log-scal no2

PAPUA NEW GUINEA

FOREST AUTHORITY

PROCEDURES FOR THE IDENTIFICATION, SCALING AND REPORTING (INCLUDING ROYALTY SELF-ASSESSMENT) ON LOGS HARVESTED FROM NATURAL FOREST LOGGING OPERATIONS

September 1996

THE INDEPENDENT STATE OF PAPUA NEW GUINEA

FORESTRY ACT 1991

Act Sections 117, 120 and 135
Regulations 29 and 30

This manual entitled "Procedures For The Identification, Scaling And Reporting (Including Royalty Self-Assessment) On Logs Harvested From Natural Forest Logging Operations", is issued by the Managing Director of the Papua New Guinea Forest Authority in accordance with the Forestry Act 1991 and its Regulations.

Compliance with the procedures is a requirement placed on all Timber Authority and Timber Permit holders. Those Timber Permit holders who have passed some or all of their obligations over to a contractor under a Logging and Marketing or similar agreement must be clear that this does not absolve them from responsibility for meeting the Timber Permit terms and conditions, or any other requirements of the Forestry Act and its Regulations. Non-performance by the contractor may lead to suspension or cancellation of the Permit.

Any queries or constructive comments on the contents of this manual may be sent to:

The Chief Scaler
PNG Forest Authority
P.O. Box 5055
Hohola, NCD
Papua New Guinea.

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G K Zurenuoc
Managing Director

26/9/1996

CONTENTS

1. INTRODUCTION

The purpose of this manual is to inform licensed log scalers, PNGFA Project Supervisors, and Timber Permit/Authority holders and their contractors of the procedures for the identification and scaling of natural forest logs in Papua New Guinea, and the associated reporting requirements. The manual does not cover the scaling of logs destined for chipping which are typically weight scaled.

2. PURPOSE OF SCALING

Logs are scaled in order to:

(i) Facilitate the charging and collection of royalty payments, and any other volume or species based payments which may be due.

(ii) Facilitate the control of log production levels for each Timber Permit or Timber Authority area and thus to ensure that agreed minimum log production levels are achieved, and that maximum log production levels are not exceeded.

(iii) Provide rough forest yield data which can be used to estimate the potential yield from other similar areas of forest.

(iv) Allow project, regional and national log production statistics to be produced.

3. RESPONSIBILITY FOR SCALING

The responsibility for log scaling lies with the Timber Permit or Timber Authority holder, who may pass it on to logging companies through a harvesting agreement, or employ independent licensed log scaling contractors.

Only log scalers licensed by the PNGFA may scale logs and fill in *Log Scaling Record Sheets*. The requirements for obtaining a Log Scaling Licence are set out in the Regulations under the Forestry Act[1]. Licensed log scalers may use unlicensed assistants in the field, but only licensed scalers may sign the *Log Scaling Record Sheet*. As a consequence the licensed scaler is held responsible for accurate scaling.

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[1] Licensing requirements can be obtained from the PNGFA Chief Scaler.

4. LOG IDENTIFICATION AND SCALING METHOD

(i) LOCATION OF LOG IDENTIFICATION AND SCALING

Logs must be identified and scaled on the log landing in the forest after being trimmed and cut to length. It is expected that sections of a tree felled in the bush which will clearly not be merchantable, will be docked off and left in the bush. This approach will:

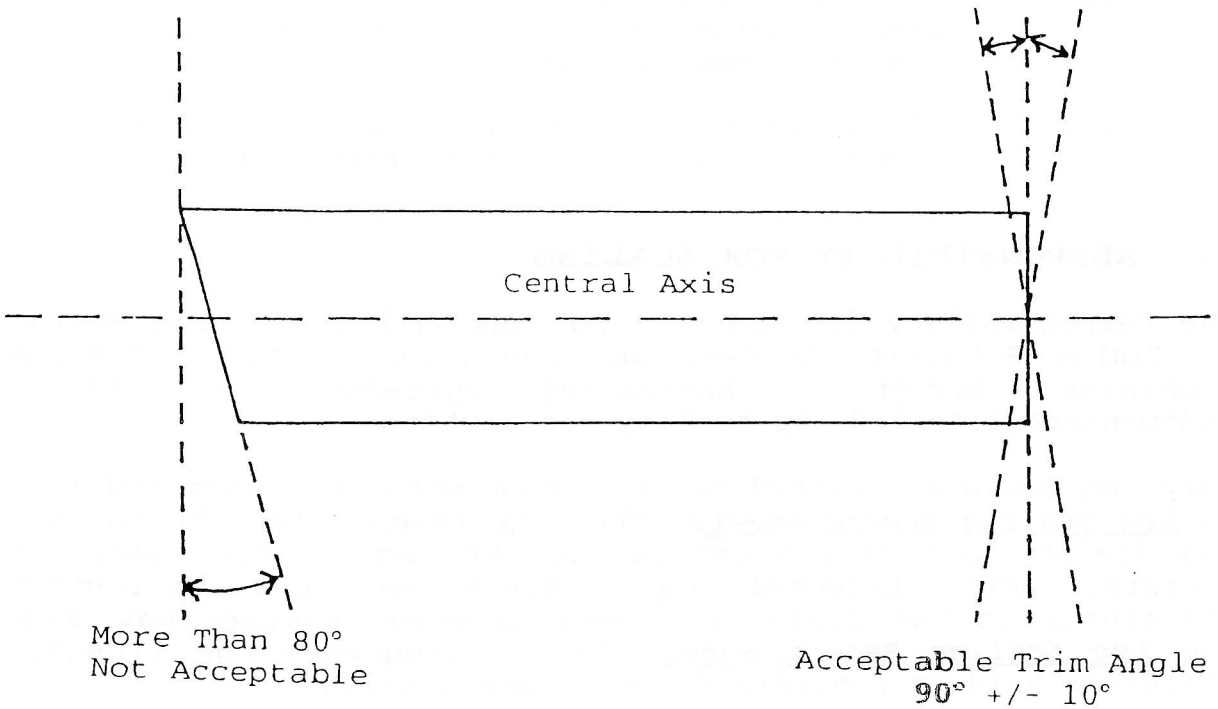
* Save the logger from skidding unnecessary log volume thus reducing skid track damage and costs;

* Allow for a smaller log landing[2] with less log off-cuts to clear away thus reducing costs and the impact on the forest;

* Allow defective pieces of log to rot and recycle in the bush.

(ii) LOG TRIMMING

Before scaling all logs must have properly trimmed ends. This means that each end must be trimmed in such a way that the face is at an angle of not less than 80 degrees to the log's central axis.



[2] See "Key Standards For Selection Logging In Papua New Guinea" for maximum allowable log landing size.

(iii) LOG IDENTIFICATION

Each log must be tagged at one of it's trimmed ends with an official PNGFA log tag at the time of scaling. Tags must be firmly attached using the top and bottom green portions of the tag leaving the white tear-off portions of the tag free for later removal. The preferred method of attachment is with a staple gun.

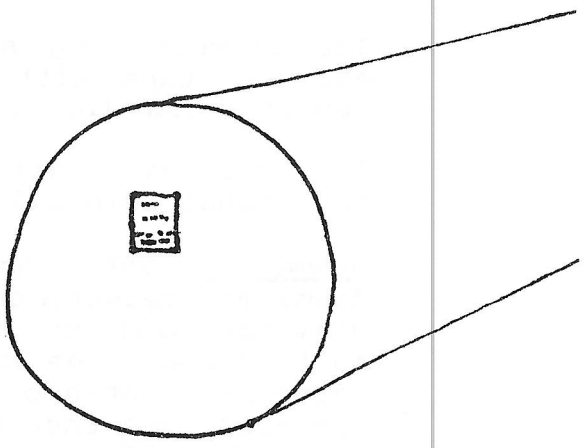
Under no circumstances should tags be attached to the round part of the log. This is to ensure they will not be lost or damaged during log loading and transport, and during log sorting at the log yard.

In addition to the tag, Timber Permit/Authority holders or their contractor may add the log number to one or both ends of the log using paint or crayon.

Log tags will be supplied by the PNGFA, or on behalf of the PNGFA by an agent. Details on how to obtain logs tags for those Timber Permit/Authority holders who have not already arranged a regular supply of tags, are available from the Chief Scaler.

Timber Permit and Timber Authority holders must ensure that they or their Licensed Scalers do not run out of log tags. It is prohibited for logs to be removed from the log landing unless they are tagged with official PNGFA tags and the scale information has been entered onto the official PNGFA *Log Scaling Record Sheet* (see Section 6 of this manual).

Official Log Tag
(Actual Size)

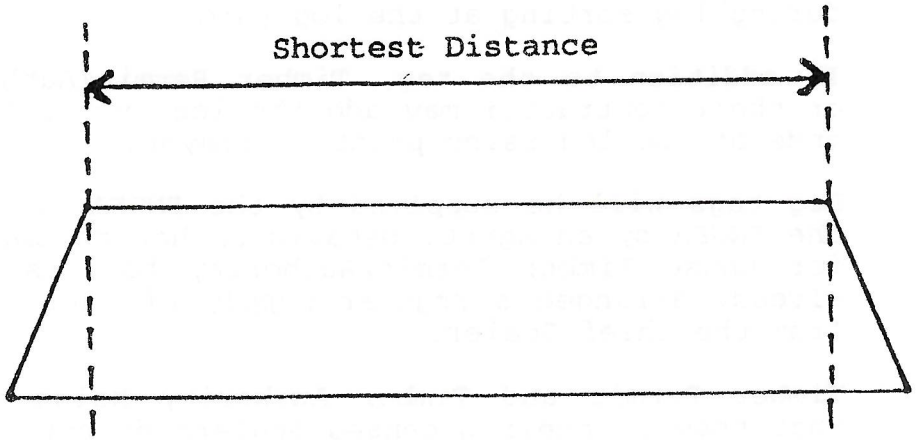


Log With Official Log Tag
Attached To One Trimmed End

(iv) LOG SCALING

Logs will be scaled using the Brereton method which requires the determination of length and four diameters.

Length: The log scaler must measure length using a measuring tape. Log length is taken as the shortest distance between log faces.



Log length is measured to the nearest lower tenth of a meter. Thus:

5.11m is rounded down to 5.1m
5.15m is rounded down to 5.1m
5.19m is rounded down to 5.1m

The licensed log scaler must check his tapes regularly and any tape with a broken end must be discarded and replaced immediately.

As logs have already been trimmed on the skids no additional trim allowance will be made[3].

Diameter: The log scaler must take four underbark diameter measurements, two at each end of the log. Diameter will be measured using a measuring tape or a solid ruler. The diameters are measured by marking the geometric centre of the face, measuring first the longest diameter, and then the second diameter at right angles to the first. The line of measurement must be marked with crayon for later checking by PNGFA staff.

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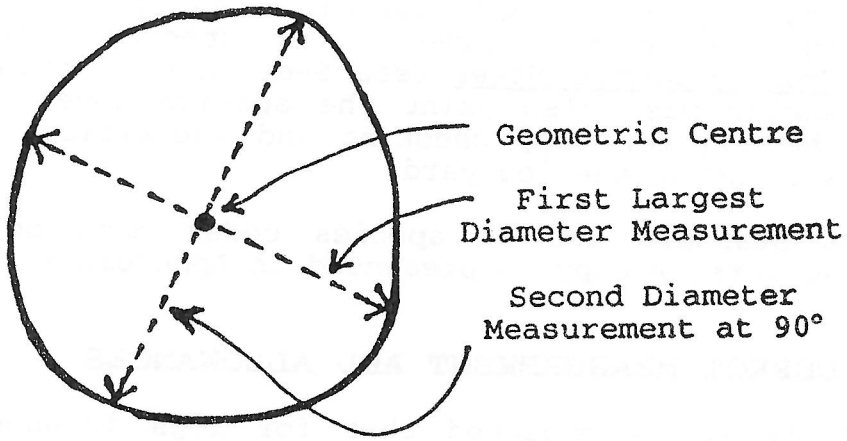
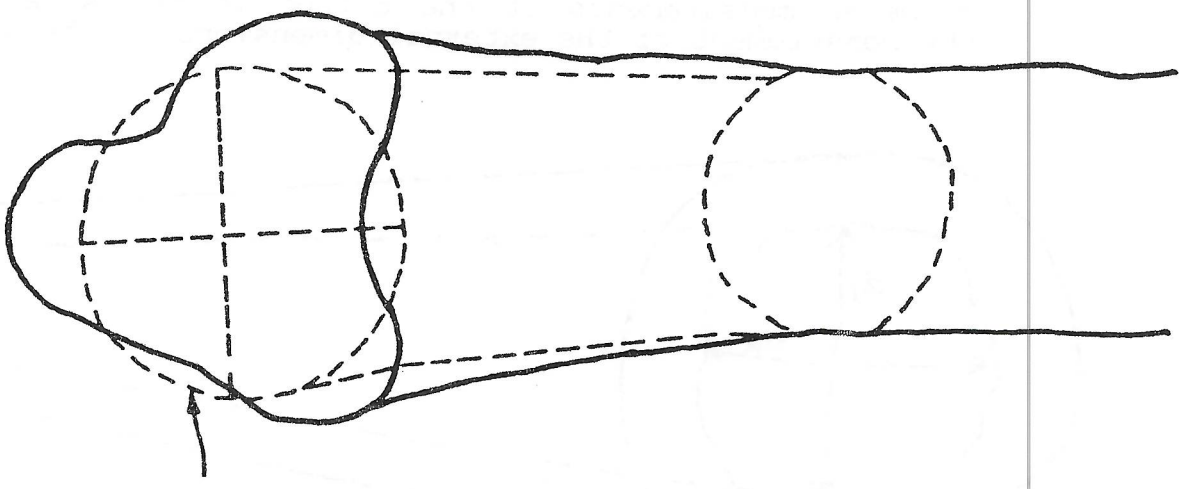
[3] Where logs are exported, limited provisions for "paper trimming" are provided for under the PNGFA's "Procedures For Exporting Logs" April 1996.



Diameters are measured in whole centimetres rounded down. Thus:

42.1 cm is rounded down to 42 cm
42.5 cm is rounded down to 42 cm
42.9 cm is rounded down to 42 cm

Irregular Butt Ends: Where the butt end of the log is fluted or otherwise irregularly shaped, the log scaler must estimate fair butt end diameters, as shown in the following diagram. Excessive flanges should be trimmed off with a chainsaw.



Suggested Diameters To Measure

(iv) SPECIES IDENTIFICATION

The log scaler must identify the species for each log, and record the three letter species code on the *Log Scaling Record Sheet* (see Section 6 of this manual). The scaler must also paint the species code on each end of the log for easy checking and identification during log sorting at the log yard.

A standard set of species codes must be used by all scalers. A copy is presented in Appendix 1.

5. DEFECT MEASUREMENT AND ALLOWANCES

Generally it is expected that for logs intended for export there will be little requirement to provide for defect measurement and allowances except for pipes and other forms of core defect in an otherwise sound log.

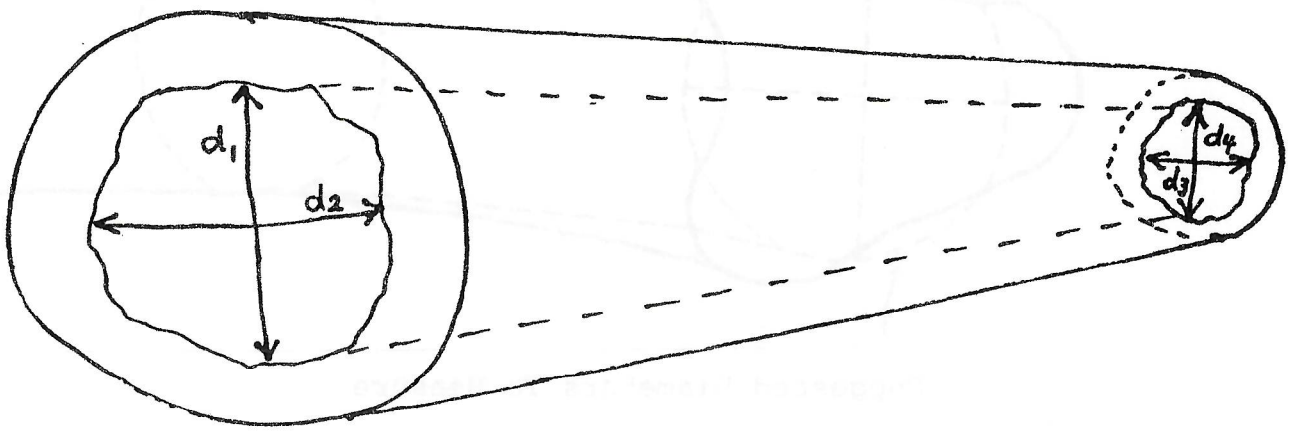
Where logs are destined for local processing, there may be a need to provide for the measurement and allowance for other defects.

For the purpose of measurement and allowances, defects are considered in two categories as follows:

1. CORE DEFECTS

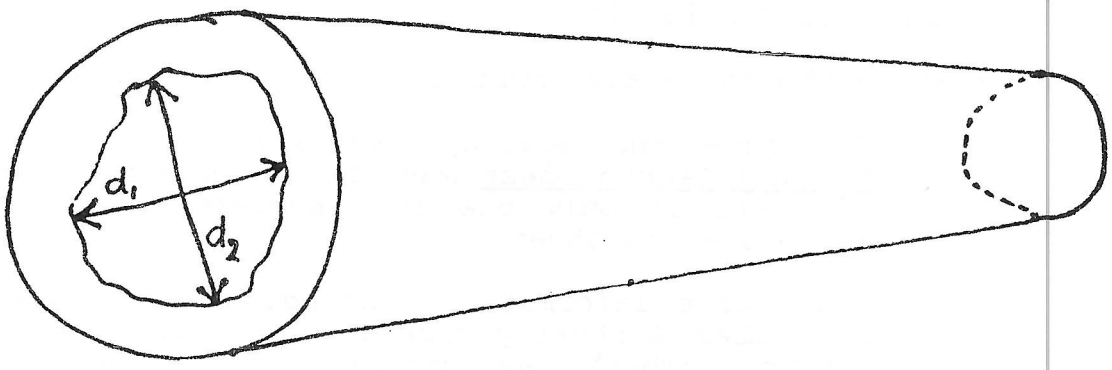
This includes pipe, doze (heartwood decomposition by fungi causing softening, dry rot), ring shakes (circular cracks/fissures around the heart resulting from growth stresses), and termite infestations.

Where the core defect runs through the entire length of the log (defect type C2), the log scaler will measure the log in the normal way, but in addition will take four diameter measurements of the defect in the same way as the measurement of the external dimensions of the log.



$$D = \frac{d_1 + d_2 + d_3 + d_4}{4}$$

Where the defect is visible only at one end of the log (defect type C1), and it is not possible to determine the actual length of the core defect, the defect will be deemed to run for half the length of the log, and be recorded as such. In this case the log scaler will take two measurements of the diameter of the defect taken at right angles, at the end of the log where the defect is visible.

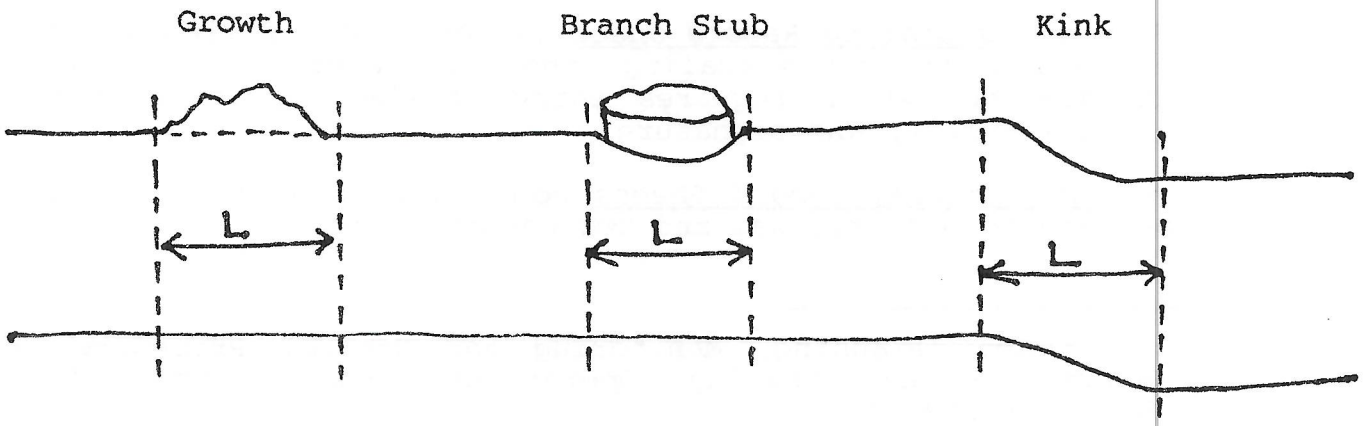


$$D = \frac{d_1 + d_2}{2}$$

2. LENGTH DEFECTS

These include kinks, external growths, and branch stubs. For length defects (defect type L) the log scaler will measure the length of the defect. For the purposes of making a volume allowance, the Timber Permit holder or its contractor will use the average diameter of the entire log.

Excessive butt flanges are not considered to be a defect, and should be trimmed off in the bush.



L = length to lower
0.1 meter

6. INFORMATION RECORDING BY THE LICENSED SCALER

(i) FILLING IN *LOG SCALING RECORD SHEETS*

It is the responsibility of the licensed log scaler to enter all the relevant information regarding the source of the logs and the scaling of the logs onto the official PNGFA *Log Scaling Record Sheet*. *Log Scaling Record Sheets* will be provided by the PNGFA Provincial Forestry Officer located in the province. A copy is shown on page 9. *Log Scaling Record Sheets* are serially numbered to facilitate PNGFA control over their use (see Section 7).

Information the log scaler must fill in is as follows:

* The date the scaling was undertaken. A new *Log Scaling Record Sheet* must be started each day, even if there is only one log recorded on the previous day's scaling sheet.

* Log source information, including the Timber Permit or Timber Authority number, for Timber Permits the Set-up number[4] (as appears in the PNGFA Set-up Approval issued by the Project Supervisor), and the name of the landowner group or clan from whose land the logs were harvested.

  Where a Set-up covers land owned by more than one landowner group or clan, separate *Log Scaling Record Sheets* must be kept for logs from each landowner group or clan area.

* For each log the log tag number.

* For each log the species code.

* For each log, four diameter measurements and one length measurement as prescribed in Section 4 (iv) of this manual.

* A record of any defect measurements as prescribed in Section 5 of this manual.

When a *Log Scaling Record Sheet* is completely filled in, or at the end of the day's scaling, the log scaler must fill in the declaration, which requires entry of the log scaler's name, licence number, and signature.

The *Log Scaling Record Sheets* come in pads with three copies per sheet, one original and two carbon copies.

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[4] See "Planning, Monitoring and Control Procedures For Natural Forest Logging Operations Under Timber Permit (November 1995)".

scale-sh.WK3

PAPUA NEW GUINEA FOREST AUTHORITY
LOG SCALING RECORD SHEET

Sheet Number AA 0000

LOG TAG NUMBER	SPECIES CODE	DIAMETER MEASUREMENTS (To Lowest Whole Centimeter)				LENGTH (Lower 0.1 Of A Meter)	DEFECT ALLOWANCES					
							DEFECT TYPE (C2/C1/L)	DIAMETER MEASUREMENTS (To Lowest Whole Centimeter)				LENGTH (Lower 0.1 Of A Meter)
		d1	d2	d3	d4			d1	d2	d3	d4	
						.						.
						.						.
						.						.
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DATE SCALED: ....

TIMBER PERMIT/AUTHORITY NUMBER:

....

SET-UP NUMBER:

....

LANDOWNER GROUP NAME:

....

DECLARATION

I, ..., holder of Log Scaler's Licence No ...., certify that I have scaled the logs entered on this form, and that the information given is true and correct.

SCALER'S SIGNATURE:

....

ORIGINAL WHITE COPY: TO PNGFA PROJECT SUPERVISOR (FOR FORWARDING TO PROVINCIAL FORESTRY OFFICER)

YELLOW DUPLICATE: TO PNGFA PROJECT SUPERVISOR (FOR PNGFA PROJECT BASED RECORDS)

GREEN DUPLICATE: TO LOGGING COMPANY RECORDS

DEFECT TYPES:
C2 = CORE DEFECT - VISIBLE BOTH ENDS - REQUIRES ONLY FOUR DIAMETER MEASUREMENTS
C1 = CORE DEFECT - VISIBLE ONLY ONE END - REQUIRES ONLY TWO DIAMETER MEASUREMENTS
L = LENGTH DEFECT - REQUIRES ONLY A LENGTH MEASUREMENT

(ii) *LOG SCALING RECORD SHEET* COLLECTION

The Licensed Scaler is required to submit the top white original and the first yellow duplicate to the PNGFA Project Supervisor daily, or if this is not practical as often as possible. The PNGFA Project Supervisor is responsible for making arrangements with the logging company or its licensed scalers for the *Log Scaling Record Sheets* (original and the first yellow duplicate) to be delivered/collected daily.

Once collected, the Project Supervisor is required to submitted the original white copy of the *Log Scaling Record Sheet* to the Provincial Forestry Officer approximately weekly. The first yellow duplicate copy is retained by the Project Supervisor as part of the project based records for a minimum of two years.

The second green duplicate is forwarded by the Licensed Scaler to the logging company, and becomes the basis for the company's monthly (or more often) *Declaration Of Logs Harvested And Royalty Self-Assessment*.

Timber Permit and Timber Authority holders must ensure that they or their Licensed Scalers do not run out of *Log Scaling Record Sheets*. It is prohibited for logs to be removed from the log landing unless they are tagged with official PNGFA tags and the scale information has been entered onto the official PNGFA *Log Scaling Record Sheet*.

(iii) CALCULATION OF LOG VOLUMES AND DEFECT ALLOWANCES

The *Log Scaling Record Sheet* does not provide columns for the calculation of log volumes or defect allowances. It is expected that the logging company will take the raw log scaling data and enter this into a computer to do the volume calculations. This approach is efficient in terms of time and cost, avoids human calculation error, and provides for the easy computer generation of the monthly (or more often) *Declaration Of Logs Harvested And Royalty Self-Assessment*. For log exporters it also provides for easy stock control and the generation of log export declarations.

The volume calculation is to be based on the formulas set out in Appendix 2.

PNGFA staff are not required to calculate volumes or defect allowances.

7. CONTROL OF *LOG SCALING RECORD SHEETS* BY PROVINCIAL FORESTRY OFFICERS

The PNGFA Provincial Forestry Officer is responsible for the supply of *Log Scaling Record Sheets* to the logging company, and for maintaining a record of which *Log Scaling Record Sheet* numbers have been issued to each logging company in their province. The Provincial Forestry Officer is also responsible for checking that all of the issued *Log Scaling Record Sheets* are returned, and for checking with the logging company when *Log Scaling Record Sheets* appear to be unaccounted for.

Where issued serial numbers are not being returned within a reasonable period of time, the Provincial Forestry Officer (after first checking that the Project Supervisor is forwarding the collected *Log Scaling Record Sheets* regularly), must seek an explanation from the logging company. It is expected that the Provincial Forestry Officer will develop a professional working relationship with the Timber Permit/Authority holders (or the Timber Permit holder's contractors) operating in his/her province, and that minor problems can be sorted out without fuss. Where there is a major problem that the Provincial Forestry Officer is unable to resolve with the assistance of the Project Supervisor logging company personnel, then s/he must immediately bring the problem to the attention of the Chief Scaler and/or the PNGFA Revenue Accountant and seek assistance.

Where *Log Scaling Record Sheets* are lost the Provincial Forestry Officer must advise the Chief Scaler in writing. The Chief Scaler may impose fines for each lost sheet.

Where a *Log Scaling Record Sheet* is damaged, the logging company is required to submit it to the Provincial Forestry Officer in order that it can be recorded as accounted for.

It is the joint responsibility of the Chief Scaler and the Provincial Forestry Officer to ensure that Provincial Forestry Officer does not run out of *Log Scaling Record Sheets*.

8. SUMMARY OF EQUIPMENT NEEDED

A summary of the equipment needed by licensed scalers in order to carry out their duties is as follows:

(i) Tapes for measuring log defect lengths;

(ii) Tapes or rulers for measuring log and defect diameters;

(iii) An adequate supply of official PNGFA log tags for attaching at one end of the log;

(iv) A staple-gun and an adequate supply of staples

for attaching the PNGFA official log tags to the logs;

(v) An adequate supply of official PNGFA *Log Scaling Record Sheets* for recording all scale information;

(vi) Crayons for marking where the diameter measurements were taken;

(vii) Paint for marking the three letter log species code on each end of the log;

Licensed scalers must also carry their log scaling licence whilst they are carrying out scaling activities.

9. SCALING CHECKS BY PNGFA PROJECT SUPERVISORS

PNGFA Project Supervisors will carry out log scaling checks by undertaking their own scaling and filling in a *Log Scaling Check Sheet*, a copy of which is shown on page 13. This will involve checking the species identification, the measurement of log length, four diameters, and the measurement of any defect. At minimum there will be a scaling check on each licensed scaler once a fortnight. A scaling check will involve the scaling of 8 randomly selected logs. Check scaling will take place on the log landing in the view of the licensed scaler who originally scaled the logs.

The PNGFA Project Supervisor will check his own scaling information against that entered on the official *Log Scaling Record Sheet*. Where there is no discrepancy the PNGFA Project Supervisor will tick the appropriate box on the check scaling sheet.

Where there is a discrepancy between the PNGFA Project Supervisor's scaling and that of the licensed scaler, the PNGFA Project Supervisor will judge the seriousness of the discrepancy, and decide whether it can be sorted out between the Project Supervisor and the licensed scaler, or whether action by the Chief Scaler is required. The Supervisor will tick the appropriate box on the Check Scaling Sheet.

Generally PNGFA Project Supervisors are expected to develop an open and professional relationship with the Licensed Scalers operating in the project(s) under their supervision. Such a relationship should allow for minor scaling problems to be sorted out on the spot in an amicable and professional manner without the need for intervention by the Chief Scaler.

check-sh

PAPUA NEW GUINEA FOREST AUTHORITY
LOG SCALING CHECK SHEET

TIMBER PERMIT/AUTHORITY AREA: .....
LICENCED SCALER NAME/NUMBER: .....

CHECK SCALED BY: .....
DATE: .....

	LOG TAG NUMBER		SPECIES CODE	DIAMETER MEASUREMENTS (To Lowest Whole Centimeter) d1	d2	d3	d4	LENGTH (Lower 0.1 Of A Meter)	DEFECT TYPE	DEFECT ALLOWANCES DIAMETER MEASUREMENTS (To Lowest Whole Centimeter) d1	d2	d3	d4	LENGTH (Lower 0.1 Of A Meter)
1		ORIGINAL SCALE						.						.
		CHECK SCALE						.						.
		DIFFERENCE						.						.
2		ORIGINAL SCALE						.						.
		CHECK SCALE						.						.
		DIFFERENCE						.						.
3		ORIGINAL SCALE						.						.
		CHECK SCALE						.						.
		DIFFERENCE						.						.
4		ORIGINAL SCALE						.						.
		CHECK SCALE						.						.
		DIFFERENCE						.						.
5		ORIGINAL SCALE						.						.
		CHECK SCALE						.						.
		DIFFERENCE						.						.
6		ORIGINAL SCALE						.						.
		CHECK SCALE						.						.
		DIFFERENCE						.						.
7		ORIGINAL SCALE						.						.
		CHECK SCALE						.						.
		DIFFERENCE						.						.
8		ORIGINAL SCALE						.						.
		CHECK SCALE						.						.
		DIFFERENCE						.						.

CHECK SCALING MUST TAKE PLACE ON THE SKIDS WITH THE LICENCED SCALER, AND MUST COVER A MINIMUM OF 8 RANDOMLY SELECTED LOGS.

CHECK SCALER TO TICK ONE BOX	
1. NO SCALING DIFFERENCES	
2. MINOR DIFFERENCES SORTED OUT BY CHECK SCALER IN THE FIELD	
3. MAJOR DIFFERENCES - CHIEF SCALER ACTION REQUIRED	

ORIGINAL WHITE COPY:
TO PNGFA CHIEF SCALER

YELLOW DUPLICATE:
TO LICENCED SCALER

GREEN DUPLICATE:
TO PROJECT RECORDS

The *Log Scaling Check Sheets* come in pads with three copies per sheet, one original and two carbon copies. The PNGFA Project Supervisor is required to send the top original white copy to the Chief Scaler to indicate to the Chief Scaler whether follow-up action is required, and as evidence that the scaling check has taken place. This must be sent as soon as possible after the check scaling has taken place.

The yellow duplicate will be given to the Licensed Scaler as his record of what has been submitted to the Chief Scaler, and the green duplicate remains with the Project Supervisor as part of the PNGFA project based records for a minimum of two years.

Where a Check Scaling Sheet sent to the Chief Scaler indicates that action by the Chief Scaler is required, the Chief Scaler will use the raw scaling data to calculate the discrepancy between the volume based on the data measured by the licensed log scaler, and the volume based on the data measured by the Project Supervisor. A 3% tolerance is allowed. Where a check scaling indicates a discrepancy that is more than 3%, compensatory royalty and other charges will be levied. These will be calculated based on the volume of all the logs scaled by that Licensed Scaler since the previous scale check, and the percentage difference. Where the log volume for the sample is within the allowed 3%, or is less than that based on the Licensed Scaler's log measurements, no compensatory charges will be made.

The Chief Scaler may also take further action as he considers appropriate, including the cancellation of the scaler's licence.

10. LOG STACKING ON THE SKIDS

Logging operators must stack logs on the log landing in such a way that PNGFA Project Supervisors can gain easy access to the ends of the logs for periodically checking log identification and log scaling.

This means that individual log stacks must be far enough apart to allow easy access between the stacks, and where the log landing is excessively muddy logs must be stacked on bearers.

11. DECLARING LOGS HARVESTED AND ROYALTY SELF-ASSESSMENT

Royalty payments are only one component of the forest revenue system. Royalty charges are based on the volume of logs scaled on the log landing.

By the 10th of the following month, or more often as required, each Timber Permit or Timber Authority holder (or its

contractor) must submit to the PNGFA Provincial Forestry Officer a *Declaration Of Logs Harvested And Royalty Self-Assessment*. The declaration must be accompanied by a cheque made out to the PNG Forest Authority for the royalty payment due.

The declaration consists of three parts as follows:

(1) A summary of all the *Log Scaling Record Sheet* serial numbers included in the declaration by landowner or clan group name, and the Set-up number from which the logs were harvested. At the time the declaration is submitted, a number of Set-ups will be "active" i.e. approved for harvesting to commence and not yet signed off by the PNGFA Project Supervisor as satisfactorily completed. The summary in the declaration must list each currently active Set-up and indicate a "Nil" return if no logs were harvested from the Set-up during the period since the immediately previous declaration was made.

(2) A detailed listing of all logs harvested and scaled during the month, including the calculated volume, both gross and net where there are defects.

(3) A royalty self-assessment.

The declaration must follow the layout prescribed in the pro-forma shown on page 16. Declaration forms will not be supplied by the PNGFA. It is expected that each logging company will computer generate its own forms.

Logs may not be included in a schedule of logs intended for export (see "Procedures For Exporting Logs" April 1996) **until they have been declared for royalty purposes.**

In order to facilitate the export of logs during the same month as they were harvested and scaled, *Declaration Of Logs Harvested And Royalty Self-Assessment* may be submitted for periods of less than one month. However these must be matched with a subsequent declaration for the balance of the month. All logs recorded as scaled on the official *Log Scaling Record Sheets* for the month must be included in the declaration(s) for that month.

DECLARN.WKJ

DECLARATION OF LOGS HARVESTED AND ROYALTY SELF-ASSESSMENT

TIMBER PERMIT/AUTHORITY NUMBER: ..... FOR PERIOD FROM: .../.../19...

TIMBER PERMIT/AUTHORITY HOLDER: ..... TO: .../.../19...

PART 1. SUMMARY OF LOG SCALING RECORD SHEET NUMBERS INCLUDED IN THIS DECLARATION

LANDOWNER/CLAN GROUP NAME: .....

SET-UP NUMBER: .....

LOG SCALING RECORD SHEET NUMBERS:	NUMBER OF LOGS ENTERED ON SHEET

SET-UP NUMBER: .....

LOG SCALING RECORD SHEET NUMBERS:	NUMBER OF LOGS ENTERED ON SHEET

SET-UP NUMBER: .....

LOG SCALING RECORD SHEET NUMBERS:	NUMBER OF LOGS ENTERED ON SHEET

LANDOWNER/CLAN GROUP NAME: .....

SET-UP NUMBER: .....

LOG SCALING RECORD SHEET NUMBERS:	NUMBER OF LOGS ENTERED ON SHEET

SET-UP NUMBER: .....

LOG SCALING RECORD SHEET NUMBERS:	NUMBER OF LOGS ENTERED ON SHEET

SET-UP NUMBER: .....

LOG SCALING RECORD SHEET NUMBERS:	NUMBER OF LOGS ENTERED ON SHEET

CONTINUE FOR ALL LANDOWNER/ CLAN GROUPS AND CURRENTLY ACTIVE SET-UPS

TOTAL NUMBER OF LOGS DECLARED:

PART 2: DETAILED LIST OF DECLARED LOGS

LOG NUMBER	LOG TAG NUMBER	SPECIES CODE	AVERAGE LOG DIAMETER (cm)	LOG LENGTH (m)	GROSS VOLUME (m3 to three decimal places)	DEFECT TYPE (C2/C1/L)	AVERAGE DEFECT DIAMETER (cm)	DEFECT LENGTH (m)	NET VOLUME (m3 to three decimal places)
1					.			.	.
2					.			.	.
3					.			.	.
4					.			.	.
5					.			.	.
6					.			.	.
7 etc					.			.	.
		TOTALS:			.				.

PART 3: ROYALTY SELF-ASSESSMENT

TOTAL LOG VOLUME THIS DECLARATION: M3

ROYALTY RATE: K ..... /M3

TOTAL ROYALTY PAYMENT DUE: K .....

CHEQUE DETAILS: BANK: ..... CHEQUE NUMBER: .....

THIS DECLARATION WAS SUBMITTED BY:

NAME (PRINT): .....

CONTACT PHONE NUMBER: .....

SIGNATURE: .....

12. CONTROL BY THE PROVINCIAL FORESTRY OFFICER

On receipt of the monthly (or more often) *Declaration Of Logs Harvested And Royalty Self-Assessment*, and the accompanying cheque, the Provincial Forestry officer will:

(1) Deposit the cheque and obtain a deposit receipt slip stamped and signed by the receiving bank.

(2) Check the *Declaration Of Logs Harvested And Royalty Self-Assessment* by using the original *Log Scaling Record Sheets* to:

(i) Check that the number of logs declared for each *Log Scaling Record Sheet* matches with the actual number of logs recorded on that sheet;

(ii) Check that the detailed log list declares the details for the correct number of logs.

(3) Check a sample of the volume calculations (using the formulas set out in Appendix 2) to ensure that the formula used in the logging company computer is correct.

(4) Check that the royalty payment has been correctly calculated and that the cheque submitted and banked was for the correct amount.

(5) Fill in a *Declaration Of Logs Harvested And Royalty Self-Assessment Evaluation Form*, and forward this with the logging company's *Declaration Of Logs Harvested And Royalty Self-Assessment*, and the deposit slip to the PNGFA Revenue Accountant at Head Office.

A pro-forma *Declaration Of Logs Harvested And Royalty Self-Assessment Evaluation Form* is shown on page 19. Provincial Forestry Officers may obtain master copies of this form from the Revenue Accountant at Head Office, or use photocopied forms.

DECLARATION OF LOGS HARVESTED AND ROYALTY SELF-ASSESSMENT EVALUATION FORM

TO BE FILLED IN BY THE PROVINCIAL FORESTRY OFFICER AND SENT TO REVENUE SECTION PNGFA HEAD OFFICE

1. DATE COMPANY DECLARATION RECEIVED: ...../...../19.....

2. DATE CHEQUE BANKED: ...../...../19.....

3. ALL THE MONTH'S SCALING SHEETS HAVE BEEN DECLARED (ONLY REQUIRED IF DECLARATION COVERS A FULL MONTH OR IF DECLARATION IS FOR THE BALANCE OF A MONTH):

YES	NO

4. NUMBER OF LOGS DECLARED TO BE RECORDED ON EACH LOG SCALING RECORD SHEET IS CORRECT:

YES	NO

5. THE TOTAL NUMBER OF LOGS DECLARED IS CORRECT:

YES	NO

6. SAMPLE VOLUME CALCULATIONS CONFIRM COMPANY CLACULATIONS ARE CORRECT:

YES	NO

7. THE SELF-ASSESSED ROYALT PAYMENT IS CORRECT AND CHEQUE WAS FOR CORRECT AMOUNT:

YES	NO

CHEQUE DEPOSIT SLIP ATTACHED (TICK BOX): ☐

COMPANY DECLARATION ATTACHED (CHECK BOX): ☐

ANY "NO" ANSWERS INDICATE
THAT THE PFO MUST INVESTIGATE
AND/OR REPORT ISSUE TO
HEAD OFFICE

EVALUATION CARRIED OUT BY:

NAME (PRINT): .....

SIGNATURE: .....

DATE: ...../...../19.....

13. SUMMARY OF INFORMATION GENERATED/RECEIVED AND ACTION TO BE TAKEN

A. LOGGING COMPANY

* Generates (using PNGFA supplied sequentially numbered forms) *Log Scaling Record Sheets* filled in by Licensed Scaler employed by the logging company. Daily (or as frequently as possible) submission of original and first duplicate to the PNGFA Project Supervisor. Second duplicate kept by company for preparation of *Declaration Of Logs Harvested and Royalty Self-Assessment*.

* Generates *Declaration Of Logs Harvested And Royalty Self-Assessment*. Submitted to PNGFA Provincial Forestry Officer monthly or more often accompanied by a royalty cheque made out to the PNG Forest Authority. If submitted more than once a month a *Declaration Of Logs Harvested And Royalty Self-Assessment* for the balance of the month to be submitted by the 10th of the following month. Declarations for the month to include all logs included on *Log Scaling Record Sheets* filled in during that month.

* Receives (Licensed Scaler) a copy of the *Log Scaling Check Sheet*, at minimum once a fortnight.

B. PNGFA PROJECT SUPERVISOR

* Receives original and duplicate *Log Scaling Record Sheets* from the licensed scaler. Forward the original to the Provincial Forestry Officer approximately weekly. Adds duplicate *Log Scaling Record Sheet* to project based records.

  Checks that *Log Scaling Record Sheets* are being submitted daily (or as often as possible) and if not ensures that this is arranged.

* Generates *Log Scaling Check Sheet* fortnightly for each licensed scaler. If necessary sorts out minor differences with the scaler. If necessary initiates action by the Chief Scaler by ticking appropriate box. Original submitted to Chief Scaler as soon as possible after being generated, with one duplicate to log scaler, and one duplicate to project based records.

C. PNGFA PROVINCIAL FORESTRY OFFICER

* Supplies *Log Scaling Record Sheets* to each Timber Permit/Authority holder in the province recording the serial numbers issued to each.

* Receives original *Log Scaling Record Sheets* from Project Supervisor approximately weekly. Checks that sheets properly filled in, and if not generates advice to the Chief Scaler to take action.

  Checks that the Project Supervisor is submitting the original *Log Scaling Record Sheets* approximately weekly, and if not takes action to ensure that this happens.

  Checks off the serial numbers of the *Log Scaling Record Sheets* received against the serial numbers of those issued. Where *Log Scaling Record Sheets* appear to be missing takes action to obtain explanation from the logging company. Advises the Chief Scaler regarding apparently lost sheets.

* Receives *Declaration Of Logs Harvested And Royalty Self-Assessment* from logging company. Undertakes sample check of declared volumes against original *Log Scaling Record Sheet*. Initiates action if inconsistencies are found.

  Checks that the logging company is submitting declarations at least monthly, and if not takes action to ensure that this happens.

* Receives the royalty cheque from the logging company and immediately banks it obtaining a stamped and signed deposit receipt slip.

* Prepares a *Declaration Of Logs Harvested And Royalty Self-Assessment Evaluation Form*, and submits this with the declaration and the cheque deposit receipt slip to the Revenue Accountant at Head Office.

D. CHIEF SCALER

* Maintains a supply of *Log Scaling Record Sheets* and ensures that each Provincial Forestry officer does not run out of stocks.

* Maintains a supply of *Log Scaling Check Sheets* and ensures that each Project Supervisor does not run out of stocks.

* Receives original *Log Scaling Check Sheets* from Project Supervisor. Records receipt and date of scaling check. Checks if action required, and if so takes appropriate action. Where check scale is

required and it shows the sample to be 3% or more under-scaled, take appropriate action and prepare instruction to Revenue Section to invoice additional royalty charges.

Checks that each Project Supervisor is submitting a Check Scaling Sheet for each active log scaler once a fortnight, and if not takes action to ensure that this happens.

* Receives advice from the Provincial Forestry Officer when they find *Log Scaling Record Sheets* which have not been properly filled in. Takes action to ensure this does not continue to happen.

* Receives advice from the Provincial Forestry officer when *Log Scaling Record Sheets* are missing, and takes appropriate action, including the possibility of fines.

E. PNGFA HEAD OFFICE - REVENUE SECTION

* Receives the *Declaration Of Logs Harvested And Royalty Self-Assessment Evaluation Form*, the logging company's *Declaration Of Logs Harvested And Royalty Self-Assessment*, and the royalty cheque receipt slip from the Provincial Forestry Officer each month (or more often).

  Checks that the information received from the Provincial Forestry Officer is received regularly for each project each month, and if not takes action to ensure that this happens.

APPENDIX 1

CODES FOR PNG COMMERCIAL TREE SPECIES

SPECIES CODE	COMMERCIAL NAME/SPECIES
AGA	Kauri pine (*Agathis*)
AGL	Aglaia (*Aglaia*)
ALB	Albizia Brown (*Albizia procera*)
ALH	Alstonia Hard (all except *A. scholaris*)
ALW	Albizia Whate (all except *A. procera*)
AMB	Amberoi (*Pterocymbium beccarii*)
AMO	Amoora/Pacific Maple (*Aglaia cucullata*)
AMW	Almond White (*Alphitonia*)
ANT	Antiaris (*Antiaris toxicaria*)
ARH	Hoop Pine (*Araucaria cunninghamii*)
ARK	Klinki Pine (*Araucaria hunsteinii*)
ASG	Ash Scaly (*Ganophyllum falcatum*)
ASH	Ash Hickory PNG (*Flindersia ifflaina*)
ASP	Ash Silver Papuan (*Flindersia amboinensis*)
ASS	Ash Silver/Ash Silkwood (*Flindersia schottiana*)
BAL	Balsawood (*Ochroma lagopus*)
BAS	Basswood PNG (*Endospermum*)
BEP	Beech PNG (*Nothofagus sp.*)
BEW	Beech Wau (*Elmerrillia pauana*)
BIP	Birch Pink (*Schizomeria*)
BOM	Bombax (*Bombax ceiba*)
BOS	Box Swamp PNG (*Tristania suaveolens*)
BOW	Boxwood PNG (*Xanthophyllum papuanum*)
BTO	Brown Tulip Oak (*Heritiera trifoliolata*)
BUR	Burckella (*Burkella obovata/B. sorei*)
CAD	Candlenut (*Aleurites moluccana*)
CAG	Canarum Grey (*Canarium oleosum*)
CAH	Camphorwood PNG (*Cinnamomum*)
CAL	Calophyllum (*Calophyllum*)
CAM	Campnosperma (*Campnosperma brevipetala*)
CAN	Cananga (*Canaga oderata*)
CAR	Canarium Red (*Canarium indicum*)
CEH	Celtis Hard (*Celtis philippinensis/ C. latifolia*)
CEJ	Cedar Java (*Bischofia javanica*)
CEL	Celtis Light (*Celtis nymanii/C. kajewekii*)
CEM	Cedar Mangrove (*Xylocarpus papuanum*)
CEP	Cedar Pencil (*Palaquium warburgianum*)
CER	Cedar Red (*Toona sureni*)
CHR	Chrysophyllum (*Chrysophyllum roxburghii*)
CLL	Carallia (*Carallia brachiata*)
CLP	Celery-Top Pine (*Phyllocladus hypophyllus*)
COR	Cordia (*Cordia dichotoma*)
COW	Coachwwood PNG (*Ceratopetalum succirubr.*)
CRY	Cryptocarya/Medang (*Cryptocarya*)
CWW	Cheesewood White/Milky Pine (*Alstonia scholaris*)

CWY	Cheesewood Yellow (*Nauclea*)
DAC	Dacrydium (*Dacrydium nidulum*)
DIL	Dillenia (*Dillenia papuana*)
DRY	Drypetes (*Drypetes*)
DUA	Duabunga (*Duabanga moluccana*)
DYS	Dysox (*Dysoxylum*)
EBO	Ebony (*Diospyros ferrea*)
END	Endiandra/Medang (*Endiandra*)
ERI	Erima (*Octomeles sumatrana*)
EUH	Euodia Heavy (*Euodia bonwickii*)
EUL	Euodia Light (*Euodia elleryana*)
FIG	Fig PNG (*Ficus*)
FLA	Flacourtia (*Flacourtia*)
GAG	Garo Garo (*Mastixiodendron pachyclado*)
GAL	Galbulimima/White Magnolia (*Galbulimima belgraveana*)
GAR	Garuga (*Garuga floribunda*)
GLO	Glochidion (*Glochidion*)
GME	Gmelina/White beech (*Gmelina muluccana*)
GON	Gonostyllus (*Gonostylus macrophyllus*)
GOR	Gordonia (*Gordonia papuana*)
GUW	Gum Water (*Syzigium sp.*)
HAY	Hardwood Yellow (*Neonauclea*)
HEK	Hekakoro (*Gluta papuana*)
HEN	Hernandia (*Hernandia*)
HER	Heritiera (*Heritiera*)
HIB	Bulolo Ash (*Hibiscus papuodendron*)
HOH	Hopea Heavy (*Hopea iriana/H. glabrifolia*)
HOL	Hopea Light (*Hopea forbesii/H. papuana/ H. similis/H. celtidiflora*)
HOR	Horsfieldia (*Horsfieldia*)
IRS	Ironbark Scrub (*Bridelia minutiflora*)
IVW	Ivorywood PNG (*Siphonodon celastrineus*)
KAK	Kasi Kasi (*Xanthostemon sp.*)
KAM	Kamarere (*Eucalyptus deglupta*)
KAN	Kandis (*Garcinia latissima*)
KAP	Kapiak (*Artocarpus*)
KEM	Kempas PNG (*Koompassia grandiflora*)
KEW	Kerosene Wood (*Cordia subcordata*)
KIN	Kingiodendron (*Kingiodendron*)
KIS	Kiso (*Chisocheton*)
KWI	Kwila (*Intsia*)
LAB	Labula (*Anthocephalus chinensis*)
LAP	Lapome PNG (*Teysmanniodendron ahernianum/ T. bogoiense*)
LIB	Libocedrus (*Libocedrus pauanus*)
LIT	Litsea/Medang (*Litsea*)
LOP	Lophopetalum/Perupok (*Lophopetalum torricellense*)
MAB	Mangrove Black (*Bruguiera gymnorhiza/ B. parviflora*)
MAC	Macaranga (*Macaranga aleuritoides*)
MAH	Malaha (*Eucalyptopsis papuana*)
MAK	Manilkara (*Manilkara kanosiensis*)
MAL	Malas (*Homalium foetidum*)
MAM	Mangrove Milky (*Exoecaria agallocha*)

MAN	Mango (*Mangifera minor*)
MAR	Mangrove Red (*Rhizophora*)
MAS	Maple Scented (*Flindersia laevicarpa*)
MAT	Maniltoa (*Maniltoa*)
MAW	Mangrove White (*Avicennia marina*)
MER	Mersawa PNG (*Anisoptera thurifera*)
MGB	Brown Mangrove (*Lumnitzera littorea*)
MIG	Milkwood Grey (*Cerbera floribunda*)
NEO	Neoscortechinia (*Neoscortechnia*)
NEU	Neuburgia (*Neuburgia corynocarpa*)
NUT	Nutmeg (*Myristica*)
OAP	PNG Oak (*Lithocarpus/Castonopsis*)
OAR	Oak Red (*Lithocarpus celebicus*)
OAS	Oak Silky (*Finschia chloroxantha, Grevillia papuana, Helicia sp, Stenocarpus sp*)
OAW	Oak White (*Castonopsis acuminatissimo*)
OPS	Oak Pink Silky (*Oreocallis wickhamii*)
OSC	Oak She (*Casuarina*)
OTH	Others
OWT	Oak White Tulip (*Pterygota horsfieldii*)
PAN	Pangium (*Pangium edule*)
PAR	Paratocarpus (*Paratocarpus venenosus*)
PAS	Parastemon (*Parastemon versteeghii*)
PER	Pericopsis (*Pericopsis mooniana*)
PIM	Pimeleodendron (*Pimeleodendron*)
PLA	Planchonia (*Planchonia papuana*)
PLB	Plum Busu (*Maranthes corymbosa*)
PLR	Planchonella Red (*Planchonella torricellensis*)
PLT	Plum Tulip (*Pleiogynium*)
PLW	Planchonella White (*Planchonella kaernbachiana*)
POB	Brown Podocarp (*Decussocarpus*)
POD	Podocarpus (*Podocarpus sp*)
POH	Highland Podocarp (*Dacrycarpus imbricatus*)
POL	Polyalthia (*Polyalthia*)
QUA	Quandong (*Elaeocarpus*)
ROS	Rosewood (*Pterocarpus indicus*)
RWD	Oriomo Redwood (*Adinandra forbesii*)
SAG	Satinheart Green (*Geijera salicifolia*)
SAH	Saffronheart (*Halfordia*)
SAP	Satinwood Pink (*Buchanania*)
SAS	Sassafras PNG (*Dryadodaphne*)
SEM	Semicarpus
SIL	Silkwood Maple (*Flindersia pimentelania*)
SIW	Siris White (*Ailantus integrifolia*)
SLO	Sloanea (*Sloanea*)
SPO	Spondias (*Spondeas cytherea*)
STE	Sterculia (*Sterculia*)
TAU	Taun (*Pometia pinnata*)
TEM	Tetrameles (*Tetremeles nudiflora*)
TER	Terminalia (*Terminalia sp*)
TET	Tea Tree (*Malaleuca leucadendron*)
TRC	Trichadenia (*Trichadenia philippinens*)
TRI	Tristiropsis (*Tristiropsis*)

TUL	PNG Tulipwood (*Harpullia*)
VAT	Vatica (*Vatica raasak*)
VIT	Vitex (*Vitax cofassus*)
WAB	Wattle Brown (*Acacia aulacocarpa*)
WAL	Walnut (*Dracontomelon dao*)
WAR	Wattle Red (*Acacia crassicarpa*)

APPENDIX 2

FORMULAS FOR CALCULATING LOG VOLUMES

The Brereton method is used for log volume determination.

1. LOGS WITH NO DEFECTS

$$V = \frac{0.7854 \times D^2 \times L}{10,000}$$ (0.7854 is Pi/4)

Where V = volume in cubic meters
D = average diameter in centimetres
L = length in meters

$$D = \frac{d_1 + d_2 + d_3 + d_4}{4}$$

Where D = average diameter in centimetres
d_1, d_2, d_3 and d_4 = the four diameter measurements taken two at each end of the log at right angles

2. LOGS WITH CORE DEFECTS

(a) Where core defect visible both ends of the log (defect type C2)

$$V = V_1 - V_2$$

Where V = net log volume in cubic meters
V_1 = volume of the log (including defect) calculated using the formula shown in 1. above
V_2 = volume of the core defect calculated using the same formula as shown in 1. above

(b) Where core defect visible at one end of the log only (defect type C1)

$$V = V_1 - V_2$$

Where V = net log volume in cubic meters
V_1 = volume of the log (including defect) calculated using the formula shown in 1. above
V_2 = volume of the core defect estimated according to the following formula

$$V_2 = \frac{0.7854 \times D^2 \times (L/2)}{10,000}$$

Where V^2 = defect volume in cubic meters
D = average log diameter in centimetres
L = log length in meters

$$D = \frac{d_1 + d_2}{4}$$

3. LOGS WITH LENGTH DEFECTS

Defect type L.

$$V = \frac{0.7854 \times D^2 \times (L_1 - L_2)}{10,000}$$

Where V = net volume in cubic meters
D = average diameter in centimetres
L_1 = log length in meters
L_2 = defect length in meters

$$D = \frac{d_1 + d_2 + d_3 + d_4}{4}$$

Where D = average diameter in centimetres
d_1, d_2, d_3 and d_4 = the four diameter measurements taken two at each end of the log at right angles