

# Log quality key to industry profitability

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## Introduction

The New Zealand plantation forest industry is now a century old. It is struggling for profitability. It is also volatile and short on leadership. The veneer sector of the wood industry has a huge role to play if we are to expand processing and generate real returns for New Zealand.

Whilst there is a suite of factors affecting profitability within our industry, log quality is potentially the largest influencing factor. Log quality is steadily on the decline. There is a lack of knowledge and a lack of real accountability amongst forest growers to produce better logs, and this has and will further seriously erode New Zealand's viability in wood manufacturing.

World timber resources are dwindling and New Zealand has in world terms a small resource of mostly *Pinus radiata*. We can grow excellent forests and hit the high value end-use products, or we can grow average or worse forests and be in the commodity trade.

To balance all the adverse factors wood manufacturers are now facing, there are some outstanding benefits New Zealand has with its forestry industry:

- Our soils and climate particularly here in the East Coast can produce some of the best volumes of high quality wood per hectare in the world.
- *Pinus radiata* is a versatile, easy-to-work manufacturing timber.
- When we manufacture wood products here (compared to exporting logs) we are able to keep the timber clean and fresh from fungi; we are able to halve the volume for shipping; and we are able to cut down the weight by 75%.

Onshore processing will work, but the industry needs to get serious about driving for its future.

## What place does veneer have in New Zealand?

Traditionally rotary peeling in New Zealand has focused on pruned logs producing clear veneer for high-grade, clear face plywood. A very limited volume of clear flitch has been sliced into veneer for decorative finishing uses.

Whilst rotary peeling of pruned logs may continue in a limited form, it is more likely that high values will be extracted from pruned logs by sawing them into solid wood finishings where the price per cubic metre on world markets far exceeds that of plywood.

Peeling unpruned radiata logs to produce plywood and laminated veneer lumber products

has huge potential, and will generate value well in excess of New Zealand's traditional framing timber on a per cubic metre basis. If New Zealand can make profits from such business then the unpruned logs will have an onshore home to go to.

## What to manufacture?

*Pinus radiata* may not have the density of some species but it does have many qualities that set it ahead of other species for manufacturing and finishing. Being such a versatile wood we then ask ourselves what product, at what value and cost, can we make from which section of the tree?

In fundamental terms we want to make a product that is in steady demand, of high quality, not under threat from substitution, and that is profitable to manufacture. Our own company philosophy is that wood that you can see, live around and touch is generally of high value and in demand. If it is not in your eye every day but used under the floor or in a wall, then it has a much lower value and is more likely to be substituted.

In world terms, timber markets have been there for centuries. There are many grades of lumber, variation from nation to nation, and particular niches here and there; but the following value principle has held since timber was first traded:

- highest value quarter sawn solid clear lumber
- next flat sawn solid clear lumber
- then industrial grade lumber
- lowest value fibre products

Relating this product value gradient back to the tree, it is easy to see that the highest value products will come from well grown, large diameter pruned butt logs. The second and higher logs of a tree are more valuable in terms of products if their knots are kept small, density is kept high, and if the volume of pulpwood is minimised.

In summary, anyone seeking to be successful in a market and expand his or her market share must deliver the best quality product on every order. That means starting off with a log resource that is really fit for purpose, and manufacturing the best quality products along the processing and delivery chains.

The balance between log quality and what to make is critical. If a log is less than optimal for the end product the following negative impacts will result:

- higher log costs in \$/m<sup>3</sup> of the product,
- lower conversion rates from the log to the product,

- higher manufacturing costs in \$/m<sup>3</sup> of the product,
- lack of production volumes to meet orders of the product,
- pressure to meet target volumes, giving a risk of lack of quality in the final product,
- more downgrade material to dispose of at a lower value, and
- the potential for stress, frustration and lost reputation.

### Veneer products

Sliced veneer from quarter sawn flitches may be a small volume trade, but it is very high value and profitable. For this product you need large pruned logs, even and small growth rings, small heartwood, central pith, no fluting and so on. From these very best logs you can quarter saw to produce flitches and then slice into thin veneer, dry that and use it for finishing on every-day surfaces such as cupboard doors, stair treads and furniture. Sliced veneer is probably the highest value product as well as giving the highest profit margins, and has been the wood products market leader for decades. It's a niche market with a consistent demand and New Zealand should be growing trees for expanding this market.

Rotary peeling of pruned logs for face veneers will have some place, but if the logs are unpruned, it is more likely that the veneers will be used for a range of engineered wood products. For rotary peeling to make higher grade structural laminated veneer lumber (SLVL) and plywood products, the logs will ideally have:

- a large outer diameter,
- a low taper,
- a straight, central pith,
- a small diameter heartwood, and
- high density (although some products do not require high density).

Of course the less the log supply conforms to the above list the more the veneer will be downgraded, from face to cross band for ply, or to core for LVL. Indeed, as the log grade mix worsens the volumes of low-value construction ply veneers increase.

At our East Coast mill we have processed logs from most forests in the North Island and we have noted a wide variability from place to place. We are now confident about which qualities can be obtained from which forests. Some of the very best wood comes from our own Patunamu forest near Wairoa. We bring some veneers from Kaitia to mix in our SLVL, because wood densities are higher in the Northland forests.

Technology is improving and this is assisting us to grade our input material. We now grade

logs for density using tools in the log yard, and grade veneer for strength along the processing lines.

### Manufacturing costs

In most wood manufacturing operations the cost of the logs clearly dominates the books. Wood qualities vary strongly from forest to forest, as well as within any one tree. Arguing with the supplier for a few dollars either way on the "log grade" price is nonsense compared to a log price based on product out turn. The processor will earn hefty dividends from a "fit for purpose" log, which will allow him to pay more to the log supplier. Presentation of the correct log to the manufacturer is good for both parties.

**Logging and loading** costs at the forest have increased sharply within New Zealand since corporatisation in the late 1980s. Cable logging, which was \$16-18 /tonne then, has risen in some regions to more than \$30/tonne, whilst productivity per crew day has correspondingly fallen. My view is that this is largely due to the unreliability of our corporates and their excessive dependence on the log export trade, which has resulted in a boom-bust operating style. That style, coupled with continued changes in company ownership, has resulted in the departure of many of our more experienced people from the industry. Large sectors of the industry now lack skills and are repeating the mistakes that we made and learned from decades ago. The current lack of expertise on the part of forest companies and their contractors is serious.

**Roading** and the cost of roading in areas like the East Coast has also been of serious concern. As far back as the 1970s the Central North Island Planning Study had identified specific needs for public roads for our industry, but successive Governments chose to ignore the issue. I congratulate our current Government, in particular the Rt. Hon Jim Anderton for his foresight, drive and conviction to make available public funding for roads that will directly assist wood processing. District roads and bridges are being built and that is one large barrier that processors and forest owners can now strike off their list.

**Electricity** costs in the Gisborne region are higher than they are in Kaitia! We have generation at Tuai and in the Bay of Plenty, we have a well depreciated Transpower line running at near capacity into this region, and in our case our mill is just 4 or 5 kilometres from the Transpower substation. We have a connected load of around 4.5 Mw (i.e. we are big users), but even with a national supply contract to JNL as a whole, we pay a higher unit price here than in



*Quality of logs has to be fit for purpose.*

Masterton or Kaitia. Our electricity cost went up some 50% last year, and is forecast to go up another 30% in due course.

Electricity supply is a critical area of national importance and yet the Government has privatised it, and now the new owners are price setters, taking super profits at the expense of New Zealand's future growth. This seems bizarre.

When JNL built its plants in New Zealand we looked very closely at co-generation of electricity using wood fuels. It was then (and is now) uneconomic, and while there will always be some waste, our real goal was to minimise waste and maximise value. It made no sense to burn wood that we had paid someone to carefully grow for the last 30 years! Consequently as an industry we are largely at the mercy of Government and the electricity sector on energy prices. Minimising consumption and alternative private generation will assist the economics of existing plants.

**Labour** efficiencies and costs in New Zealand are driving all industries towards more automation. Unfortunately for the wood industry there is no simple road to automation. A pine tree is a structure just as Sky Tower is in Auckland, and it grows to stand tall in the wind and to resist some earth movements. *Pinus radiata* is also an extremely opportunistic species that will grow more branches out towards open space and the sun, and therefore the tree's support structure is less than uniform.

It follows that with such intrinsic variability within the tree's structure, the various components and wood types produced when it is unraveled by sawing, slicing or peeling must be separated for grading and product streaming. Such grading is essentially a manual process. Although grading can be automated to a point, the higher the level of automation the less exacting the quality the finished product will be.

Processing in Japan is very expensive with labour rates more than double those of New

Zealand. However, labour rates in China and the Philippines, for example, are just 10% of ours or less. More attention to exacting silviculture and uniformity in log presentation will assist our wood processors to automate and compete in markets for high-value products.

**Land transport** is an important component of both forest and manufacturing costs. Here in the East Coast where we are isolated from other regions by mountains, we must strive to process and export from within our own region to minimise transport costs. Thanks to Government the roads are no longer such a barrier, however heavier pay-loads per truck would bring New Zealand more into line with our world competitors. Industry has had more than a decent attempt to increase pay load weight to something matching our Pacific competitors, but we are hampered by our reputation of log truck rollovers. Rollovers are largely the result of stacking short length export logs too high, and are likely to continue while trucks hauling these logs dominate our highways. Domestic processors generally prefer longer logs, which for the same pay load weight provide a lower centre of gravity and less of a problem.

Road transport is a high cost component of the forest cycle. An increase in gross laden weight from 42 tonnes to 60 tonnes per truck would re-



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duce road transport costs per tonne by some 40%. We need to keep working on truck safety and increased efficiency.

The politics of rail within New Zealand, particularly the East Coast, have been well aired over the past year. There are no existing benefits to East Coast forests by using rail for log freight. The rail's location means that trucks must cart from forest to the rail head where the logs must be unloaded and reloaded onto wagons. Double handling makes rail an uneconomic option for log transport within this region.

At present container shipping is available only at Napier. In some cases rail may be useful to processors sending containers from Gisborne to Napier and back, however it is hopefully a short-term issue. More processing within our region and more diversified marketing will reduce bulk exports and make local containerisation more likely. Gisborne will eventually handle its own containers.

**The Port of Gisborne** is critical to the economic success of forestry and Tairāwhiti as a whole. Trucking or railing logs and products out of the region will add huge expense to those concerned. The Port of Gisborne management has been subject to uncertainty and change over the past few years, and little direction has been acted upon during that time. We must work closer with them so that they can better understand our business. At the same time our industry must take responsibility for the investments made by the Port on our behalf. If huge investments are required to facilitate log export growth, then that is a high risk investment that log exporters must own up to and be responsible for.

### Coming back to forestry and logs

Our experience is that log quality is probably the most significant key to profitable wood processing. Unfortunately when one looks around New Zealand at our forests, it is clear that silvicultural management leaves a lot to be desired. The age class for clearfelling is generally far too young. This affects both wood density and corewood ratio, and of course the merchantable volume per hectare is reduced so that harvesting costs per m<sup>3</sup> are higher and profitability is lower.

The forestry corporate accountants will say that NPV calculations based on log value return dictate a clearfelling age of 22 to 26 years. What they fail to realise is that our future as an industry lies in processing, not in log exports. Logs that are older and from better managed stands will return far more to processors, and can therefore be higher priced. Unfortunately these accountants seem to be locked into just one sector

of the forestry business. My own practical studies on profitability show that a rotation age of 33 to 35 years may be optimal here on the East Coast, based on the integrated financial accounts of our forests and mill.

Of further concern are the activities of forest consultants who seem to target any farmer with forests over 20 years old. It is getting harder and harder to find 30 year old stands in New Zealand. Even good pruned stands can be clearfelled at 22 years plus.

Processors are beginning to pay clear differentials for lower and higher quality logs in order to change this early clearfelling mentality. Owning up to the issues will help us to establish stronger price gradients for age and quality of logs.

Understanding silviculture and creating improvements in tomorrow's log quality for processing is critical for New Zealand. It seems to be difficult for foresters to achieve, but it shouldn't be. Apart from site issues, log uniformity is about the genetics of the stock that you plant and how you manage the trees over the ensuing 12 to 14 years.

In many cases New Zealand would seem to be doing well with genetic deployment, although wood quality issues were for a time forsaken in favour of faster growth. Silviculture, however is commonly very poorly understood and practised. Perhaps it is an activity that carries poor responsibility and ownership. My opinion is that some forest managers, who are not in the business for any long-term credibility or reward, often regard the downstream effects of poor silviculture as irrelevant. Many managers and silviculturists simply appear to lack knowledge of wood processing and what it is that they are really trying to grow their trees for. The effects of successive sales of forests to asset strippers, and the misguided corporate belief that frequent staff restructuring is beneficial, are now showing up in many areas.

My estimate of the situation in New Zealand is that particularly in the last 15 years, only 50% of all forest estates have been well managed to provide consistent wood quality to discerning manufacturers. This is indeed a sad waste of opportunity. Correct stocking, even spacing throughout the rotation and balancing growth to manage juvenile core and heartwood for the first 10 years will pay heavy dividends to long-term players.

For my own company's part, whilst we are far from perfect, I can report that for example our East Coast forest office boasts more than 125 years of experience among just five key managers. My challenge, issued to those staff in respect of buying land and creating some additional forests,

was “You have probably the highest level of experience for the operational size of any forest office in New Zealand — go forward and create forest more profitable than New Zealand has ever seen.” I am happy to report that the team eagerly picked up the ball and is running with it.

### Summary

This paper mentions some outstanding advantages of being in the New Zealand forest business. It also outlines many issues that are hampering wood processing in New Zealand. The silviculture of yesteryear is haunting us today, and the sometimes sloppy silviculture of

today will hamper our future again as sure as those trees are harvested.

New Zealand's wood will be in great demand in years to come. The way forward is to process that wood into high value products, and manage a range of cost factors. Logs are and will remain the most significant cost input to processing plants.

The more fit for purpose and uniform we can make them, the more success and value we will all extract. With the Kiwi “can do” attitude, growing industry and Government cooperation, and a dash of leadership we should go profitably into the future.

## Get on with it!

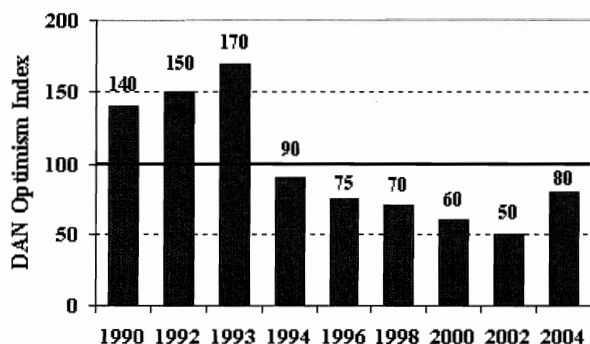
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### Time for Optimism?

If we look back to 1993 there was a lot of optimism about forestry. The world was running out of trees. The harvest of forest on US public land had been dramatically reduced because of the spotted owl. Asian wood-buyers were concerned about the future wood supply and log prices were sky-high. Global population was increasing rapidly and New Zealand was seen to be a place where radiata pine could be grown cheaply to produce big trees. So buying trees or investing in processing would be a sure thing.

But soon after, and to the present, the story has looked increasingly tattered. The DAN “Optimism Index” has been on the decline since 1993 (Fig. 1) but the good news is that it has just started to increase. After a decade or so of increasing pessimism about the industry it is probably time to get out or get on with it. And maybe, just maybe, the tide is beginning to turn.

Fig. 1: DAN Optimism Index is at last starting to show positive signs.

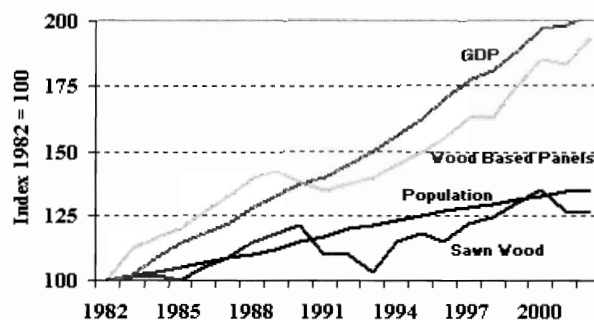


### Trends in some important areas

#### Wood demand

Wood demand is increasing – a good thing – but we need to watch where it is going and act accordingly. Sawn wood demand is barely keeping pace with population growth. However the demand for wood-based panels is increasing at a much higher rate and is matching GDP growth (Fig. 2).

Fig. 2 World demand for sawn wood and wood-based panels relative to population and GDP. (Source: Jaakko Poyry Consulting, Helsinki).



#### Wood supply

We have learnt that shortages can, by definition, never be chronic (unlike what we thought in the early 1990s) but:

- Tropical wood supplies are really getting closer to running out.
- Softwoods are substituting more and more.

New Zealand radiata pine costs are still reasonably good in world terms. Growing costs for New Zealand radiata pine were 22<sup>nd</sup> lowest out in 96 sawlog case studies in a recent DANA/Manners review (Table 1).