



FWPA Australian Timber Industry Investment Review

Forest and Wood Products Australia

Final Report
2017

2 September

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Omega Consulting



Peter Zed
Chief Executive

2 September 2017

Acknowledgements:

Omega Consulting acknowledges the assistance of all of the industry participants who generously supplied their data that formed the basis for the data compilations in this report.

Cover Photo – Containerised pine seedlings.

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Executive Summary

FWPA sought to better understand the level of recent investment that has occurred within the timber industry processing operations. To achieve this, the industry was segregated into four categories, namely: softwood sawmilling, hardwood sawmilling, panel plants and plywood operations.

A voluntary survey of selected production facilities was conducted to ascertain the total level of investment over the past five years, where that investment had occurred within the production sequence, what type of technologies were being targeted and what potential benefits were being sought.

The selected operations represented approximately 90% of the softwood sawmilling industry, 45% of the hardwood sawmilling industry, 98% of the panels industry and 69% of the plywood industry.

The final summary of data available for inclusion in the review represented 52% of the softwood sawmilling industry, 40% of the hardwood sawmilling industry, 58% of the panels industry and 42% of the plywood industry.

The analysis on this data identified a total of \$473 million had been invested by these operations over the past five years. It also identified significant differences between the various categories when the level of total investment was expressed as \$/m³ of investment per annual log volume processed. The results of this analysis were that \$33/m³ had been invested within the softwood sawmilling category, \$111/m³ had been invested within the hardwood sawmilling category, \$153/m³ had been invested within the panel plants and \$78/m³ had been invested within the plywood industry.

The operations whose data was not available for inclusion within this survey represent a collection of more significant processors within the softwood sawmilling, panels and plywood categories and could be assumed to reflect a similar level of investment as those included. The hardwood sawmilling category has a large number of small operators whose investment profile is likely to be far less predictable.

If it is assumed that all surveyed categories reflect the investment rate of the unsurveyed operations then the project total investment over the past five years would have been in the order of \$938 million.

The analysis of investment within the sawmilling categories unsurprisingly identified the green-milling process to be the most significant area of investment with in excess of 30% of all investment for both softwood and hardwood sawmills. However, dry-milling, kiln drying, re-manufacturing and storage differed in investment importance between hardwood and softwood for the operations surveyed.

Terms of Reference

Forest and Wood Products Australia Limited (FWPA) is seeking to gain a better understanding of the investment that has been occurring within the solid wood sector of the timber industry. Specifically, they are seeking to quantify the annual spend that has occurred over the past 5 years, the areas in which that expenditure has occurred and the technologies that have been adopted as a result of that expenditure.

The industry categories to be included in the survey are the softwood and hardwood sawmilling sectors, the plywood sector and the reconstituted panel sector.

To assist in this process FWPA engaged Omega Consulting as a consultant with strong industry connection that can establish contact with the designated number of industry operators.

The output from this process is to be a short report which would detail the total investment that has occurred over the past 5 years (annually if possible) across Australia, segregated by specific operational areas for each industry category.

Background

The single most influential factor in the demand (utilisation) of timber products in Australia is the housing market. Within this sector the free standing dwelling commencements and the alterations and additions expenditure represent the areas where demand for softwood solid timber products predominantly arises. Whereas all dwelling commencements, along with alterations and additions, are potential drivers for solid hardwood timber products and panel products.

Historically, Australia had a relatively stable housing market that was influenced by 4-5 year housing cycles superimposed over a steadily increasing trend in commencements (Figure 1). However, over the past 20 years this pattern has become more fractured with the most recent five year period reflecting a sustained period of strong growth (Figure 2).

Figure 1: Australia's annualised house commencements Sept 1974 to Mar 2017 showing cycle peaks

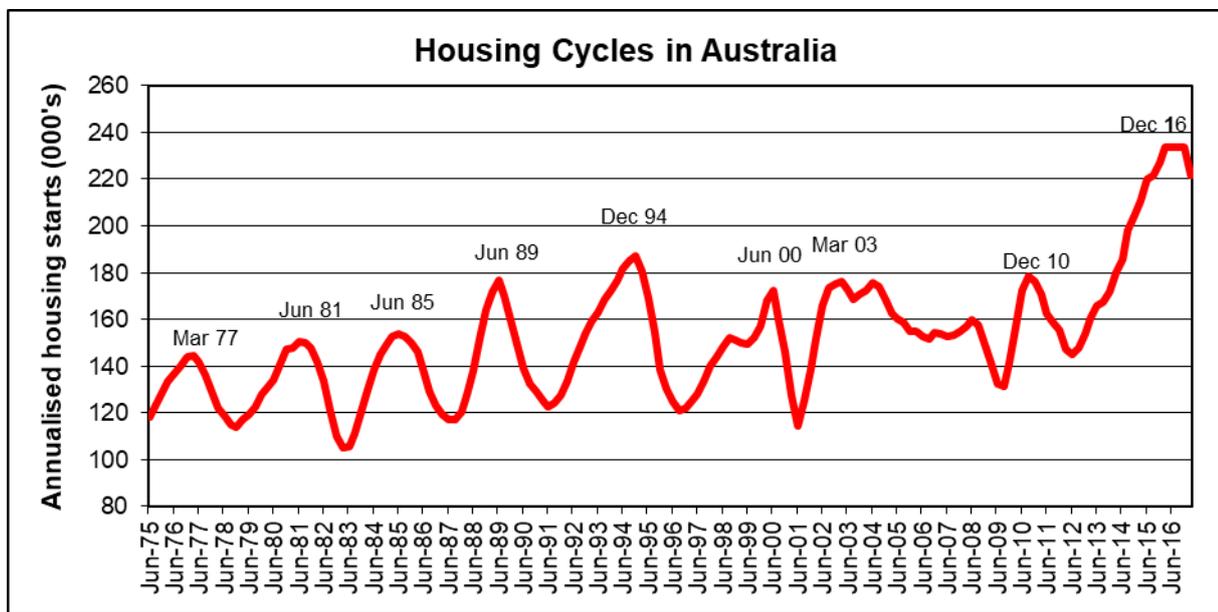
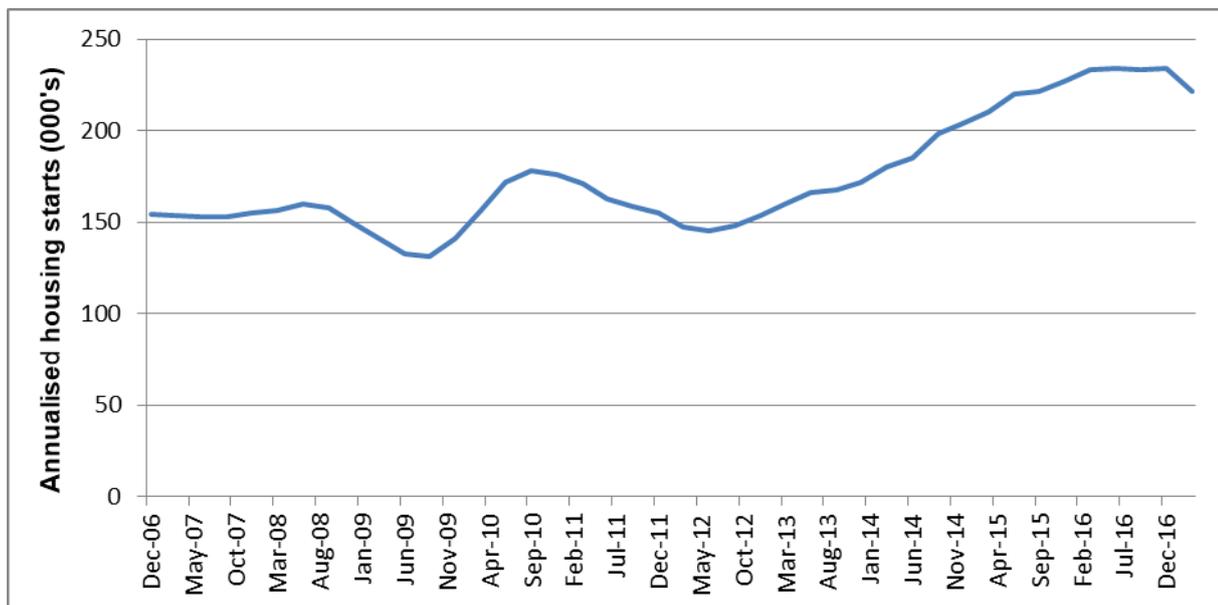


Figure 2: Australian housing commencements over the past 10 years Dec 2006 to Mar 2017



Whilst this pattern will reflect the demand for timber products, it should not be confused with the demand for housing. In recent years housing commencements have been driven significantly by developers who have placed strong emphasis on multi-story unit construction close to the CBD of Australia's major cities. Recent commentary and analysis has concluded that this supply has outstripped demand and as a result there is currently a significant amount of stock representing an oversupply in this market sector.

The most recent quarterly statistics available from ABS indicate that the peak quarterly housing commencement figure of 62,343 in the March quarter of 2016 was 24% higher than the 50,395 in March quarter of 2017. A significant amount of this turnaround is from the multi-story development sector of the market.

In the past there has been a propensity for the industry in general to invest when the market is strong and retract from investment when the market is weak. Whilst this pattern aligns with the availability of funds to support investment, it also often results in new capital coming on line as the market is beginning to contract.

Approach

Omega Consulting and FWPA developed an agreed list of companies to contact (Appendix 1). It was suggested that this list include all of the major industry participants along with those smaller operators known to have invested in significant equipment purchases in recent years. It was estimated that this total list would amount to about 40 contacts covering approx. 70 individual manufacturing sites.

The selected operations represented approximately 90% of the softwood sawmilling industry, 45% of the hardwood sawmilling industry, 98% of the panels industry and 69% of the plywood industry.

Omega Consulting identified a short list of the key operational areas for each of the three industry categories. The selected operational areas for each of the four categories are listed below (Table 1)

Table 1: Operational areas by industry category

Softwood sawmills	Hardwood sawmills	Plywood	Panels
Log yard and deliveries	Log yard and deliveries	Log yard (incl. pre steaming)	Log and fibre storage yard
Greenmill	Greenmill	Veneer Line	Fibre preparation
Drying	Drying	Dryers	Dryers
Drymill	Drymill	Veneer Grading	Manufacturing line
Timber Treatment	Timber Treatment	Treatment	WIP Storage
Remanufacture	Remanufacture	Plywood/LVL manufacture	Remanufacturing
Storage/Logistics/Dispatch	Storage/Logistics/Dispatch	Storage/Logistics/Dispatch	Storage/Logistics/Dispatch
Management systems	Management systems	Management systems	Management systems

Omega Consulting contacted each of the selected companies to confirm their agreement to participate in the review. At the time of initial contact there was a brief discussion in regard to the confidentiality associated with individual company data, and the consolidation process that will be applied before the summary data is released to FWPA.

This initial contact also served to highlight the benefit to the whole industry of FWPA having a better understanding of the total annual industry investment and the technologies being employed. In particular the opportunity it will afford FWPA in its communication with stakeholders,

government departments, community groups and ENGO's as to the importance of the industry and its continued investment in both jobs and productivity.

Omega Consulting developed four simple survey sheets (the softwood one is attached in Appendix 2) that were sent to each company that agreed to participate along with a summary of the basis for the survey and the confidentiality that would be applied to data supplied by any of the participating companies (Appendix 3). While the information request was reasonably simple, the format of the survey sheet was such that it would serve to maintain a degree of consistency and structure to the process.

Omega Consulting compiled all of the data collected as a result of the survey/review and summarised the findings into appropriate groupings to ensure that individual company data is not identifiable to FWPA.

Response to the request for information

After strong support from industry to the survey the final data base consisted of information relating to 15 softwood sawmills (representing approximately 52% of national production), 24 hardwood sawmills (representing approximately 40% of national production), 3 plywood mills (representing approximately 42% of national production) and 4 panel plants (representing approximately 58% of national production).

The survey data has been supplemented with public domain investment information. However, in these cases there was little or no information relating to the specific areas where the investment was focused or the technologies employed.

Data summary and analysis

The high level summary of data collated from the surveys and review process, segregated by category is shown in Table 2.

Table 2: Total capital invested over the period July 2012 to June 2017

Capital Invested (5 yr)	Softwood	Hardwood	Panels	Plywood
Total (\$m)	145	106	202	20
% of industry included	52%	40%	58%	42%

Sawmilling

While the data available for the softwood sawmilling sector represented an estimated 52% of the total national softwood sawn production, about 50% of the sourced information didn't include segregation of the expenditure by operational area.

All of the information supplied for the hardwood sawmilling sector was correctly segregated. The inclusion of a significant hardwood log treatment operation considerably distorted the result for that operational area; however, it only had a minor impact on the total investment across this category.

To establish a comparison between the two sawmilling categories (softwood and hardwood) I have determined the investment in each of the operational areas as a ratio of capital dollars invested per annual log volume processed (Table 3). The softwood data in this table only represents the data where full segregation had occurred. The clear takeaway from this analysis is

that the investment in hardwood processing has been significantly higher (more than double) than for softwood processing over the past five years.

Table 3: Data segregation for the softwood and hardwood sawmilling categories

Five year capital spend (\$/m ³ of annual log production)					
Operational area	Softwood		Hardwood		H/S Ratio
Log delivery and Log yard	4.12	8.3%	7.38	6.6%	179%
Greenmill	15.57	31.3%	44.06	39.6%	283%
Kilns/drying	6.11	12.3%	14.55	13.1%	238%
Drymill	9.14	18.4%	17.16	15.4%	188%
Timber treatment	0.66	1.3%	4.94	4.4%	747%
Remanufacture	9.50	19.1%	10.47	9.4%	110%
Storage/Logistics/Dispatch	1.56	3.1%	8.78	7.9%	564%
Management systems and other	3.02	6.1%	3.87	3.5%	128%
Total	49.69	100.0%	111.20	100.0%	224%

There are a number of reasons for this outcome. However, the most likely relates to the nature of the two sawmilling activities. Softwood sawmills are predominantly high volume commodity product production assets that require a far greater utilisation factor associated with the installed machine centres. The hardwood sawmills are predominantly focused on appearance grade products requiring slower production speeds and lower utilisation rates.

The majority of the unsegregated data was for the larger softwood sawmills. Including the information for these mills in the total expenditure reduces the average investment per m³ of sawlog process annually for the softwood category to \$33.11/m³. This result adds further weight to the reasoning for the difference identified in Table 3.

The relativity between hardwood and softwood investment can be seen in the right-hand column of Table 3. The impact of the investment in the hardwood roundwood treatment facility can be clearly seen.

Unsurprisingly, the largest proportion of investment dollars for both softwood and hardwood sawmills is in the greenmill. However, more surprisingly was the re-manufacturing investment level in the softwood sawmills. This result was in part due to the impact of softwood appearance grade product manufacturers (such as hoop pine processors) within the softwood sawmilling category.

Investment in storage was expected to be more significant for hardwood sawmills as there are very few products that are able to be stored in the weather after they are processed, packaged and wrapped.

There was some suggestion that the sawmilling data could be separated by state, but this would have resulted in some state based data in a specific category being for a single sawmill. As a result I have elected not to review any of the information on a state by state basis.

Plywood and panel plants

Given the small number of both plywood and panel plants included in the review and the limited number that supplied information, this data has not been segregated and will only be used as a representation of total investment in the sector. This process has been adopted to protect the potential for specific information to be interpreted by anyone citing this report.

As was done for the sawmilling comparison, the unit investment ratio for the plywood industry data was \$78.08/m³ of annual log processed over the 5 year period (Table 4). This would be expected to be higher than softwood (lower productivity capabilities) but lower than the hardwood sawmills as a significant proportion of the Australian plywood production is directed towards the commodity type of structural applications.

Table 4: Plywood and panel production investment rates (\$/m³)

Operation category	Plywood [†]	Panels [*]	Panels [†]
Total	78.08	229.76	153.17

[†] Based on estimated annual equivalent m³ of log processed

^{*} Based on annual production of board products

For the panel industry the determinant is more difficult to express in terms of log processed, as a significant proportion of the raw material is produced as sawmill by-products or residue products. The comparative number chosen would be capital investment per annual volume of product produced. For the data received this was determined to be \$230/m³ of annual production (Table 4).

As softwood wood fibre is the predominant resource used in panel production and the density of the included panel products equates to a density approximately 35-40% higher than sawn softwood products, then the approximate comparison would be in the order of \$150-155/m³ of annual log equivalent processed.

Key Technologies employed and benefits sought

The respondents provided a list of the key technologies that they employed and the benefits that they sought to achieve from the various types of investment.

There were a number of capital items identified that were major replacements or upgrades to current plant, as opposed to investment in new activities on the site. These included the replacement of plant (such as log loaders, forklifts, vehicles, compressors etc.) with more recent models that in general offered higher efficiency and lower operating costs per m³ of log handled. There was also a significant quantity of capital associated with replacement or upgrading of product transfer equipment (such as conveyors, ducting, cyclones etc.).

Whilst I have included cost of all of these items in the total investment for the sites, I have removed them from the key technology list, unless there was a sound reason to include them (such as a significant jump in technology associated with the new asset).

The resulting abridged list of the technologies and benefits for sawmills (hardwood and softwood have been merged) panel plants and plywood operations are included in Appendix 4.

Table 5 contains a summary of the key technologies and benefits associated with the sawmilling sector of the timber industry. There has been a high level of focus on scanning and optimisation technologies to support the drive for higher recovery, improved productivity and improved grade yield. These technology gains have been incorporated in most of the new equipment installed over the past five years and represent a continuous evolution of further reducing the requirement for manual interaction with the materials handling process.

The cost driven requirement for greater productivity in all parts of the sawmilling process, irrespective of the product quality constraints, continues to foster a focus on technologies that support a reduction in labour or an increase in output for the labour that is retained.

Table 5: Summary table of installed sawmilling technologies over the past five years

Technology	Benefits
Debarker, scanner & sorter upgrades	Increase productivity and reduce operating costs
Proximity detector & warning systems	Reduce risk of injury and damage to equipment
New watering system	Ensures excellent log watering including control
Barcoding on log delivery e-dockets	Improved stock control and automated processing
New technology chipper heads	Better chip quality, increased knife life
Optimising edgers	Improved recovery and speed
Power factor correction	Reduced power bill
Metal detectors	Protect drum chipper from tramp metal
Acoustic board graders	Segregate boards - structural vs non structural
Trimmer/scanner lines	Higher recovery, higher productivity
Edger board positioning, optimiser & scanner upgrades	Improve recovery and reliability, reduce maintenance costs and increase productivity
Curve sawing gangs and scanners upgrades	Increase recovery by scanning at higher resolutions
Cant gang - pith locating tool	Improve MPG10 recovery
New head-rig and slant carriage	Improved grade recovery
Twin band re-saw	Improved productivity
New high speed carriage lines	Improved productivity and reduced cost
LED Lights	Reduce electricity consumption
Automated Dockers	Improved productivity and safety
Optical docking and 3 head horizontal saw	Improved recovery
Kiln control systems	More flexibility of drying schedules
New drying kilns	Improved drying quality
New control system	Kilns and reconditioners under one control system
New triple fired boilers	Increased steam capacity and control, decrease in fuel (dry sawdust) decrease in emissions
New hoppers and high flow bag houses	Increased capacity in manufacturing plants
Additional pre-drying kilns	Improved quality and reduced manufacturing lead time
Co-generation turbine	Reduced electricity consumption
Cyclonic particulate extractor for boilers	Reduce particulate emissions from boiler stacks
Drymill moisture detection systems	Improved quality of product, better kiln control feedback
Auto infeed table	Improved drymill speed
Optimising docking systems	Better use of true wood material and increase production
MGP stress grader	Allow diversification from F7 grading to MGP
New moulding line with scanning, bundling and material handling	Reduce labour, improve recovery, increase product range
Multi-sensor scanner	Recovery, productivity, safety (less manual intervention)
LHG upgrade and performance enhancement	Reduce problem diagnosis for mechanical feed problems
Spark detector and arrestor	Improve equipment security and reduce employee input
Drymill precision end trimmer	Mitigate all of the manual handling risk
Microtec scanner and system TM outfeed	Improved grade yield
New flooring end-matcher line	Create efficiencies by putting end-matching on line
Finished product bundler	Packaging improvements
Conversion of CCA waterborne treatment plants to dual preservative capacity with LOSP	Allow access to increasing LOSP market

Technology	Benefits
Multi saws and docking line	Increase recovery into alternate products
High speed dual coat painting line	Allows penetration into the primed moulding market
Solid core door lines	Supplement our imports
Automated nail plating line	Benefit of utilizing more mid length ranges
Y/Stacker wrapping/strapping station	Reduce manual handling , streamline the process
Thin kerf saw line	Improve recovery and presentation of timber
Horizontal Finger Jointing Line with optimiser and solid set length ejection	Manufacture of high value FJ appearance products in window and stair joinery and benchtops. Enable production of high value in demand products from slow moving feedstock
New FJ Line	New product
New optimizing docker	Improved recovery & productivity
Storage area lighting upgrades (LED)	Increase in energy saving
I-Pads and tethered scanners for all forks and dispatch	Create better efficiencies to respond to customer requirements quicker
New tally and wrapping stations	Improved tally and wrap
Inventory accounting systems	Better tracking of stock through processing.
Stock management system	Install new Timbersmart stock management system to manage all aspects of stock
New management information systems (ERP etc.)	Improve production and inventory management, sales & distribution and better support sales capability

Summary

Recent investment/re-investment within the softwood sawmilling, hardwood sawmilling, panels and plywood sectors of the timber industry differ significantly.

The level of investment appears to reflect the type of product processed and potentially the average selling prices for the target products. While appearance grade products attract a higher price they also require a higher investment per unit of production.

For the production investment data collated for each of the four categories, the investment ratio can be summarised as:

Table 6: Summary of category investment ratios

Category	\$/m ³ annual log production	% of industry included
Softwood sawmilling	33.11	52%
Hardwood sawmilling	111.20	40%
Panel plants	153.17	58%
Plywood operations	78.08	42%

While the total investment identified in this report of \$473 million over the past five years represents approximately 50% of the current timber industry manufacturers, we can use the rate of investment within each category to estimate the total investment by all processors for the same period.

The operations whose data was not available for inclusion within this survey represent a collection of more significant processors within the softwood sawmilling, panels and plywood categories and could be assumed to reflect a similar level of investment as those included. The Australian hardwood sawmilling category contains a large number of small operators whose investment profile is likely to be far less predictable. The survey was targeted at the 24 larger hardwood sawmill operators, however there are close to 200 hardwood sawmills still operating in Australia.

Total investment for the sector is picked up through the ABS Cat 5625.0 Private New Capital Expenditure Quarterly Survey. This provides survey results by industry sectors which includes Wood Product Manufacturing and over the past 5 years the capital spend totalled \$1,007 million and is summarised by year in Table 7.

Table 7: Private new capital expenditure for wood products manufacturing in Australia

Year	\$ million
2011-12	257
2012-13	97
2013-14	176
2014-15	264
2015-16	213
Total	1,007

This would suggest that the survey result from about 50% of the industry is aligned with the ABS macro data.

Appendix 1: Agreed contact list

Softwood	Hardwood	Plywood and panels
AKD	Artec	Borg
ATP	ASH	CHH
Big River Timbers (Plywood)	Aust. Solar Timbers	Hendersons
CHH	Auswest	Laminex Ind.
CHH (Plywood)	Boral Timber (HW & SW)	Alpine (Metro Pty Ltd)
CSI	Britton Timber	
D & R Henderson	Dormit	
Dongwha Timbers	DTM	
Highland Pine Products	Fennings	
Hyne & Son	Hurford Timbers	
Mareeba Softwoods	Koppers	
N F McDonnell and Sons	McKay	
Penrose Pine	Nannup Timber Processing	
Superior Wood	Neville Smith Forest Products	
Tarmac	Parkside	
Timberlink	Ryan & McNaulty	
Wades	Ta Ann (plywood)	
Wesbeam (LVL & Plywood)		
Wespine		
Whiteheads		

Appendix 2: Example of Survey form used for softwood sawmills

Softwood Sawmills (past 5 years of investment - 2012/13 to 2016/17)

Area	\$ (millions)	Key Equipment/Technologies installed	Expected Benefit
Log delivery and log yard			
Greenmill			
Kilns/drying			
Drymill			
Timber treatment			
Remanufacture			
Storage/Logistics /Dispatch			
Management systems			

Appendix 3: E-mail to participants

John

As discussed earlier in our phone conversation, I have been engaged by FWPA to survey the solid wood and panels sectors of the timber industry to enable them to gain an understanding of the level of investment that has occurred within the industry over the past 5 years (2012/13 to 2016/17 inclusive) and the types of technologies that have been associated with that investment.

FWPA are constantly communicating with state and federal politicians, government departments, communities, ENGO's and the public with regard to the importance of maintaining a viable timber industry, the contribution it makes to communities, the level of recent investment, the technical improvements being achieved and the employment that it brings. The information derived from this survey will strongly support their efforts.

To achieve this outcome, I have constructed a simple survey sheet (attached) which identifies the key areas for four different operation types. If you can organise to have this filled out and returned to me before 2nd June 2017 it would be appreciated. I will then consolidate all of the data to generate the information as requested by FWPA.

The spreadsheet consists of five separate tabs for the four types of operations (Softwood sawmills, hardwood sawmills, veneer & plywood mills and panel plants) along with an example sheet. The investment dollars identified for each area need only be rounded to the nearest \$0.1 million and should exclude maintenance expenditure. Capex for any projects commenced earlier than 2012/13 but commissioned inside of the 5 year review period should all be included. Any mobile plant should be included for the area where it operates.

Where multiple site operations within one state are involved e.g. 3 hardwood sawmills, it can all be assembled on the one sheet if you choose i.e. hardwood sawmill, since the only information required in accumulating the information is the total annual expenditure by operational area, the list of key technologies employed and benefits sought.

If operations are in multiple states it would be appreciated if they could be separated by state as I may attempt to assemble the information by state, as long as there are enough individual operations in each state to assure that no individual companies data can be identified. Due to the limited number of operations in each state, panel and plywood/LVL operations data will only be accumulated at the National level.

The terms of my agreement with FWPA are that I will be accumulating all of the information collected as part of this survey and only pass on to FWPA the total annual spend in each identified category, along with a consolidated list of all of the technologies and benefits that those expenditures have delivered. This way there will be no capacity for anyone (including FWPA) to be able to identify individual plant information.

Thanks once again for agreeing to contribute to this process and supporting the ongoing efforts of FWPA to support the industries future development on your behalf.

If you have any further questions with regard to this survey please don't hesitate to contact me.

Regards Peter

Appendix 4: Abridged list of capital expenditure identified as containing new technologies and associated benefits

Sawmilling	Technology	Benefits
Log delivery and Log yard	Debarker, scanner & sorter upgrade	Increase productivity and reduce operating costs
	Log scanning & sorter control upgrade	Risk reduction, improve log line productivity, reduce operational downtime
	Safe mine proximity detector & warning system	Reduce risk of injury to personnel and damage to equipment
	upgrade of scanner and software	better log sorting enabling faster production through mill
	Weighbridge	Measurement of volume in and out of sawmill
	New log yard bays and watering system	Increased storage and flexibility Ensures excellent log watering including control
	Log processing line	Improve log yard efficiency in cross cutting & log washing in a semi-automated line
	Implementation of barcode on forestry e-dockets	Improved stock control and automated processing
Greenmill	Chipper heads - new technology	Better chip quality, increased knife life
	Optimised edger	Improved recovery and speed
	Power factor correction	Reduced power bill
	Metal detector	Protect drum chipper from tramp metal
	Un-scrambler	Better presentation of boards to trimmer area
	Computer control upgrade	Upgrade to be Windows 10 compatible
	Pack docker controls	Better reliability and accuracy
	Green-chain and re cut sawing systems	Improve cutting tolerances and recovery
	Install bin sorter, board scanner, inline docking, stacking and strapping	Increased grade recovery and increased throughput
	5 moving saw combination edger with chipping heads, including scanning and optimisation	Improved throughput and recovery
	Acoustic board graders	Segregate boards for appropriate outcome structural vs non structural
	Trimmer/scanner lines	Higher recovery, higher productivity
	Edger	Productivity
	Scanning and optimisation upgrades	Recovery & aged asset renewal
	Trimmer, optimiser & control upgrade	Increase in overall recovery of 0.5%
	Edger optimiser & scanner upgrade	Improve recovery and reliability, reduce maintenance costs and increase productivity
	Curve gang scanner upgrade	Increase recovery of sawn product by scanning at higher resolutions
Edger board positioning system upgrade	Increase sawn fibre recovery and eliminate uncontrolled board ejection	

Sawmilling	Technology	Benefits
		hazard
	Cant gang-pith locating tool	Improve MPG10 recovery
	Install 2 extra machine centres for small log milling	faster production and accuracy
	Upgrade large log breakdown system	Better timber flow and utilisation
	Microtec scanner install	Improve recovery
	Edger infeed upgrade install	higher piece count through edger
	Edger scanner upgrade	Enable higher piece count through edger
	Upgrade sorter board lug loader	Increase piece count to sorter
	New head-rig and slant carriage	Consolidating two separate sites into one
	Twin band re-saw	Improved productivity - reduced headcount by 40%
	Gibson edger	
	New high speed carriage lines	Improved productivity and reduced cost
	LED lights	Reduce electricity consumption
	Automated docker	Improved productivity and safety
	Bandsaw tip grinder	Upgrade to a more precise machine
	Recovery re-saw	Improve final green mill recovery - aiming for 0.5-1% extra recovery
	Horizontal bank saw	Extra recovery of fibre from mill
	Multi rip saw	Extra recovery of fibre from mill
	Optical docking and 3 head horizontal saw	Improved recovery
	Garden stake line	Value add to resource previously being chipped
	Optimisation scanners on the edger	Increased productivity
	Edger	Increase production volumes and fibre recovery
	Optical scanner	Improve recovery
	Dockers	Improve recovery and control product output
	New roundabout system on grey bench	For quarter sawing improved kiln drying process and better grades of timber
	New Brucks & chipper & screen	Improved Bi-Product production
	Semi auto slab stacker	Improvement of manual handling
Kilns/drying	Kiln control system	More flexibility of drying schedules
	50 m3 LPG kiln with supporting hardstand and shed structures	Increase m3 of dry material
	Biomass fired thermal oil heat-plant	Reduced fuel (gas) costs
	3 Mahild drying kilns	Improved drying quality (existing kilns were direct fired on gas)
	Contraflow kiln	Productivity, energy efficiency, quality of product
	Central kiln PLC upgrade	Reduce reliance on aging electronic control technology.

Sawmilling	Technology	Benefits
	Kiln control room (9mX4m)	Reduce occupational health and safety risks
	Kilns HV transformer	Improve safety and to contain risks within bounds
	Kiln control software & hardware upgrade	Allow zonal control, better zero calibrations
	Kiln trolley controls upgrade	Maintain efficiency and speed of operation at the kilns
	Install new kiln	Quicker production and cheaper drying
	Building of new kilns (Currently Underway)	Value add process
	New control system	Incorporates all kilns and reconditioners onto one management system
	New triple fired 5MW Boiler	Increased steam capacity and control, decrease in fuel (dry sawdust) decrease in emissions
	New hopper, two new high flow bag houses	Required for increased capacity in manufacturing plants
	Additional pre-drying kilns	Improved quality and reduced manufacturing lead time
	Co-generation turbine	Reduced electricity consumption
	Reconditioning chamber	Increase reconditioning capacity to create general efficiencies
	Storage shed	Increase dry storage capacity prior to production
	Cyclonic particulate extractor for Boiler emissions	Reduce particulate emissions from boiler stack to comply with EPA requirements
	Waste water settling pond	Removal of solids from sewer discharge
	New conventional kilns	improve quality
	2 new kilns	To increase production
	Upgrade of 2 kilns	To improve production
	2 new boilers and gas lines upgrade	To manage new and upgraded kilns
Drymill	Moisture detection system	Improved quality of product / better kiln control
	Auto infeed table	Improved drymill speed
	Moulders and extraction systems	Increase m3 and improve financial returns
	Docking systems	Better use of true wood material
	MGP stress grader	Allow diversification from F7 grading to MGP
	New moulding line with scanning, bundling and material handling	Reduce labour, improve recovery
	High speed planer	Productivity; quality of finish on moulded product
	Multi-sensor scanner	Recovery, productivity, safety (less manual intervention)
	Moulder	Increase product range
	LHG upgrade and performance Enhancement	Reduce time spent on problem diagnosis for mechanical feed problems
	Cosmec multi-rip saw	Reduce direct cost, simplify processing method

Sawmilling	Technology	Benefits
	Spark detector and arrestor	Ensure compliance with AS/NZS 1748:2011, eliminate the need for human participation
	Edger un-scrambler drive upgrade	Reduce the head load, improve the lug fill rate
	Drymill precision end trimmer	Mitigate all of the manual handling risk
	install stress grader	more accurate grading of structural sections
	Microtec scanner and system TM outfeed	Improved grade yield
	new low cost decking plant	Reduced operating and transport costs
	specialty processing line	New product capability
	New moulder and associated materials handling	Increase processing capacity and quality of machined output by 20-25%
	New flooring end matcher line	Create efficiencies by putting end-matching on line (incorporated in to moulding line)
	New overlay flooring packing line	Improve capacity and efficiencies in bundling and packing overlay flooring
	Glue spreader, horizontal & multi rip saw	Value uplift in fall down product
	Costa sander/planer	Value uplift in fall down product
	Rotary composer	
	Wintersteiger	To improve production
	Straightliner	To improve production
	Opticut printer	Labelling
	Finished product bundler	Packaging improvements
	New Leader Mac moulder	More efficient machining
	New end matcher	Recovery for flooring
	New optimizing docker	Improve through put
Timber treatment	Conversion of CCA water-borne treatment plant to dual preservative capacity with LOSP	Allow access to increasing LOSP market
	Waco dust extraction	Reduce the dust build up and associated fire risk
	Waco electrical controls upgrade	Reduce the downtime by 50%
Remanufacture	Re-saw system	Take re-sawing job away from sawmill, allowing more production hours.
	Multi saws and docking line	Increase recovery into alternate products
	Inline scanning and docking system	Increase grade recovery and efficiency
	Install three new high speed optimising docking lines with the latest Wood-eye scanning	Increase throughput and grade recovery
	Installed high speed dual coat painting line	Allows penetration into the primed moulding market
	New solid core door line	Supplement our imports
	Automated nail plating line	Benefit of utilizing more mid length ranges
	Y/Stacker wrapping/strapping Station	Reduce manual handling , streamline the process

Sawmilling	Technology	Benefits
	Install thin kerf saw line	Improve recovery and presentation of timber
	Baghouse Extraction Machine	New machine for value add briquettes
	Bag House	New machine for value add briquettes
	Installation of horizontal finger jointing line (including extension to building) with optimiser and solid set length ejection	Manufacture of high value FJ appearance products in window and stair joinery and benchtops. Enable production of high value in demand products from slow moving feedstock
	Installation of continuous large end section finishing line (extension of current continuous laminating line) including planer, sander, shrink wrapping, materials handling	Manufacture of high value FJ appearance products in window and stair joinery and benchtops. Enable production of high value in demand products from slow moving feedstock Increase product range
	Increased capacity of staircase component line	Diversion of feedstock from lower margin markets into staircase market
	New FJ line	new product
	New band – re-saw	Upgrading to better grades
	New docking line	Increased productivity
	New optimizing docker	Improved recovery & productivity
Storage/Logistics/Dispatch	Double dispatch area and introduce dispatch office	Increase efficiency and capacity to dispatch greater volume in a single shift
	Bulk stores lighting upgrade	Increase in energy saving
	Seal timber storage yard	Improve forklift cycle times and loading
	New fork lifts	Carry more weight , bigger packs , reduce cycle times
	New regional distribution centres	Reduced rental costs
	Finished pack storage shed	Ensure we have appropriate storage for the volume of finished stock
	I-Pads and tethered scanners for all forks and dispatch	Create better efficiencies to respond to customer requirements quicker
	Storage area/buffer deck etc.	To allow for increased production/storage
	2 New warehouse sheds	Stock holding
	New tally and wrapping station	Improved tally & wrap
Management systems and other	New hardware	Relocated all servers off site to dedicated external providers
	SYSPRO ERP accounting Software	Improve operational management
	Expand & update MIS hardware	Expand data storage and extend virtualised server capacity
	Aruba wireless network	Better coverage for data, improve scanning reliability, improved automatic troubleshooting
	ERP project - detailed Scoping	Able to more clearly understand the issues involved in the implementation of an ERP system, thus reducing potential project risk
	Upgrade inventory accounting system	Better tracking of stock through processing

Sawmilling	Technology	Benefits
	Security system (cameras and monitors)	Reduce loss of stock and equipment due to burglaries
	New accounting, production and payroll systems	Commencement of new enterprise
	Complete new IT system	Commencement of new enterprise
	New workshop processing plant	Improvement maintenance capacity and security
	Stock management system	Installed new Timbersmart stock management system to manage all aspects of stock
	Samsung Galaxy tablet & scanner Kit	To improve data processing accuracy & efficiency
	Timbersmart log inventory system	To record/track stock
	New management Information system	Improve inventory management, sales & distribution and better support sales capability
	New Timbersmart software and accounting software	Accounting and management systems upgrade to cater for Chain of Custody and Australian Standards

Panels	Technology	Benefits
Log and fibre storage yard	Log yard PLC upgrade	Mitigate possibility of business interruption
Manufacturing line (MDF and particleboard)	MDF conti line 2 line upgrade New particleboard line PZK Flaker 3 Wood Dust Palletiser WESP Press refurbishment Saw Upgrade Wet Extraction System Press process modelling	Automated intelligence system for better quality control and more efficient productivity – lower waste etc. Internalise supply of particleboard Improve productivity and reduce costs Improve productivity and reduce costs
Remanufacturing	Docking saw Recut panel barcoding line New UV flat panel paint line	New products New products
Storage/Logistics/Dispatch	LED lighting	Energy saving

Plywood	Technology	Benefits
Log yard (incl. pre steam and docking)	New steaming and chipping assets installed	Increased efficiencies, reduced materials handling
Veneer line	Two new lathes	Access to new products Ability to process smaller logs Increased recoveries
Driers	New dryer ordered (commissioning FY18)	Access to new markets
Plywood/LVL manufacture	New finishing assets for plywood manufacture All process machinery from Composers to Secondary Processing machines for form-ply Panels testing machines, water bath and dryers	Reduced labour, increased efficiency and reduced material handling To meet design capacity for plywoods panels Enable in-house capabilities to conduct panel quality test
Management systems	New data measurement system New management and warehouse Information system	Better analysis Manage data to improve scheduling and operational management Improve inventory management and better support sales capability