

1. Maximum Volume handled to
wasn't going to CPY?

PROCESSING AT THE STUMP, CPY
OR MILL: A Personal Perspective

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2. Looked into using lime
or concrete stabilised ground instead
of sealed

INTRODUCTION

Having been involved with Ngaumu Forest over 11 years I have seen changes in processing from the traditional forest skid site, to a forest central processing yard, (CPY) to a mill processing yard. The changes from Skid to CPY to the Mill Processing Yard were for a combination of factors and changes in forest ownership.

successor Timberlands NZ Ltd from 1987.

As such it was one of a few CPY's operating in radiata pine. When it was conceived some two years previously logging was predicted to expand from 35,000m³ up to 80,000m³. Logging was also moving to the Poroporo block which was some distance from the Head Quarters block. The Ngaumu CPY was designed around a five year life of 400,000m³ however, because of its location it could be used for the future as the potential volume of 1,600,000m³ was available to the yard.

NGAUMU LOGGING

When the N.Z. Forest Service first started logging in Ngaumu Forest the annual volume clearfelled was approximately 30 000m³. With such a small volume little roading was needed however there were seven customers all with different logging rigs. Forest log stocks needed to be only 50 - 200m³ to keep the mills in production, so there was no need for large skids. Provided that a reasonably constant flow of wood could be maintained mills could keep up production from their own large stock piles held at the mill.

In the investigation into the savings and benefits of a log yard a number of issues were addressed.

1. Very poor ground conditions in wet weather
2. Costly metal supplies
3. Scarce local metal supplies
4. Limited logging history
5. Costly landing construction if large areas were required
6. Increased requirements for hauler extraction of steep terrain
7. Scattered and numerous customers requiring stockpiling
8. Variations in truck units and configurations

NGAUMU CPY

The Ngaumu CPY was established by the N.Z. Forest Service and run by its

All the above points revolve around the high cost of providing all weather access for logging trucks and the

need to construct large landings to store segregated logs, the highest cost being metal. Seven grades of logs were being graded on the skids at the time.

LOCAL MILLS

Ngaumu Forest customers were eight small mills with no single large mill capable of taking the bulk logs available. This then led to stockpiling a number of log sorts.

Each mill contracted its own trucking firm, making highway trucks variable in wheel configuration. Some required large turn arounds, others had traction difficulty when roads were wet. Skids and roads were designed for highway trucks and thus needed to be over designed to take the poorest highway truck. This then led to higher forest roading costs than the volume warranted.

METAL SUPPLIES

Local metal supplies are available in limited quantities from a forest quarry. However, this metal is poor quality greywacke and sandstone and very expensive to win. It required blasting and ripping to extract, then heavy rolling to form a base course. Left exposed to the elements it quickly breaks down.

High quality river gravel is available at Masterton some 30km from the forest.

Ngaumu Forest can experience wet weather conditions in many months other than the

winter period. So while planning is for wet winter periods there is a need to also plan for wet periods in any month.

LANDING CONSTRUCTION

With a move to grading logs by log type in order to maximise returns, landings need to be reasonably large to accommodate the log sorts. Because loaders are then required to move logs around larger areas, increased areas of metal are required.

Although landing start out at 40 x 40m, 0.16ha they invariably expand over the logging period to 0.21ha that is 46 x 46m.

Metalling costs on landing was a significant saving in the evaluation of the log yard.

HAULER

Although at the time FMC haul units were in use it was recognised that future logging would require hauler operation. It was felt that hauler sites would require even larger landings, there were then savings if the processing could be carried out at a central site.

POROPORO LOGYARD OPERATION

BUSH

The Ngaumu CPY was constructed with a weighbridge and was designed to take the total Ngaumu Forest cut.

Bush felling took place and tree lengths were extracted to the skid using a F.M.C. 220 CA unit. At the skid, logs were measured and a pre-emptive cut made at approx 12m depending on the pruned length. The 12m length was decided on the presumption that it could be cut to 2 x 6m lengths.

Logs were stacked and then loaded with a Hitachi UH083 loader onto a Kenworth off highway heavy duty C500 logging unit.

LOG YARD

The Kenworth was weighed at the CPY and then unloaded using a CAT 950B loader. Logs were laid onto runners in order to facilitate the measuring and cutting of the logs.

Bunching of the log sorts was achieved with a Hitachi loader and then placed onto the log piles with a CAT loader.

Highway trucks were loaded and then weighed over the Weighbridge. The weighbridge provided all the documentation to the mill as well as being linked to a computer network to enable invoices to be raised.

ROADING STANDARDS

It was felt that there was little chance of reducing the geometric standards of the roads. Roads being upgraded were already minimal and corner radii and road grades unlikely to be reduced except on arterial roads.

There were savings to be made

in reducing the pavement depth mainly due to the fact that loads could be reduced in winter to 20 tonnes and then increased to 25 tonnes in summer.

If highway trucks pick up logs at the forest skid they demand maximum loads at all times of the year and restricting their loads is difficult without some compensation for higher costs per tonne km.

LANDINGS

It was estimated that there would be a 70% reduction in skid size. This was based on skids evaluated at 50 x 25m, 0.125ha in size and requiring 250m³ of metal. The recommended size of skids was 30 x 12m, 0.036ha and no metal.

The cost savings in the smaller skid formation was \$800 per landing or 0.16/m³ of logs. Metal reduction amounted to \$4 000 per landing or \$0.18/m³ of logs.

The previous skids were built to 40 x 40m, 0.16ha in size and often had greater quantities of metal than 250m³ especially on the winter skids. After logging an evaluation of the Head Quarter block, skids showed that they were 0.21ha in size i.e. 46 x 46m.

The evaluation of the log yard found that skids needed to be at least 40m long to enable the F.M.C. room to drag the tree length onto the skid. The width needed to be 20m, thus the skid size 0.08ha. After logging, skids have usually increased to

0.15ha being 50m x 30m.

Skid sizes were not reduced to any great extent as full length stems still have to be landed, stockpiled and loaded at the skidsite, however, the amount of metal used is significantly reduced.

The next development made was that landings were not constructed at all and processing was undertaken just off the road edge using the road as part of the processing area. This method continues today for tractor operations although with the move to haulers, skids needed to be constructed.

JUKEN NISSHO MILL PROCESSING YARD

With the sale of Ngaumu Forest to Juken Nissho Ltd the company built a large Laminated Veneer Lumber and Sawmill factory at Masterton and the processing location was investigated again. This led to the formation of a new mill processing yard and the closure of the previous Ngaumu CPY.

There were a number of reasons for the change in policy and new yard at the Mill, but probably the main ones being:

- (a) Logging in a number of blocks some distance from Poroporo
- (b) The move to hauler logging.
- (c) The greater need to segregate log qualities to meet the mill requirements.
- (d) Greater ability to supervise and meet changing mill requirements.

Starting again with a new CPY at the mill enabled improvements to be made from what had been learnt at the Ngaumu CPY.

MAJOR CHANGES TO DESIGN OF LOG YARD

1. Formation of a sealed yard
2. Drainage from the site
3. Bark disposal
4. Log movement direction from unloading, to processing, to stock pile, to mill deck.
5. The ability to expand and change the yard log layout over time.

SEALED LOG YARDS

Sealed log yards are probably the most important decision to make because of the high capital cost, however I would say that it has the most bearing on the efficiency and work quality of the operation. Bark knocked off the logs from log handling presents a major waste disposal problem to be solved. The Poroporo yard was constructed in metal. Over time the bark is mixed into the metal surface and the removal of bark from the site resulted in metal also being removed and then having to be replaced. It is both costly and difficult to keep the yard surface clean and smooth unless its sealed especially in the winter as the bark holds the water from draining.

I would not recommend that metal yards are used without a cheap supply of metal and a large disposal area for the bark.

Once a yard has been sealed

then daily cleaning can take place and because the bark is clean it can be sold to the various firms dealing in potting mixtures.

YARD RUN OFF

With the introduction of the Resource Management Act the disposal of waste from CPY has been highlighted.

Run off from rainfall takes with it crushed bark as a fine silt. The quality of this water is likely to have BOD of 200 - 400gms/m³ and Suspended solids of 500 - 1000gms/m³.

In today's environmental awareness the disposal of run off needs to be taken into account. It is far better that this aspect is evaluated at the initial planning stage rather than become a future problem.

LOG GRADING

The mill requires log grades different from the domestic or export market, however the skid operation is very similar. Log lengths into our process are 1.3m in length and at times can be less than 1 metre although we cut to multiples of these lengths at the CPY. Further cutting to single lengths takes place after debarking

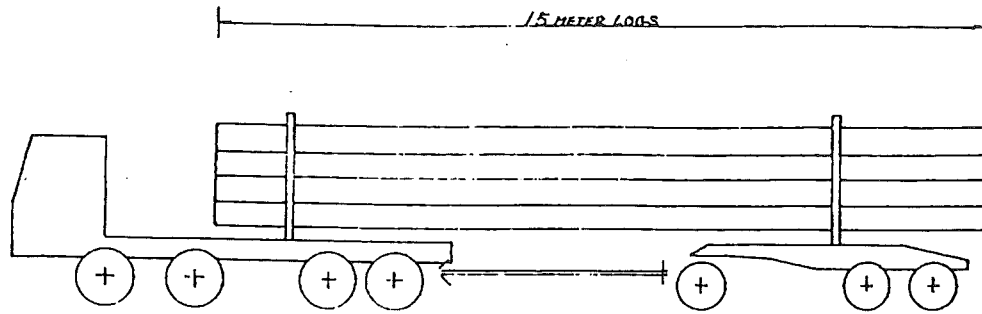
just prior to processing.

The shortest logs normally processed by local markets has been 3.1m and multiples of 300mm up 6.1m. This has led to some waste at bush skids or logs being down graded to market short sections.

Because we have 15m logs, short section of defect can be cut thus enabling much higher recovery from our forest. Sweep is one area where recovery can be higher due to cutting the sweep into 1.3m sections. Over this length sweep is very small and not a problem although with sweep we also get compression wood that makes very poor quality veneer. Such logs have a poor conversion but they are still utilized rather than left in the bush.

LOGGING TRUCK DEVELOPMENT

Because the Mill CPY was at Masterton, off highway trucks could not be used. This then required logging trucks to conform to public road regulations. Kevin Fearon our trucking contractor developed the rig to enable us to take what we believe is the longest legal log length at 15m. The Truck wheel configuration to enable maximum tonnage at this length was also developed.



SUMMARY

CPY's are highly desirable where log flows can be centralised and volumes are sufficient to justify the capital cost of the operation.

With the increased log prices, log making requires greater supervision, as good cutting decisions can greatly increase the value to the forest.

CPY's need to be sealed to offer the best working conditions and to enable the bark waste to be disposed as a by-product rather than by paying for it to be dumped.

Where roading is expensive and bush skids are restricted in size the development of a CPY should be considered. It is highly desirable to let the logging contractors concentrate on production, and take the logs to a CPY where cutting to maximum value for the grower or mill can take place.