

Tuesday, 12 February 2013

Timber Appraisal Report

[Address]

Lot xx, DPxxxxxx

Table of Contents

Name and address of consultant	2
Qualifications	2
Relevant experience.....	2
Scope of report	2
Instructions	2
Context	2
Property details	3
Process and methodology	3
<i>Inventory</i>	3
<i>Pricing</i>	4
Findings and observations	4
Conclusion	7
Exclusions and disclaimers	8
Appendices	10
Appendix A - Techniques for Measuring Stand Basal Area	10
Appendix B – Plot Locations	11

Name and address of consultant

Steven Bruce Dobbys

Principal

Jamax Forest Solutions

PO Box 558

Wauchope NSW 2446

Qualifications

Bachelor of Science (Forestry) attained from the Australian National University, Canberra in 1987.

Steve is a member of the Institute of Foresters of Australia, a Registered Professional Forester and past member of the Divisional Committee of the Institute of Foresters of Australia.

Relevant experience

Since graduating, Steve has gained extensive experience in public and private sector forest management, with:

- 24 years experience in native forest and plantation management;
- 20 years experience in planning and supervising harvesting operations;
- 18 years experience in sales and marketing on the NSW north coast;
- 12 years experience in harvesting and haulage contract management;
- 5 years experience in export log sales and marketing;
- 2 years experience managing the Northern Regions Aerial Photography Interpretation Unit; and,
- 3½ years as an independent forestry consultant.

Scope of report

Instructions

Jamax Forest Solutions was engaged by XXXXX (the Client) to undertake an estimate of the current merchantable volume and residual value of the standing crop of timber on the aforementioned property.

Context

The client has indicated that they are seeking an estimate of the current value of the standing crop of trees for the purpose of seeking finance to purchase the block.

Due to the short timeframe and cost considerations, it was not necessary to undertake a formal valuation of the property in accordance with the Association of Consulting Foresters of Australia (2012) *A Standard for Valuing Commercial Forests in Australia*. However, a less formal appraisal of the timber resource was undertaken using the Lump Sum method, which assumes that the whole forest is liquidated within a 1 year without impacting price and that there is an active market.

Property details

Location	
Lots	Lot
Deposition Plan(s)	DP
Gross area	352.95 hectares
Net forest area	Approximately 173.7 hectares

Process and methodology

Inventory

In accordance with the Association of Consulting Foresters of Australia (2012) *A Standard for Valuing Commercial Forests in Australia* (Leech, Jerry and Ferguson, Ian, Technical Editors, 2012), Jamax Forest Solutions has used the Lump Sum Method to determine the value of the biological assets. The standard states that:

Small forests or plantations for which suitable transactions data are not available may be valued by estimating separately the value of the Land and the value of the Living Trees. Small forests or plantations are those in which the harvest and sale of the resulting wood could potentially be arranged in a year or so without the undue disruption of markets and prices otherwise associated with a forced sale of a substantial volume of wood.

Under the above conditions, the value of the Living Trees can reasonably be estimated by applying the current prices to the estimated volumes of wood in the various grades and assortments that would be expected to be available if the trees were to be harvested in the base year, and deducting all costs borne by the owner that are associated with the harvesting and transport to market (Leech, Jerry and Ferguson, Ian, Technical Editors, 2012, p. 25).

To estimate the total standing volume and the volume of log products, five circular plots were established throughout the forest stand. Each plot was 0.1 hectare in size, contained 12-28 trees and was located in a representative area of the forest.

At each plot, the following stand characteristics were measured:

- latitude/longitude
- basal area
- species
- diameter
- bark thickness
- height
- merchantability
- product
- product length and mid diameter
- product diameter

To calculate estimated standing forest volume, the following formula was used:

$$\text{Standing Forest Volume (m}^3\text{/ha)} = \text{Plot Volume (m}^3\text{/plot)} \times \text{Net Area}$$

The inventory data is presented in Table 1 below.

It should be noted that due to time and cost considerations, the number of plots was reduced below that which would normally apply to a formal valuation of the forest block. However, to achieve an acceptable

sampling error, stand basal area and the consultant's personal experience to crosscheck the results. Stand basal area can be used as a quick estimate of total forest volume to using the formula:

$$\text{Standing Forest Volume (m}^3\text{/ha)} = (\text{Stand Basal Area (m}^2\text{/ha)} \times \text{Dominant Height (m)})/3$$

Basal area (BA) is the cross-sectional area of a tree measured at breast height (1.3 metres) over bark. As this is an area measurement, the units are in metres squared. Stand basal area is the sum of the basal areas of all trees within the operational area expressed in metres squared per hectare. Imagine you cut down every tree in a 1 hectare area of land and that all the stumps were 1.3 metres high. The stand basal area is the total surface area of all of those cut stumps. Stand basal area was measured by angle count sampling, which is explained in detail in Appendix A. Plot locations are shown in Appendix B.

The total stand volume was calculated for the current timber crop and a merchantable volume determined based on the number of trees within the sample plot currently capable of making a log product.

Pricing

Current harvesting and haulage rates were used to determine the residual stumpage from the property based on Jamax's current delivered prices and transactional data.

Findings and observations

Approximately 173.7 hectares of the property is fully timbered, with additional scattered stands throughout the northern half of the property that have not been considered in this timber appraisal, which focussed on the contiguous areas of forest on the property. However, these additional areas are likely to yield an additional volume at the time of harvesting, if access permits. The property exhibits a long, though not recent, history of logging, as evidenced by the numerous stumps, extraction tracks and logging debris across the property. The property has previously been harvested for poles, girders, sawlogs, fencing timbers and, possibly, sleepers.

The forest is primarily Forest Types No. 60 (*Narrowleaved White Mahogany-Red Mahogany-Grey Ironbark-Grey Gum*), No. 62 (*Grey Gum-Grey Ironbark-White Mahogany*) and No. 37 (*Dry Blackbutt*) (Forestry Commission of NSW, 1989). The species breakdown of the sample plots was:

Species	No. of trees	Basal Area
Blackbutt	10%	37%
Grey Ironbark	18%	20%
White Mahogany	32%	17%
Grey Gum	18%	12%
Bloodwood	6%	3%
Turpentine	4%	3%
Brushbox	3%	2%
Tallowwood	10%	6%

The forest's current stand structure exhibits two distinct age classes with a canopy of late mature, dominant trees overtopping a regrowth sub-canopy. The forested section adjoining XXXX Forest Drive near the property's main access road appears to have been significantly modified in the past with most of the understorey removed and grazed. However, a lack of ongoing maintenance and/or grazing has seen the area revert to forest, though the understorey now contains abundant weed species and very little eucalypt regeneration.

The forest has been selectively harvested in the past favouring the retention of select individuals and the remnant overstorey is now largely merchantable, with 48% of the trees and 45% of the standing volume being merchantable. The sub-canopy is predominantly too small to be of current economic value and will benefit from being inadvertently "thinned" during any harvesting operation to remove the merchantable overstorey.

Table 1: Summary of Inventory Data

	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Average
Product Volumes (m³/ha)						
Girder	8.848					1.770
Pole	6.641	11.433	7.999	7.522	19.263	10.571
Pile					12.152	2.430
High Quality Large Sawlog	11.431		56.732		39.059	21.445
High Quality Small Sawlog	4.590		5.331			1.984
Salvage Sawlog	47.706	17.125	54.710	51.357	40.954	42.370
Pulp		92.733		6.181	17.437	23.270
% merchantable timber	59%	28%	60%	46%	55%	45%
Non merchantable volume (m³/ha)						
Unmerchantable/Submerchantable	54.344	307.038	81.863	77.813	103.381	124.888
Estimated Standing Volume (m³/ha)	133.559	428.329	206.636	142.873	232.245	228.729
Basal Area (m²/ha)	21	26	32	42	40	32
Est. Standing volume using BA sweep	210.000	390.000	426.667	490.000	513.333	406.000
Est. Standing volume using calc. BA	194.088	683.709	281.665	262.519	447.711	373.938
No of merchantable trees	9	9	7	11	12	9.6
% of merchantable trees	75%	38%	33%	39%	55%	48%

It should be noted that the estimated standing volume (m³/ha) calculated from the plot data is well within the volumes calculated based on either individual tree basal area or by basal area sweeps.

However, as detailed below, just because a tree has an inherent value whilst it is standing in the forest does not mean that that value can be economically, legally or viably realised.

The current monetary value of the merchantable timber crop is a residual value that is dependent on a number of factors, including:

- harvesting contractor viability;
- harvesting contractor's rates, which will reflect difficulty of harvesting (slope, access, etc), area available for harvesting, volume per hectare, etc;
- point of sale – delivered to the mill or sold in situ "on the stump" (stumpage);
- costs of planning, finding a market and supervision;
- distance to market – the cost of haulage is a critical cost that is often more than the harvesting rate and stumpage combined;
- roading costs, and;
- regulatory restrictions.

A harvesting contractor needs to make enough money each day to cover the costs of initially moving his equipment to the job, pay for his equipment, fuel, staff, repairs and maintenance and still make a profit. As there is a limit to how much a contractor can charge for each unit of logs he harvests, the minimum area and yield per hectare are the major factors that influence contractor viability.

When assessing the potential yield of a forest, stand basal area is a very useful parameter for quantifying a forest stand. It may be seen as a summary of the number and the size of trees in a stand. A fully stocked stand should average between 30-50m²/ha prior to harvesting. The Victorian Department of Natural Resources and Environment's Native Forest Silviculture Guideline No.14 (Department of Natural Resources and Environment, 1997) prescribes that the minimum basal area limits for thinning mixed age regrowth in 30m² per hectare for economic viability. The stand basal area across the property averages 32m² per hectare.

However, the basal area limits that apply to timber harvesting operations on the north coast of NSW require that the stand basal area must not be reduced to less than 16-18m² per hectare for North Coast dry/moist mixed hardwoods and North Coast Blackbutt respectively (Department of Environment and Climate Change NSW, 2008). As such, the available standing merchantable volume is not all available and, based on the client's instructions regarding the harvesting of the property, the inventory yield data has been deliberately skewed towards the preferential removal of the highest value log products.

Table 2: Summary of Harvestable Volumes within Basal Area Limits

	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Average
Basal area limits (@ 18m²)	14%	31%	44%	57%	55%	40%
Harvestable volume under PVP	11.316	37.320	54.588	37.177	70.875	42.255
Product Volumes						
Girder	8.848	0.000	0.000	0.000	0.000	1.770
Pole	2.468	11.433	7.999	7.522	19.263	9.737
Pile	0.000	0.000	0.000	0.000	12.152	2.430
High Quality Large Sawlog	0.000	0.000	46.589	29.655	39.059	23.061
High Quality Small Sawlog						
Salvage Sawlog	0.000	25.888	0.000	0.000	0.401	5.258
Pulp						

As a result, the estimated current merchantable volume and residual value of the standing crop of timber on the property is:

Table 3: Summary of Product Volumes and Values

Products		Royalty Value (\$/m ³)	Estimated Product Volume (m ³ /ha)	% of Standing Volume	Estimated Product Value (\$/ha)	Estimated Product Volume (m ³)	Estimated Product Value (\$)
1	Girder	\$ 257.68	1.770	4%	\$ 456.00	307	\$ 79,207
2	Pole	\$ 169.23	9.737	23%	\$ 1,647.78	1,691	\$ 286,220
3	Pile	\$ 200.00	2.430	6%	\$ 486.06	422	\$ 84,429
4	High Quality Large Sawlog	\$ 108.12	23.061	55%	\$ 2,493.33	4,006	\$ 433,091
5	High Quality Small Sawlog	\$ 84.12	0.000	0%		-	\$ -
6	Salvage Sawlog	\$ 12.00	5.258	12%	\$ 63.09	913	\$ 10,959
7	Pulp	\$ 6.00	0.000	0%		-	\$ -
8	Unmerchantable/submerchantable						
			42.255	100%	\$ 5,146.27	7,340	\$ 893,907

Conclusion

It is my professional and considered opinion that the current timber crop could yield approximately 7,340 m³ of high valued products, which based on current harvesting and haulage rates and delivered prices could return a residual value of \$893,907.

This estimate is my considered opinion of the value of the subject timber crop as at the date of estimate. It does not purport to reflect any future trends, changes in value or changes to the property.

This estimate is for the use only of the party to whom it is addressed and for no other purpose. No responsibility is accepted to any third party who may use or rely on the whole or any part of the content of this estimate.

I hereby certify that I do not have any direct, indirect or financial interest in the property described herein.

STEVE DOBBYNS BSc (Forestry) M.I.F.A., R.P.F.

Jamax Forest Solutions

Phone: 0427 990 317

Fax: 02 6585 6293

Email: steve.jamax@bigpond.com

ABN 44 673 162 360

Exclusions and disclaimers

Jamax Forest Solutions has not been requested to nor have we undertaken a formal forest valuation in accordance with the Association of Consulting Foresters of Australia (2012) *A Standard for Valuing Commercial Forests in Australia*. Such a valuation would require additional plot work to achieve the level of sampling error for such a valuation.

The estimate is current at the date of estimate. The value assessed herein may change significantly and unexpectedly over a relatively short period (including as a result of general market movements, environmental factors or factors specific to the particular property). We do not accept liability for losses arising from such subsequent changes in value. Without limiting the generality of the above comment, we do not assume any responsibility or accept any liability where this estimate is relied upon after the expiration of three months from the date of the estimate, or such earlier date if you become aware of any factors that have an effect on the estimate.

Whilst the land appears suitable for the existing use, no soil tests or environmental studies have been made available to Jamax Forest Solutions. This estimate is on the basis that the property is not affected by any hazardous or unsafe material or condition that adversely affects its existing utility or reduces its marketability. Should an environmental consultant's report indicate otherwise, then this estimate report is to be requisitioned for comment.

The report is not to be relied upon by any other party for any other purpose. Jamax Forest Solutions accept no liability to other parties nor do we contemplate that this report will be relied upon by other parties. Other parties who may come into possession of this report are invited to seek our written consent to them relying on this report. We reserve the right to withhold consent or to review the contents of this report in the event that our consent is sought. In summary, this estimate report is for the use of and may be relied upon only by the parties to whom it is addressed. No other party is entitled to use or rely upon it without our specific written consent and Jamax Forest Solutions shall have no liability to any party who does so.

In accordance with a condition of our Professional Indemnity Insurance Policy, it is advised that this is an informal estimate of the value of the timber and not a Valuation Report.

Neither the whole nor any part of this report, nor any reference thereto, may be included in any document, circular or statement, without written approval from Jamax Forest Solutions of the form and context in which it will appear.

It is confirmed that Jamax Forest Solutions have no pecuniary interest that could conflict with the estimate of this property.

References

Department of Natural Resources and Environment. (1997). *Thinning of Mixed Species Regrowth, Departmental Guideline No. 02-20-0701-2 (Native Forest Silviculture Guideline No.14)*. Department of Natural Resources and Environment.

Department of Environment and Climate Change NSW. (2008). *Private Native Forestry Code of Practice for Northern NSW*. Sydney: Department of Environment and Climate Change NSW.

Forestry Commission of NSW. (1989). *Research Note No. 17 - Forest Types in New South Wales*. Sydney: Forestry Commission of NSW.

Leech, Jerry and Ferguson, Ian, Technical Editors. (2012). *A Standard for Valuing Commercial Forests in Australia*. Canberra: Association of Consulting Foresters of Australia, Division of the Institute of Foresters of Australia.

Appendix A - Techniques for Measuring Stand Basal Area



Private Native Forestry Code of Practice Guideline No. 5

Techniques for Measuring Stand Basal Area

Introduction

This document provides a guide to the measurement of stand basal area. The Private Native Forestry Code of Practice (the Code) uses the concept of basal area to set disturbance thresholds, or retention limits for single tree selection and thinning operations in private native forests. Basal area is a forest measurement that can help forest owners estimate tree volumes, and understand and manage stand density and competition.

It is the responsibility of landowners and forestry contractors and operators to comply with the Code.

For the purpose of this guideline, and for use in accordance with the Code, there are some important definitions which include the following.

- **Tree basal area:** the cross-sectional area of a tree trunk measured at breast height over bark. It can be thought of as the surface area of a cut stump at a height of 1.3 m (Figure 1).
- **Stand:** an area of forest that can be identified and mapped according to broad forest type and height class as listed in section 3.1 of the Code (section 3.2 in the Code for Cypress and Western Hardwood Forests).
- **Stand basal area:** the sum of the basal area of all live trees in a stand, is usually expressed in square metres per hectare (m²/ha).

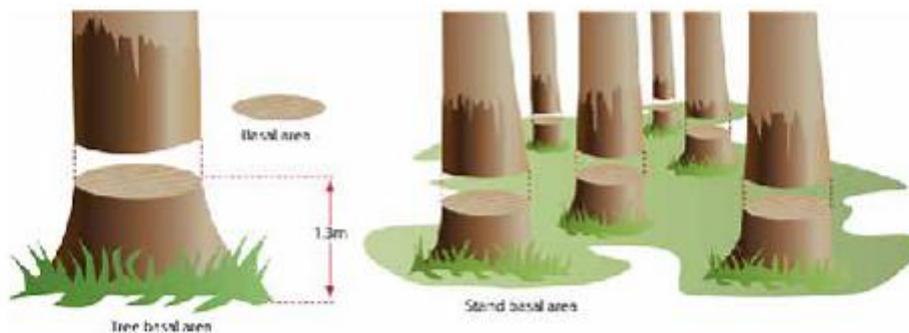


Figure 1: Tree basal area and stand basal area

Appendix B – Plot Locations