoring). Once a pest is observed, it is identified by experts. Bacteria and fungi are identified through sample analysis in a lab. When identified, information is gathered on the pest, using scientific research, experience from other companies and monitoring results (see section Monitoring).

Based on this information, measures are developed to combat the pest, and to prevent future occurrence.

Pest Prevention

The best pest management is prevention. Strong, healthy trees are generally more resistant to pests, so prevention of pests is for a large part done through improving tree health and vigour. A number of generic measures is listed below:

- Proper species selection and composition. Species growing under good site conditions are healthier and consequently more resistant to pests. This applies in particular to recently harvested sites with a certain level of disease pressure.
- Weeding of young planting, since a high weed pressure competes with young trees reducing their vigour and pest resistance. Additionally, weeds and other undergrowth may attract pests.
- Activities which damage the trees (e.g. thinning, pruning) are performed in the dry season to prevent infestation with fungi.
- Fertilization might be a viable way to improve tree vigour and pest resistance, whereas the fertilization regime depends on a site's initial soil composition (nutrients and pH).
- Proper thinning improves tree growth, positively affecting vigour and pest resistance of the trees.

If a pest is identified, specific preventive measures will be developed to prevent spreading of that pest, based on collected information. These measures are then incorporated in company management procedures.



Pest Control

In addition to preventive measures, it may be necessary to develop ways to further control the pest, or even to eradicate it completely. This depends on the severity of the pest, the rate of dispersion, and the efficacy of the preventive measures.

For all pest control, non-chemical methods are preferred. The use of chemicals (e.g. pesticides, fungicides) is considered only if non-chemical methods are not available or not effective. Equipment used for chemical application is well-maintained and regularly calibrated to minimize excessive application and waste of chemicals. No chemicals are used that are classified as 'highly hazardous' by FSC™ (FSC-C044035) unless no other option is feasible. In that case, Form Ghana will apply for a derogation.

Monitoring

The occurrence of the pest is monitored in order to determine the severance (level of damage, abundance), the dispersion (location(s)) and the pest population development. Based on monitoring results, and on severity of the pest (level of damage, dispersion, abundance), the company decides upon management action.

Records are kept of the monitoring activities. These records are used to (1) evaluate the efficacy of prevention and control methods; (2) identify areas vulnerable to pests; and (3) monitor pest population development.

Training

Workers involved in the monitoring and control of pests are trained by Form Ghana and/or Form International.



Protocol 28 Community development

Purpose of the Protocol

Form Ghana believes that investing in local communities is very important and this is as such incorporated in the company's Corporate Social Responsibility policy. Communities are important stakeholders in the area and play a key role in the company's operations.

This needs however be balanced with the economic interests of Form Ghana, as well as a fair distribution of benefits among the different surrounding communities. This protocol outlines Form Ghana's approach for the support of future community development activities, as well as the strategy to manage expectations arising from the surrounding communities.

General approach

Form Ghana believes that investing in local communities is very important. The communities should benefit from the presence of a large economic actor. Available funds for such projects are however limited. All available funds are put to the establishment of the plantations which will be the economic motor for the area. This will however raise expectations of the communities that need to be managed in order to enable further sustainable development as a company and to avoid frictions between the company and the communities or among individual communities.

Of course, the communities do already benefit from the presence of the company as the main employer in the region. Roads close to the plantations are rehabilitated and maintained and thereby improve connectivity of all fringing communities. And with harvesting a Benefit Share is paid of which the communities are also beneficiary. But Form Ghana wants to go a step further as part of the Corporate Social Responsibility policy, which means that more will be done if the situation allows for it.

The assistance from Form Ghana to community development will have two bases. One is through direct support by the company, while the other is through indirect funding from benefit sharing. These different approaches are explained below.

Benefit sharing

Every time timber is harvested, Form Ghana pays a percentage of the Standing Tree Value to the Forestry Commission by means of benefit sharing. The benefit sharing is a certain amount of the standing tree value (STV), which varies per Forest Reserve. The standing tree value is an amount per tree that depends on the diameter of the tree. As trees age and have a larger diameter, the standing tree value becomes higher.

The benefit sharing is payable to the Forestry Commission, who then is responsible for distributing it to the Traditional landowners (chiefs), the communities and to the Forestry commission. The funds for the communities are paid to the District Council. The District



Council is then responsible for the allocation of funds to community development activities. Form Ghana has no role in the identification or development of activities to fund.

The role of Form Ghana in this process consists of actually paying the dues and communicating the amounts paid to the stakeholders, so they know what to expect and are able to follow-up on it. This information is shared in the stakeholder meetings, and also included on the company information brochure which is annually updated and distributed.

Development of community projects

The company is an important factor in the area with long-term presence, and therefore has the opportunity to develop community development projects on solid, stakeholder-based grounds. The process for project development is outlined in the following sections.

Through contact with stakeholders during meetings and individual contact, ideas for projects reach the company.

These ideas are evaluated in management meetings, where specifically the following elements are evaluated:

- Does the project idea fit in the company's priorities for community development (the company has a strong preference for projects relating to health and hygiene (water, ablution, sensitisation));
- Does the company's budget allow for realization of this project idea;
- Does the project idea correspond with the principle of equal distribution of benefits to the surrounding communities?

If the company deems a suggestion a good idea, it is then presented during a stakeholder meeting to see if there is broader support for the idea. If during a stakeholder meeting it becomes clear that the proposal is supported in the community, Form Ghana will do a costing of the activity and also identify the parts that a community can arrange (in case of a building for instance, arrange sand and gravel from a local source, arrange a suitable site and arrange labour). The proposed process will take some time, but it is a good way to make sure that ideas are funded that have broad support and are feasible.

The process is described in the flow-chart below:

