NATIONAL FOREST SERVICE

(PNG FORESTAUTHORITY)

REVISED WASTE MANAGEMENT AND ASSESSMENT PROCEDURES

CONTENTS

PROCEDURES FOR WASTE ASSESSMENT

1.0 INTRODUCTION

The procedure for undertaking a post-logging field inspection as the basis for issuing a Set – up Clearance (in the form of a Certificate of Satisfactory Completion of Work) is set out in the PNGFA's manual entitled ***"Planning Monitoring and Control Procedures for Natural Forest Logging under Timber Permit"***. A Set – up Clearance cannot be issued until a field inspection has taken place. The Project Supervisor should not unnecessarily delay the field inspection.

During field inspections the project supervisor (or one of his subordinate Forest Monitoring Officers) is required to make a judgment on the level of logging waste, and where waste is judged to be "excessive" then s/he is required to undertake a full waste assessment to obtain measure of the level of waste as a basis for invoicing the logging company for penalty payments. The field inspection and the waste assessment (if required) should be carried out by the Project Supervisor or his/her monitoring officer within 30 days after receiving the Set – Up Clearance application.

Given the nature of logging activities, total elimination of waste cannot be expected. There is a degree of natural control on the level of waste, as it is in the logger's own interest to reduce waste to a minimum and hence ensure maximum revenue and maximum profit is achieve through correct supervision and control of waste. As each wasted cubic meter is a reduction in the logger's revenue by one cubic meter worth of FOB or mill door price, there is a natural incentive for loggers to ensure that their logging crews know how to minimize waste by providing adequate supervision in the field at all means.

Waste also reduces the landowner's royalty payments, and Government's log export tax where the logs are exported. Despite the natural incentive to avoid waste, the PNGFA needs to have a procedure to monitor the level of waste, and to introduce penalty payments as a signal of it's serious intent to keep waste to minimum acceptable levels.

Information on the volume of logs harvested from the set-up is required to be provided by the Timber Permit holder or it's contractor as part of the information s/he presents to the PNGFA Project Supervisor when applying for a Set-up Clearance.

The PNGFA's Planning, Monitoring and Control procedure states that after the required post logging field inspection the Project Supervisor is of the view that there is excessive wastes, the s/he will undertake a full waste assessment. Further, the procedure requires that:
"The Permit Holder or its contractor will be invoiced for penalty payments for the full volume of waste". To create an incentive to avoid waste, penalty payments are deliberately based on the full level of waste assessed. However, in view of the reality that there will

always be a certain degree of waste produced unintentionally, a waste tolerance level of **3.5%** of the total harvest volume in a set - up is allowed. Refer to attachment 5.

- Upon completion of the waste assessment, the project supervisor will send the waste assessment results to the Area Manager. The Area Manager will invoice the logging company, and advise the project supervisor when the payment has been made. The project supervisor can then issue the Set – up Clearance. Due to the isolated locality of some projects, a 30 days payment period is allowed, after which further set-up approvals will be withheld until penalty payment is received and Set – up Clearance is given.

The purpose of this manual is to set out the procedures for undertaking a full waste assessment.

2. PURPOSE OF A FULL WASTE ASSESSMENT

In summary the purpose of a full assessment is to determine the actual volume of waste in a set – up to be used as a basis for invoicing penalty payments.

3. RESPONSIBILITY FOR WASTE ASSESSMENT

The responsibility for carrying out a full waste assessment lies with the PNGFA field officer undertaking the post logging field inspection required before a Set – up Clearance can be granted. This may be the Project Supervisor or one of his subordinate Forest Monitoring Officers. The Project Supervisor or his Monitoring Officers must always request the presence of a representative of the Permit Holder or it's Contractor. The representative may be the logging supervisor or any person with a supervisory role. The log Scalers and tree fellers must be present during the waste assessment exercise. This will allow them to observe what log pieces and volume is being measured and recorded.

4. WHAT IS WASTE

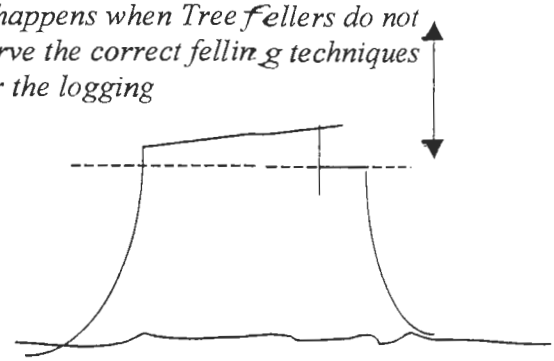
Waste are logs, parts of logs or parts of trees left in the forest, which if carefully harvested, would have been able to have been exported, or where the option exists used in a local sawmill. Thus, waste consists of:

4.1 Excessive high stumps

According to Key Standard number 16, where fluting does not occur, and the species is usually sound at the butt, stump height should not be greater than 30 cm. Hundred percentage (100%) stump can be observed and measured.

Fig 1. Excessive high stump

This happens when Tree fellers do not observe the correct felling techniques under the logging



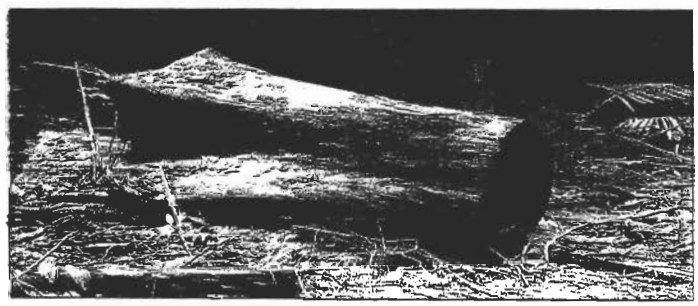
4.2 Excessive trimming of logs at the stump

This may occur for no apparent reason. It can occur at:

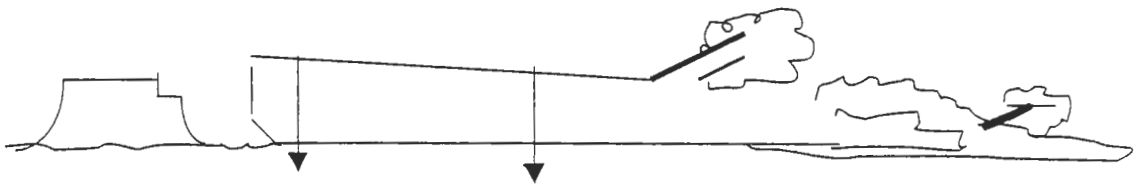
4.2.1 The stump end of the log.

Sometimes a section is trimmed off at the end of the log because there is a wood pulled from the center of the log. This is cause by not completing the back cut at the stage of felling a tree. This can be avoided by following correct procedures of felling. The hundred percentage (100%) Off–cuts can be observed and measured.

Fig 2. Off-cut at stump end



Making the cut without observing the merchantable length of log



This happens when cross – cutters do not observe and assess the entire merchantable length of a tree. The maximum value and utilization of a log should be considered when docking log into length.

4.2.2 **The head end of the log**. Sometimes the cross – cutter does not cut close enough to the head of the tree as a result reasonable merchantable log is wasted left at the head end of the log. This can be avoided by carefully sighting up the tree trunk to decide where to start trimming the log. The hundred percentage (100%) loss of merchantable volume can be observed if it is still attached to the head of the tree.

Fig 3. Head end of the log

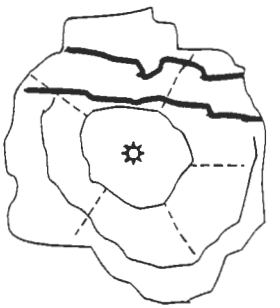
4.3 Damage to logs being skidded

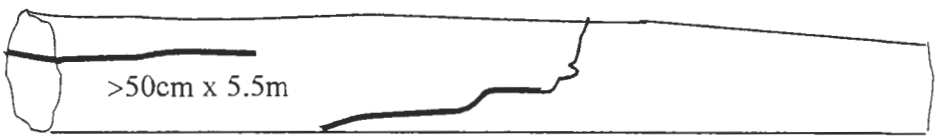
Sometimes the bulldozer drivers damage reasonable merchantable log volume during skidding. This is as a result of

- using the bulldozer blade when lifting the log to attach the strop,
- incomplete trimming or cross – cutting or,
- as a result of rough skidding practices causes breakage or splitting.

Generally, such waste is trimmed off at the landing and or in the forest. The hundred percent (100%) should be observed to logs damage in this manner.

Fig 4. Damaged log caused by Bulldozer blade.





4.4 Excessive trimming of logs on the landing

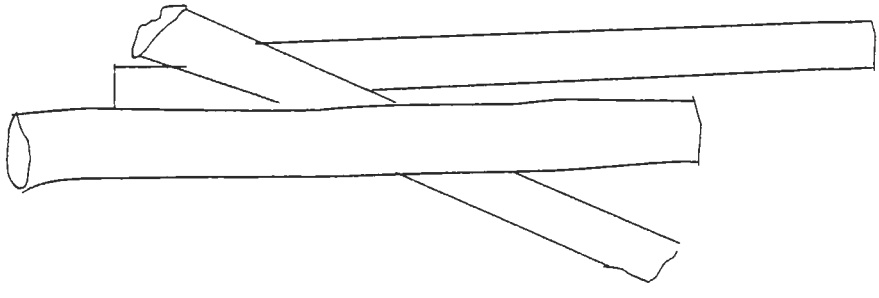
Generally a well made log carefully skidded to the landing will require only a thin "biscuit" to be cut off each end to make the log clean and presentable before being scaled and tagged. Larger off – cuts may be made to remove larger damaged portions of the log. Generally this larger damage is avoidable by making thin biscuit cut at the end of each log. The hundred percent (100%) can be observed and measured to merchantable volume left at landings and in the forest. Sometimes these volumes are hidden or covered by soil and debris. A logger will be requested to uncover or dig out these volumes for measurements.

Fig 5. Large Off-Cuts

4.5 Forgotten logs

There may be logs unintentionally left at the stump as a result of poor communication between the feller and the skidder driver, or at log landings for no apparent reason. These can be observed and measured.

Fig 6.



The removal of logs left at the log landing is a standard pre- condition for the issuance of a Set-up Clearance and will have already been checked as part of the post- logging field inspection.

5.0 ASSESSING WASTE: FOREST, ROADSIDES AND LOG LANDINGS

It is not realistic to observe and measure all waste in a logged over set-up. The previous procedure of estimating waste through a 5% sample strip survey in a logged over set-up is now amended.

All observable waste in the forest, roadsides and log landings including forgotten and abandoned logs will be measured. The hundred percent 100% to be observed and measured.

5.1 Logged over forest

The waste in the logged over forest is estimated by measuring all waste during Set-up Clearance inspections. This can be done either by walking along skid tracks or running strip lines in various parts of the set-up and measuring observable waste on both sides of the strip line.

Where strip lines intercepted or crossing the roads and log landings, care must be taken not to double count the waste on both sides. The counting should stop on one side first before continue to the other side.
This can lead to double counting and over assessment of waste thus will create problems in charging the correct volume encountered.

5.2 Roadsides

Walking along the logging roads within the set-up is necessary to inspect and decide areas require assessment to be conducted. The hundred percent (100%) merchantable waste volume will be observed and measured.

5.3 Log landings

The waste on and around the log landing is assessed by measuring 100% merchantable log waste. Some cases waste around a log landing may be incidentally buried under soil and other debris. Some digging may be required to accurately measure all the waste.

6.0 MEASURING THE VOLUME OF WASTE

The volume of wood that was wasted is measured as follows:

- Measure the length of the log in meters
- Measure the diameters (4 x diameter) in centimeters
- Calculate the volume using the formula refer PNGFA log scaling manual in cubic meters

6.1 For stumps

Measure the excess stump height, i.e. that piece of the tree, which would have been attached to the log if the stump height had been kept to its maximum height of 30 cm.
There will be high stumps where the tree was fluted or perhaps not sound at the base. The assessor will have to judge each of these and decide whether or not there was waste. Fair assessment must also be applied where stumps are on difficult slopes.

The measurements to be taken are:

- Two measurements of stump diameter taken at right angles rounded down to a whole centimeter;
- The length / height of that part of the tree which could have been harvested if it had been left attached to the log. For non- fluted trees, which are sound at the base, this will be total stump height less 30 cm.
- The measurement of stump is shown in diagrams 1-3.

Diagram 1

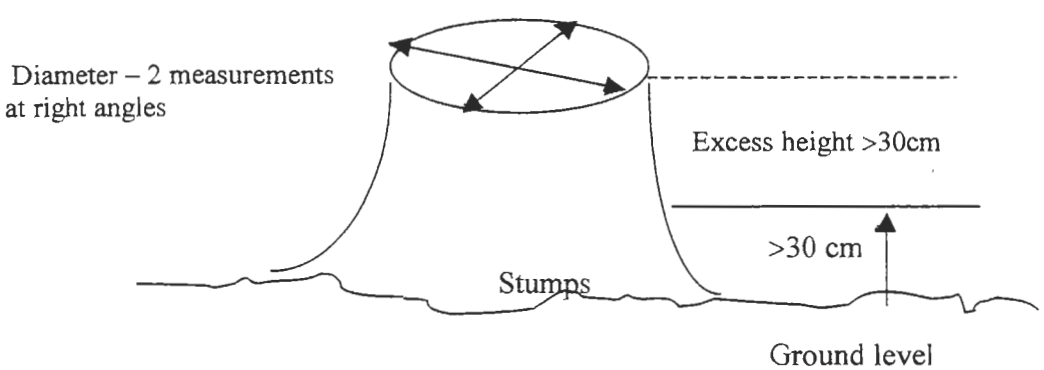
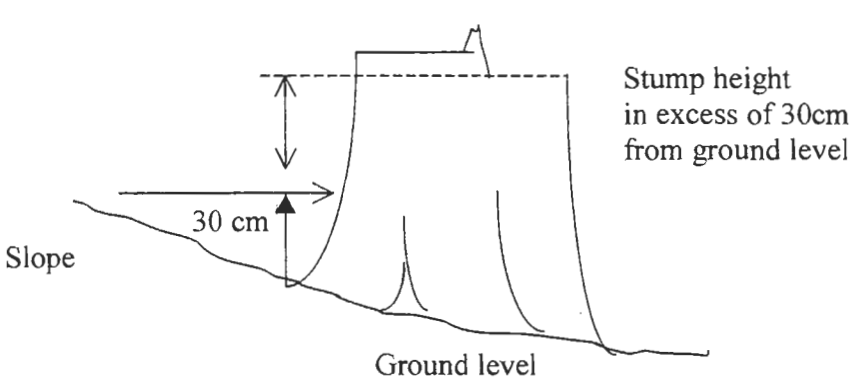


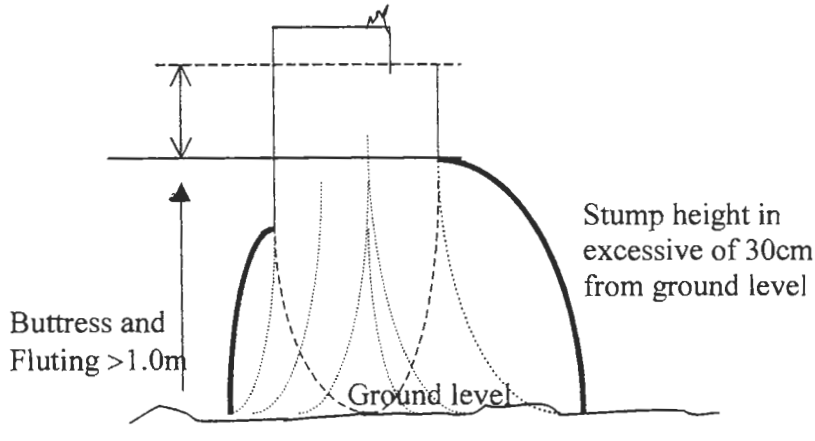
DIAGRAM 2



The measurement should be taken from higher level of the ground. This is because trees growing along the slope normally felled while standing on the higher ground level. Lower ground level is not safe and sometimes Tree fellers are trapped and got injury while felling the trees.

Therefore measurement must be taken from the higher ground level to estimate merchantable volume attached to the base of the tree.

DIAGRAM 3



This is applies to trees having huge buttresses of fluting at the height of over 1.0 meter. Tree Fellers sometime is incompetent to cut a tree at knee or wrist level and instead build a scaffold or standing bed to stand on to fell a tree.

6.2 For logs and off – cuts

Measure the same way as a log is scaled, i.e. measure two diameters at each end, and the length.

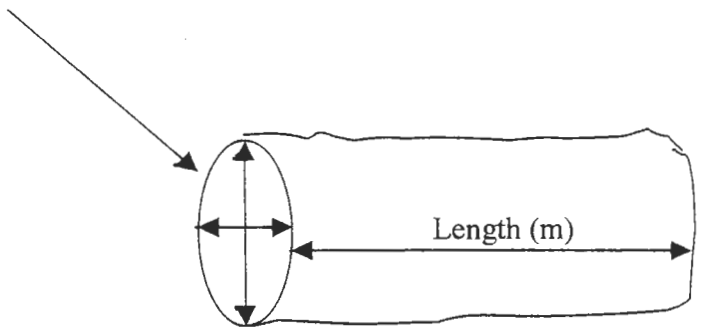
Some waste logs and off – cuts will have rough ends, and a realistic estimate of the diameter may need to be made. Similarly, split logs may require an estimate of the diameter based on the size of the two (or more) split pieces.

The measurements to be taken are:

- Two measurements of diameter taken at right angles at each end of the log or off – cut (four diameter measurements in all) each rounded downwards to the nearest whole centimeter;
- The length of the log or off – cut rounded downwards to the nearest 0.1 0f a meter.
- The measurement of logs and off – cuts is shown in the Diagram 4.

DIAGRAM 4

Diameter – 2 x Measurements
at each end at right angles



Logs and Off-cuts

The details of standard log measurement practices are set out in the PNGFA manual entitled "Directions for the Identification, scaling and Reporting on Logs Harvested From Natural Forest Logging Operations" dated December 1993 or later. Minimum specifications for waste are as tabulated in appendix 6.

7.0 EQUIPMENTS REQUIRED

The equipments required to carry out a waste assessment is as follows:

1. A copy of the map of the set – up provided by the logging company as part of its application for set – up approval. This will show the road pattern and the location of the log landings. This information can be used to plan the location of the baseline and strip lines for assessing waste in the logged forest area.

2. Compass – for setting out the baseline and strip lines for assessing waste in the logged forest area.

3. Tape – for measuring the height of stumps, and for measuring the length and diameter of wasted log or off-cuts.

4. A copy of the Log Defect Measurement, Definitions and Allowances by PNG Forest Authority

5. A waste assessment sheet (included in the back of this manual).

6. Pen for filling in waste assessment sheet.

7. Backpack or similar container for carrying the equipment out into the field.

8.0 RECORDING IN THE FIELD

This manual contains copies of the field sheet for recording waste assessment and for calculating the volume of the waste. Copies of all waste assessment sheets are sent with a covering letter to the Area manager at the Area Office. A pro -forma letter is shown in attachment 1.

Project Supervisors are responsible for ensuring that a new waste assessment manual (containing additional field sheets) is obtained from the Inspection Supervisor at the Area Office as required.

A new copy should be sought before all the field sheets in this copy of the manual are used up. Where a copy of this manual (and the attached field assessment sheets) is not available, the Project Supervisor is required to draw up his own assessment sheets by hand.

Attachment 1

PRO-FORMA LETTER FOR ADVISING THE AREA MANAGER THAT AN INVOICE FOR EXCCESSIVE WASTE IS TO BE SUMMITTED TO THE LOGGING COMPANY

(PNGFA LETTERHEAD)

Date

The Area Manager
PNG Forest Authority
P O Box.....
.....
.....

Dear Sir/ Madam

RE: Request to Invoice for Excessive Logging Waste

I have recently carried out a waste assessment in Set-up Number..... Which was logged by the..... .....logging company within the
.....
....

As shown on the enclosed waste assessment sheet, the total volume of waste was calculated to be ..... cubic meters.

Please send the company an invoice for the waste and advise immediately payment is received so a Set-up Clearance can be issued.

Project Supervisor: (Name) .....
(Date) .....
(Signature) .....

Attachment 2

LOGGING WASTE ASSESMENT SHEET

Project: .....
Set- up no: .....
Assessor name: .....
Company representative.
.....
.....
Date: .....

1. LOGGED OVER FOREST

Piece number	Code S/L/O	Diameters (2 or 4) (cm)				Length / Height (m)	Calculated volume (M3)
Logged forest sample = Total "A" =							

CODES: S = STUMP L = LOG O = OFFCUT

Attachment 3

2. **ROADSIDES**

Piece number	Code S/L/O	Diameters (2 or 4) (Cm)				Length/ Height (m)	Calculated volume (M3)
Total roadside volume = Total "B" =							

CODES: S = STUMP L = LOG O = OFF CUT

Attachment 4

3. LOG LANDINGS

Piece number	Code (S/L/O)	Diameters (2 or 4) (Cm)				Length/ Height (m)	Calculated volume (M3)
Total log landing volume = Total "C" =							

CODES: S = STUMP L = LOG O = OFFCUT

Attachment 5

4. TOTAL WASTE ESTIMATE

SET-UP HARVEST VOLUME	=	
LOGGED FOREST VOLUME (TOTAL "A)	=	
ROADSIDE VOLUME (TOTAL "B")	=	
LOG LANDING VOLUME (TOTAL "C")	=	
TOTAL VOLUME (A + B + C)	=	
3.5% OF TOTAL SET-UP HARVEST VOLUME	=	
TOTAL WASTE VOLUME (Total Volume minus *3.5%)*	=	

5. PERCENTAGE WASTE

TOTAL WASTE (.....M3) X 100
TOTAL HARVESTED FROM SET-UP (.....M3)

Attachment 6

PNG Log Grading Rules adopted by the Committee on Waste Assessment Procedures – December 2004

GRADING REQUIREMENTS	SPECIAL PEELER LOG	PRIME PEELER LOG	PRIME SAWLOG	STANDARD SAWLOG	SAWABLE GRADE
Diameter	60 cm or larger up	50 cm or larger up	50 cm or larger up	40 cm or larger up	Min top end diam 37 cm up
Length	6 meters or more	3.3 meters or longer	3.3 meters or longer	3.3 meters or longer	3.3 meters or longer
Form Defects					
Cutting	Fresh cut	Fresh cut	Fresh cut		Free of classifiable defect
Shape	Cylindrical	Cylindrical	Nearly cylindrical		
Grain	Straight grain	Reasonably straight	Reasonably straight		Straight
Ends	Properly bucked	Properly bucked	Properly bucked		
Bend	1 unit	1 unit	2 units		
End defects					
Heart location	Within 1/5 of log diam	Within ¼ of log diam	Nil		
Sound Centre defects	Nil	Nil	Nil		
Surface defects					
Knot	1 unit	1 unit	2 units		
Borer holes	1 unit	1 unit	2 units		
Split	1 unit	1 unit	2 units		
Checks	Nil	Nil	Nil		
Sapwood	No mention	Discolored/sound	Discolored/sound		
Total Standard Defects	2 kinds of 1 unit	3 kinds of 1 unit	3 kinds of 1 unit		
Sound Volume					
50 cm + diam	100 % sound	100 % sound	75 % sound	65 % sound	50 % sound
Under 50cm diam	100 % sound	100 % sound	100 % sound	100 % sound	100 % sound
1 unit equals 10%					
2 units equals 20%					
3 units equal 30%					

Note: The rules do not prevent any purchaser cutting to smaller top end diameter if wood for processing and marketing allowed this grade.

Any Other Business (2nd page of the manual paragraph 1)	Committee noted the adjustments of minor issues in the manual made by the workshop participants are as follows. First the 2nd page of the manual relating to *whilst the application of the Planning .Monitoring and control Procedures PM&C) is specific to timber permit areas, this procedures can be applied in Timber Authority, Local Forest! Areas AND timber Licence areas .Total volume harvested within the limber Authority or Licence area is required for the purpose of calculating waste tolerance level.*
2nd page of the manual paragraph 4	Second on page 2 of the manual paragraph 4— oblique *Provincial Forest Officer*
3rd page of the manual paragraph 5	Third on page 2 paragraph *5* relating to *In the case of Tlimber Authorities and Licences, no new application will he considered until penalty payments are received the second*
4th page of the manual diagram 3	Fourth on page 7 relating to the diagram of stump and the correction on the word *"Knee"*
Record sheet	Fifth is on the record sheet relating to the inclusion of columns for specie, defect type and defect volume.
Summary of Total Waste Estimate.	Sixth is on the summary page of Total waste estimate relating to replacing of Timber representative by allowing the Camp Manager to sign the form for mark of confirmation.