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Opportunities for post-consumer H2F treated 'blue-pine' off-cuts and resource recovery exemption application for end-of-life wood

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Opportunities for post-consumer H2F treated 'blue-pine' off-cuts and resource recovery exemption application for end-of-life wood

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Executive Summary

There are two objectives of this project:

1. To identify and analyse any waste disposal and recycling concerns of H2F blue-pine consumers (that is - frame and truss manufacturers) and to make recommendations for further well-targeted work to address any current issues and/or emerging concerns; and
2. To develop a specific resource recovery application in NSW for use of end-of-life wood, including H2F offcuts and engineered wood for use as animal bedding and ultimately land application as soil conditioner.

The first objective was met by the conduct of an online survey which was sent to 331 frame and truss manufacturers across Australia. Fifty five manufacturers who utilise softwood and nine manufacturers who used hardwood responded to the survey. Thirty nine of the softwood users indicating they had no problems with disposal of H2F waste. Sixteen (or 29% of softwood respondents) indicated one or more concerns with disposal or recycling of H2F blue-pine offcuts.

At a confidence level of 95% the proportion of softwood respondents who indicated they have one or more concerns gives a confidence interval (margin of error) of 11%. This means that we can be "sure" that if the question had been answered by the entire relevant population (331 FTMs) between 18% and 30% would have one or more concerns. Given that the sample may be over represented by those who did have concern caution should be exhibited in interpreting the answers of respondents.

Only nine FTMs in New South Wales, four in Victoria and two Western Australia indicated a concern. Only one manufacturer in Queensland identified an issue. The main concern identified was the high cost of disposal of H2F treated waste with the concern strongest among New South Wales manufacturer respondents. The key cause of the concern among New South Wales manufacturers was found to be the result of steeply increasing waste disposal costs, mainly as a result of increases in the state government waste disposal levy, an increasing trend to recycle all waste timber (which costs less than disposal) and a lack of markets for H2F treated waste in recycled products in that state. Increases in Government waste landfill levies in other states may see concerns rise in other states if cheaper recycling outlets are not available.

The following recommendations are therefore made:

- H2F waste offcuts recycling be monitored to see if it becomes a larger issue for FTMs.
- Work is undertaken with local environmental regulators and recyclers in NSW to clarify their understanding of toxicity of H2F timber and barriers to recycling of H2F waste.
- Timber suppliers and FTMs investigate, either individually or collectively, offcuts take-back schemes and/or arrangements with third parties in key sales locations, such as NSW, for recycling and/or energy recovery opportunities to underpin current and future sales of H2F product.

- The outcomes of this survey are broadly disseminated to frame and truss manufacturers as well as the softwood suppliers to those businesses.
- Independent research is undertaken into the effects of burning, mulching and land application, as well as use as animal bedding, of the offcuts treated with the predominant H2F treatment solutions applied to timber used in Australia.

The findings of the survey and draft recommendations were presented to attendees of the Wood Preservation Conference in Melbourne in May 2012. After the final report was circulated by FWPA subsequent consultation via teleconference with H2F producers and H2F preservatives suppliers was conducted in late 2013. This survey report and its recommendations was amended and recirculated to this group, comments received and an amended report finalised. An update of State and territory government waste disposal levies and indicative timber recycling rates was also included in this amended report.

The second objective was met when an application for a specific resource recovery exemption was submitted to the New South Wales Environment Protection Authority (NSW EPA) in March 2013. The application was based on the practices of one facility in south-western Sydney which collects and accepts end-of-life wood pallets and offcuts from timber product manufactures for recycling into animal bedding and landscape mulch. The application includes an allowance for a small proportion (up to 5%) of engineered wood product (particleboard, MDF and LVL/plywood) and H2F treated wood offcuts (also up to 5%) in the recycled products. These allowances are based on a literature review, sampling and analysis over an 8 month period and an assessment of what NSW EPA would be comfortable with allowing at this stage.

This application will provide the NSW EPA and timber recyclers with more confidence to allow a proportion of engineered wood products and organic treated wood products in recycled products that are eventually applied to the land. This specific exemption application is timely as the NSW EPA is scheduled in the next 12 months to review the general exemption (the Raw Mulch Exemption 2008), which is the basis for most of the major timber recyclers operations in NSW.

It is also expected that this project's specific application and the upcoming general exemption review will, if successful, eventually lead to lower prices for generators of these types of end-of-life wood materials.

The development of the application identified some data gaps as well as issues that may be a problem for timber manufacturers in the future. To address these it is also recommended that:

- Independent research is undertaken into the effects of burning, mulching and land application, as well as use as animal bedding, of the main adhesives and other additives used in the manufacture of engineered wood products used in Australia.
- Suppliers of H2F treated timber and engineered timber products should factor in the end-of-life recyclability, or recovery for energy, of the offcuts produced from the use of their products when considering the choice of preservative solutions, adhesives and other additives.

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Introduction

Background

A large proportion of Australian softwood framing is now H2F ‘bluepine’ treated against termites. A recent survey of Australian softwood producers found that 31% of structural softwood production was termite treated to H2F and H2 hazard level in 2012 (Gavin Matthew, Australian Plantation Products and Paper Industry Council (A3P), *pers. comm.*, 2 April). A survey by the same organisation in 2007 found that 22% of structural softwood production was then treated to H2/H2F hazard level (Peter Juniper, Australian Plantation Products and Paper Industry Council (A3P) 2008, *pers. comm.*, July, cited in Taylor & Warnken 2008).

Recent anecdotal evidence from a number of major structural pine producers was that some customers were reporting problems with disposal and/or recycling of blue-pine offcuts and they were concerned that this may be a barrier to further uptake in certain markets. There was also some evidence that state and local government regulators were confusing the toxicity of the wood preservatives used in H2F blue-pine with that of copper chrome arsenate (CCA), thus contributing to disposal problems and reduced recycling options in some regions.

Early inquiries found that there was increasing problems with disposal of H2F treated timber off-cuts and residue (e.g. shavings and sawdust) compared to untreated timber, leading to some resistance to this products usage.

Australian industry is also using increasing quantities of engineered and composite wood products and, as a result a large proportion of the waste stream is now comprised of the engineered and composite wood products. A recent study by NSW Department of Environment, Climate Change and Water (DECCW 2010) found that 27% of the nearly 300,000 tonnes of wood disposed to landfill in Sydney was particleboard, MDF or other composite wood products such as plywood. These engineered/composite wood products are also used in wood pallets and packaging. End-of-life wood packaging forms the largest part of the waste stream generated by industry as indicated by the same DECCW study which found 49% of wood disposed to landfill was wood packaging.

Since the end of 2011 all mainland Australian state and territory governments had, or proposed to have, waste disposal levies in place. Where these disposal levies are high increases in illegal dumping and recycling activities of dubious legitimacy are leading to increased regulation by state and local government environmental agencies to define and regulate what constitutes legitimate recycling as distinct from waste disposal.

In NSW, where the metropolitan areas of Sydney, Newcastle and Wollongong have the highest waste disposal levies in Australia, the Government now requires that recyclers of all end-of-life waste timber and wood products have a formal written exemption from waste regulations before being allowed to sell or place the recovered waste timber on the land or use it as fuel.¹ If a formal written exemption does not exist then the waste wood must be disposed of in a landfill (NSW EPA 2012).

¹ Untreated by-products of sawn timber processing such as sawdust, shavings and offcuts are listed in the general Raw Mulch Exemption 2008 as acceptable inputs and are thus exempt from relevant waste regulations. This type of by-product is also regarded as a “standard fuel” and exempt from relevant waste regulations.

Currently a formal written general exemption does exist for use of end-of-life waste timber as raw mulch applied to land (NSW EPA 2008) however there is zero allowance for any non-wood components (i.e. any treated, engineered or coated wood) to be included. This zero tolerance is causing problems as the zero limits in this exemption are extremely difficult, if not actually impossible, to meet for recyclers. This is also hindering investment in timber recycling infrastructure. Users of wood products (such as secondary and primary manufacturers) who generate waste and recyclers are making the decision to landfill all wood rather than recycle it.

Previous FWPA sponsored research by Hann, G. *et al.* (2010) found that there is minimal risk from a range of wood preservatives such as those used in H2F when applied to compost and/or other land applied products where the presence of wood preservatives does not exceed tolerable limits.

Other states and territories environmental protection regulators tend to follow NSW regulations in these matters so a project is needed to rectify this zero tolerance approach where it can be demonstrated that the risk to environmental and human health is minimal. This is particularly important as other states are expected to tighten their regulations in years to come, potentially generating adverse regulations for wood products in other states and increased costs of disposal.

This project

There are two objectives of this project:

1. To identify and analyse the waste disposal and recycling concerns (if any) of H2F blue-pine consumers (that is - frame and truss manufacturers) and to make recommendations for further well-targeted work to address current and emerging problems; and
2. To develop a specific resource recovery application for use of end-of-life wood in NSW for use as animal bedding and ultimate land application as soil conditioner.

The focus in the first component of the project is Australia-wide. NSW has been targeted for work in the second component of the project as the NSW regulations are seen as a forerunner to environmental rules around Australia governing recycling of waste products. These rules, and waste levies, are resulting in significant increases in costs of waste disposal for many timber businesses, including timber wholesalers and importers as well as frame and truss fabricators, furniture manufacturers and joineries.

The benefits of this project will be measured by the take-up of the recommendations by industry for the subsequent targeted work, whether it is technical research or educational. The actual measure of success will be able to be measured in subsequent Government surveys of recycling industries, including those companies that recycle timber and other wood products.

Previous research

Early inquiries showed that there were some increased problems with disposal of H2F treated timber offcuts and processing residue (for example sawdust) compared to untreated timber offcuts and processing residue. In some cases it was leading to resistance in this products usage.

Additionally many secondary manufacturers of wood products were finding it difficult, if not impossible to legitimately recycle their wood waste, thus incurring increased costs of disposal and reducing the profitability of these industries. Many frame and truss manufacturers have traditionally been able to find a range of uses for non-treated timber offcuts. For example, giving them away for use as domestic firewood, and/or production of landscape mulch and/or animal bedding. These uses usually incurred little or no expense.

Wood preservative chemical company recommendations prevent these avenues of disposal as they typically recommend the following;

Treated timber off-cuts should not be used as domestic heating or cooking fuel. Treated off-cuts and saw dust are not recommended to be supplied for mulching or animal bedding.]

Figure 1: Arch Wood Protection - Advice on offcuts of H2 timber (the active pesticide is permethrin)

- 10. Do not use preserved wood under circumstances where the preservative may become a component of food, animal feed or beehives.
- 11. Do not use preserved wood as mulch.

Figure 2: Osmose Australia - Advice on use of H2F treated timber (the active pesticide is bifenthrin)

This advice is consistent with the *AS 5605—2007 Guides to the safe use of preservative-treated timber - Consumer Safety Information Sheets* for timber treated to H2/H2F hazard level with the synthetic pyrethroids permethrin or bifenthrin, the two main choices for Bluepine. Presently Bluepine off-cuts and residue are not recommended to be recycled in the same manner as untreated timber leading to disposal costs for this product compared to lower or even zero disposal cost for untreated timber.

Industrial fuel facilities with approval to use Bluepine off-cuts as a fuel are not that common around Australia. Some frame and truss manufacturers have even reported difficulty in disposal of H2F treated timber in landfills as local and/or state regulations and/or personnel prohibit this option. All this has resulted in additional expense and a consequent resistance in the use of the product in some markets.

Disposal costs are rising above the level of CPI as waste levies introduced by local and state governments are increased in major urban centres (currently ranging from \$1 to over \$100 per tonne) are starting to be introduced in regional areas. Local landfill charges are also increasing as the trend is to close small landfills and open larger ones, usually further away from industry and residential areas. The introduction of a carbon price, which will also cover the waste sector, has also increased disposal fees for organic materials, including timber, by about \$23 per tonne. Informal burning of wood, treated or untreated, is also prohibited in some areas. Waste treated Bluepine timber is also regarded with suspicion by local and state government environmental officials. It is generally regarded as the same toxicity profile as CCA treated timber.

Each Australian state and territory has its own waste disposal assessment regulations. Some jurisdictions also have strict regulations on what can and cannot be recycled. This is already the case in South Australia and New South Wales.

Many secondary manufacturers have little knowledge of what is possible in terms of resource recovery and waste disposal. As a result, they are subject to varying interpretation by environmental authorities. Additionally, Product Stewardship legislation has been recently passed by the Australian Government which includes clauses requiring manufacturers of priority products to take specific actions for their products at end-of-life, such as product take-back, at their cost.

The NSW Government has recently recommended that timber be included as a priority waste under this Commonwealth legislation. They have not differentiated between non-treated or treated timber. Adverse product stewardship regulations have the potential to impose large costs and market barrier on new timber suppliers.

The previous FWPA sponsored research by Hann, G. *et al.* (2010) set guidelines appropriate limits for a range of preservative treated timber in a range of recycling and energy applications and found that values above zero are in a number of other jurisdictions and standards worldwide.

Methodology

An online survey was developed in consultation with the Project Steering Group. The extensive survey went through a number of iterations. It was decided that the majority of responses to specific questions would not be mandatory as feedback from previous online surveys was that FTMs may not know many of the answers. Additionally confidentiality would be very important.

Agreement was sought with Kersten Gentle of the Frame & Truss Manufacturers Association to utilise their database of 331 known frame and truss manufacturers in Australia. This up-to-date database includes members and non-members of the FTMA.

An introduction email was prepared by TDA, distributed to FTMA and forwarded to the database. The survey was open for a period of three weeks in March and April 2012. A reminder was sent out twice in this period which resulted in noticeable spike in responses each time.

Results were collated and supplementary phone calls by the researcher made to those companies who provided contact details and who responded they had an issue, to clarify the specific issue or issues. Aggregated data, with any identifying contact information removed, was provided to members of the project steering group. A draft report was prepared for review by the project steering group, amended and a final report prepared.

After the survey component was completed and the final report prepared and circulated by FWPA subsequent consultation via teleconference with H2F producers and H2F preservatives suppliers was conducted in September 2013. This survey report and its recommendations was amended and recirculated to this group, comments received and the amended report finalised. In the second stage of the project a specific resource recovery application was developed in consultation with a recycler in Sydney who commenced recycling waste wood pallets and offcuts from a range of timber manufacturing business including frame and truss manufacturers in May 2012. The recycler produces a range of products including raw mulch and bedding for meat poultry and horse markets.

Using this facility the development of the exemption application followed the steps outlined in the *Guidelines on Resource Recovery Exemptions (Land Application)* provided by the NSW Government (NSW EPA 2012).

The application addressed the following requirements:

1. Characterisation of the waste
2. Background information on the waste
3. Mixing or blending of the waste
4. Proposed use or application
5. Information on the receiving environment
6. Quality assurance and controls
7. Specifications and standards.

As required in the Guidelines, a sampling plan was also developed and a set of six representative composite samples were taken over a period of eight months. Analysis of a set group of chemicals and visible contaminants was conducted to characterise the waste.

An initial meeting was held with the NSW EPA in 2012 and work undertaken on each aspect of the application requirements in late 2012/early 2013.

A draft application was prepared for review by the recycler, amended and a second draft application prepared. Discussions were then held with the NSW EPA and a final application prepared for review by the recycler.

Results

Sixty-three (63) of the three hundred and thirty-one (331) frame and truss manufacturers (FTMs) sent the survey responded, a response rate of 19%. Of the sixty-three respondents nine manufacturers used hardwood and fifty-five manufacturers utilised softwood.

Responses were received from small, medium and large FTMs from all states and territories with the exception of the Northern Territory. Waste offcuts and sawdust generation of surveyed FTMs averaged 7% of volume of wood purchased.

Forty-five (71%) of respondent FTMS using softwood indicated they had no problem with disposal of H2F waste. Sixteen respondents (29%) indicated that they have issues. FTMs with issues were located in NSW, VIC and WA. Only one FTM in Queensland had a concern.

Statistically speaking, at a confidence level of 95% the proportion of softwood respondents who indicated they have one or more concerns gives a confidence interval (margin of error) of 11%. This means that we can be "sure" that if the question had been answered by the entire relevant population (331 FTMs) between 18% and 30% would have one or more concerns. Given that the sample may be over represented by those who did have concern caution should be exhibited in interpreting the answers of respondents.

The main issue identified was the cost of disposal of H2F treated wood. Some FTMs also cited that local landfills would not accept the H2F waste. Half of FTMs with an issue cited that the issues were increasing. No FTMs cited that the problems were decreasing.

The costs of disposal did mean that some FTMs using H2F bluepine may be at a disadvantage compared to those FTMs not using H2F. In this the survey has found that the issues are a barrier in some markets. Costs of disposal and regulatory barriers are increasing in key markets in NSW and Victoria. Issues to do with handling, storage and worker health and safety do have an impact on many respondents use of H2F. There is some evidence that state government regulations in NSW do confuse toxicity of H2F when it comes to recycling. This is probably a cautionary response due to lack of published information to the contrary.

Full results for the survey component of the project are contained in a separate Survey Report (see Appendix 1).

To disseminate the results of the survey and recommendations, a presentation was prepared and delivered to attendees of the Wood Preservation 2012 Conference in Melbourne on 29th May 2012.

The final specific resource recovery application was sent to the NSW Environment Protection Authority on 28th March 2013 and is presently being considered.

This work found that an allowance for a small proportion (up to 5%) of engineered wood product (particleboard, MDF and LVL/plywood) and H2F treated wood offcuts (also up to 5%) in the recycled products would be appropriate. These allowances are based on a literature review, sampling and analysis over an 8 month period and an assessment of what NSW EPA would be comfortable with allowing at this stage.

The work also found that analysis of many physical 'contaminants' by recycled organic producers use a visual contamination test set out in Appendix H of the Australian Compost

Standard AS 4454 (AS4454—2012). Rather than using expensive chemical analysis, it was included in the application that the levels of engineered products and bluepine residue be analysed using the same test method, modified to include engineered wood and bluepine. The analysis laboratory staff had to be trained in identifying the different engineered wood products as these components are not included in the list of physical contaminants in AS4454.

During the second stage of the project, advice was also provided to two timber companies on the resource recovery exemption process as they wished to utilise waste wood residues for their operations.

Discussion

The problems that some FTMS have with disposal of waste H2F are shared equally between large, medium and small FTMs located in metropolitan, rural and urban areas. For the moment the issues appear isolated to the states of NSW, VIC and WA.

The high costs of disposal are definitely an issue for a small number of FTMs. With increasing waste disposal costs and regulations it could be expected that these will affect FTMs in other states in time. See Appendix A for a list of State and territory government disposal levies and the trends. NSW and VIC have significant waste disposal levies. Increased disposal costs mean that FTMs using H2F may be competitively disadvantaged in the market place compared to suppliers of frames and trusses using untreated timber as often they can dispose of their offcuts through traditional low costs recycling markets.

Variability in waste generation is large. It is unclear if this is related to supply and timber quality or other issues and this may be worth further investigation.

Separating untreated from treated waste is driven by problems with disposal of mixed waste such as steep increases in waste disposal costs or non-acceptance by landfill and/or recyclers. Cost savings are realised by separation but additional costs are incurred by the separating processes. As a result FTMs only reluctantly go into separating their waste. Most don't bother with separating their treated and untreated sawdust so some H2F sawdust maybe used against recommendation in mulch and animal bedding products.

The practice of putting waste offcuts out in boxes for local residents to use as firewood is also decreasing as liability issues to do with people's safety have meant fewer manufacturers are willing to take that risk.

Further investigation of local regulations of the FTMs that had cited that recyclers and/or landfills would not take their H2F waste was undertaken. Two FTMs are located in metropolitan Sydney and it was found that recyclers were not accepting the H2F treated offcuts for recycling into mulch. Local landfills were actually accepting the H2F offcuts but at a much higher cost than the recycler charged. The recycler would not take the H2F treated waste as regulations in NSW specifically exclude any treated wood (no matter what treatment) from being used in mulch or any recycled product applied to land (Office of Environment and Heritage 2012).

Investigation of the other FTM in NSW who identified that their local landfill would not accept the H2F waste was found to be correct. The FTM in question, who utilises a large proportion of H2F (>90%) is located in a small town and the local landfill was in the process of being closed down as it was full. A new landfill had not been developed for the local area so all waste for the district was being trucked a long distance to another locality, at substantially greater cost. Local recyclers of untreated wood did not accept the H2F treated wood.

One FTM in WA cited that the local landfill would not accept the H2F waste. On further investigation it was found that the FTM is located in a rural area and the local landfill was not licensed to accept any putrescible waste. The regulations in WA are unique in Australia in that they regard wood that is not from building and demolition process as a putrescible waste material in line with household garbage (Department of Environment 1996). Therefore it is not permitted to landfill wood waste in a non-putrescible landfill, irrespective if it is treated or

not. Therefore this issue was not exacerbated by the fact that the waste was H2F treated. The other WA respondent cited that his recycler would not accept the H2F treated wood waste, so he now had to pay for disposal of that portion of his waste.

There are some examples of H2F timber suppliers assisting their customers with information that meant they could use alternatives to expensive landfill. This could be pursued in a more methodical way by some suppliers. The researcher is aware of some research that supports the low risk use of H2F treated timber in fuel, compost, mulch and land applications, however, the research is tied to particular chemical formulations. While individual suppliers are tied to particular chemical preservative treatment companies products it would assist the softwood timber industry, and H2F softwood suppliers and their customers more broadly if research to support alternatives other than landfill were in the public domain.

It was also identified that additional research into the environmental and human health safety aspects of mulching and animal bedding is required to support current and future waste recycling practices

During the second stage of the project it became apparent that while there is some reasonable amount of research available on composting some engineered wood products and the expected life of a number of organic preservatives in composting processes, there is a lack of research into the environmental effects of just shredding, mulching and spreading on the land these products in small proportions of a recycling operation.

This project also notes that the assessment and approvals process for the efficacy and safety of treatment solutions, adhesives and other additives (such as fire retardants) do not take into account end-of-life issues of the treated timber.

Manufacturers and suppliers ought to be aware that if the offcuts of their product are not readily recyclable they are exposing their customers to increased disposal costs and sometimes complex environmental regulations. This is not the case with readily recyclable competing materials such as structural steel framing.

Going forward this should be a consideration for manufacturers and suppliers of these products when choosing preservative treatment solutions, adhesives and other additives. As noted in some of the literature some preservative solutions, adhesives or other additives may be less of a problem than others. Some newer preservatives, adhesives and other additives may be very good performance-wise however their use may make the end-of-life issues for users worse.

This consideration of end-of-life issues will be particularly pertinent for manufacturers and suppliers of H2F bluepine and treated mouldings as well manufactures and suppliers of H2S treated LVL, I-beams as well as the various panel products MDF, particleboard, OSB, and plywood.

To that end, it is suggested that suppliers of H2F treated timber and engineered timber products factor in the end-of-life recyclability, or recovery for energy, of the offcuts produced from the use of their products when considering the choice of preservative solutions, adhesives and other additives.

Conclusions

Problems with recycling of H2F waste are currently restricted to FTMs located in NSW, Victoria and Western Australia. The main problem by a relatively small number of FTMs is the cost of disposal compared to untreated offcuts and sawdust. The presence of H2F in the waste stream of FTMs disrupts existing arrangements with recyclers. A very secondary issue is a problem with a landfill specifically not accepting H2F treated offcuts. This situation is reported in NSW and is a local issue.

The environmental and health effects of H2F treated timber in mulch and other “low tech” recycling applications are not well understood by suppliers, FTMs or environmental regulators. No evidence was found that state regulators were confusing toxicity of CCA treated timber with that of H2F treated timber in terms of waste disposal at landfills. However in NSW restrictions are placed on some recycling applications that do not distinguish between the toxicities of various preservatives.

Further investigation into the environmental effects of domestic burning and mulching/composting of H2F treated timber, in the public domain, would be beneficial in reducing current and future disposal (via recycling) costs for FTMs. Such research could also contribute ensuring further uptake of H2F by reducing disposal costs compared to non-treated product.

Investigation by softwood timber suppliers into take-back schemes or working with local recyclers and regulatory authorities in assisting arrangements with other parties who could utilise offcuts is also warranted. This could be an opportunity for suppliers and a service that will win them more customers. An obvious first priority state is NSW.

In developing the application for a resource recovery exemption the process revealed information gaps which could not be filled within the scope of the project. The conclusions from the second stage of the project are that there is a lack of environmental data on the breakdown products of the H2F treatment solutions (active, carriers and additives). In addition there is also a lack of environmental data on the breakdown products of a range of the adhesives used to manufacture the majority of engineered wood products and their additives. This lack of data makes it difficult to justify the safe recycling and/or energy recovery of a large range of modern wood products at the end of their service life.

As landfill disposal costs increase the pressure on manufacturers to provide this data will only increase. However, the increased links with the NSW EPA, recyclers in NSW and the recent interest by a number of timber companies in increasing recycling of wood products bodes well for the future as they have indicated a willingness to contribute to the research on these aspects in the future.

Suppliers of H2F treated timber and engineered timber products should also factor in the end-of-life recyclability, or recovery for energy, of the offcuts produced from the use of their products when considering the choice of preservative solutions, adhesives and other additives.

Recommendations

It is recommended that:

1. H2F waste offcuts recycling be monitored to see if it becomes a larger issue for FTMs.
2. Work is undertaken with local environmental regulators and recyclers in NSW to clarify their understanding of toxicity of H2F timber and barriers to recycling of H2F waste.
3. Timber suppliers and FTMs investigate, either individually or collectively, offcut take-back schemes and/or arrangements with third parties in key sales locations, such as NSW, for recycling and/or energy recovery opportunities to underpin current and future sales of H2F product.
4. The outcomes of this survey be broadly disseminate to frame and truss manufacturers as well as softwood suppliers to those businesses.
5. Independent research is undertaken into the effects of burning, mulching and land application, as well as use as animal bedding, of the offcuts treated with the predominant H2F treatment solutions applied to timber used in Australia.
6. Independent research is undertaken into the effects of burning, mulching and land application, as well as use as animal bedding, of the main adhesives and other additives used in the manufacture of engineered wood products used in Australia.
7. Suppliers of H2F treated timber and engineered timber products should factor in the end-of-life recyclability, or recovery for energy, of the offcuts produced from the use of their products when considering the choice of preservative solutions, adhesives and other additives.

References

The following references were used in the survey report and specific resource recovery exemption application.

ADAS UK Ltd (2007) *Feasibility of Composting Wood and Cardboard Waste with Green Garden or Household Kitchen Waste: Trials Research Report*. Research report for WRAP (The Waste & Resources Action Programme). Available at http://www.wrap.org.uk/sites/files/wrap/Feasibility_of_Composting_Wood_and_Card_-_Guidance_Document.3946.pdf

ACMF (1995) FORMALDEHYDE GUIDELINES FOR SAFE WORKING PRACTICES. Australian Chicken Meat Federation. Available at www.chicken.org.au/files/FORMALDEHYDE%20Guidelines.pdf

APVMA (2013) *Animal Residue Data Sheet – Bifenthrin*. Australian Pesticides and Veterinary Medicines Authority. Available at http://www.apvma.gov.au/residues/stockfeed/ARDS_bifenthrin.php

Arch Wood Protection (2007) *Tanalised Frame H2*. Available at <http://www.tanalised.com/Docs/AusProducts/AUS-Tanalised-H2-Frame-FAQ.pdf>

AS 4454—2012 *Composts, soil conditioners and mulches*. Standards Australia.

AS 5605—2007 *Guides to the safe use of preservative-treated timber - Consumer Safety Information Sheets*. Standards Australia.

Chep USA (2009) Environmental Assessment for Pallet Blocks With Melamine- Urea-Formaldehyde Resins Used In Hydrocooling. Available at <http://www.fda.gov/downloads/Food/FoodIngredientsPackaging/EnvironmentalDecisions/UCM207360.pdf>

Department of Environment (1996) *Landfill Waste Classification and Waste Definitions 1996 (As amended)*. Government of Western Australia. Available at http://portal.environment.wa.gov.au/pls/portal/docs/PAGE/DOE_ADMIN/GUIDELINE_REPOSITORY/LANDFILL_WASTE_CLASSIFCN_V3_2004.PDF

DECCW (2010) *Disposal based survey of the commercial and industrial waste stream in Sydney*. Available at <http://www.environment.nsw.gov.au/warr/commercialindustrialwaste.htm>

Eckelman, C. (undated) *Brief Survey of Wood Adhesives*. Forestry and Natural Resources FNR 154 Purdue University. Cooperative Extension Service. Available at <http://www.extension.purdue.edu/extmedia/FNR/FNR-154.pdf>

EWPA (2007) *Formaldehyde Emissions from Plywood and Laminated Veneer Lumber*. Available at http://www.ewp.asn.au/library/downloads/ewpaa_formaldehyde_emissions.pdf

Fecko, A. (1999) *Environmental Fate of Bifenthrin*. Available at <http://www.pw.ucr.edu/textfiles/bifentn.pdf>

Gaskin, J. (2004) *Potential Environmental Risks of Onsite Beneficial Reuse of Ground Engineered Wood Wastes from Residential Construction*. Prepared for: The Pollution Prevention Assistance Division Department of Natural Resources Atlanta, Georgia. Available at <http://www.toolbase.org/PDF/CaseStudies/Reusewoodreport2004.pdf>

Hann, J., Daian, G., Cookson, L. and Przewloka, S. (2011) *Determination of Acceptable Levels of Preservative Treated Timber in Timber Reuse Applications*. Available at www.timberstewardship.org.au/images/pdf_documents/review-of-pn09-1074-final-report.pdf

Howell, H. (2002) *Degradation of Permethrin in Soils of Low Normal, and High pH*. Proceedings of the 4th International Conference on Urban Pests. Charleston, United States of America, 7 - 10 July 2002. Available at www.icup.org.uk/reports%5CICUP241.pdf

Imgrund, H. (2003) *Environmental Fate of Permethrin*. Available at <http://www.cdpr.ca.gov/docs/emon/pubs/fatememo/permethrin.pdf>

Kai Gu (2010) *Evaluation of New Formaldehyde-free, Soy Flour-based Wood Adhesives for Making Particleboard*. Thesis for the degree of Master of Science in Wood Science. Available at <http://scholarsarchive.library.oregonstate.edu/xmlui/bitstream/handle/1957/16165/GuKai2010.pdf?sequence=1>

Keener, H., Dick, W., Marugg C. and Hansen, R. (1994) *Composting spent press-molded wood fiber pallets bonded with urea-formaldehyde: a pilot scale evaluation*. *Compost Science and Utilization* 2(3):73-82.

Leungprasert, S. and Otten, L. (2002) *Fate of Formaldehyde in MDF Sawdust during MSW Composting*. Available at <http://infohouse.p2ric.org/ref/12/11529.pdf>

NSW EPA (2008) *Raw Mulch Exemption 2008*. NSW Environment Protection Authority. <http://www.environment.nsw.gov.au/resources/waste/ex08mulch.pdf>

NSW EPA (2011) *Guidelines on Resource Recovery Exemptions (Land Application of Waste Materials as Fertiliser or Soil Amendment)*. NSW Environment Protection Authority. Available at <http://www.environment.nsw.gov.au/waste/RREapplications.htm>

NSW EPA (2012) *Resource Recovery Exemptions*. NSW Environment Protection Authority. Available at <http://www.environment.nsw.gov.au/waste/RRecoveryExemptions.htm>

NSW DPI (2011) *Best practice guidelines for using poultry litter on pastures*. NSW Department of Primary Industries. Available at <http://www.dpi.nsw.gov.au/agriculture/pastures/pastures-and-rangelands/management/poultry-litter>

Osmose Australia (2012) Safety Data Sheet: OSMOSE DETERMITE ULTRA LOW ODOUR TIMBER FRAMING INSECTICIDE. Available at <http://www.osmose.com.au/pdfs/OSMOSE%20DETERMITE%20ULTRA%20LOW%20ODOUR%20TIMBER%20FRAMING%20INSECTICIDE.pdf>

ROU (2007) *A Literature Review on the Composting of Composite Wood Products*. Recycled Organics Unit . Available at <http://www.recycledorganics.com/publications/reports/compositewood/compwoodreview.pdf>

South Australian Government (1994) *South Australia Environment Protection (Burning) Policy 1994 under the Environment Protection Act 1993*. Available at <http://www.legislation.sa.gov.au/LZ/C/POL/ENVIRONMENT%20PROTECTION%20%28BURNING%29%20POLICY%201994/CURRENT/1994.-.UN.PDF>

Taylor, S and Di Marco, P. (2003) *Health-Based Investigation Level for Bifenthrin in Soil*. Proceedings of the Fifth National Workshop on the Assessment of Site Contamination. Editors: Langley A, Gilbey M and Kennedy B. Available at http://www.scew.gov.au/archive/site-contamination/pubs/asc_wkshoppaper_13a_pest_taylor_hil_bifenthrin_200301.pdf

Taylor, J. and Warnken, M. (2008) *Wood recovery and recycling: A source book for Australia. Prepared for Forest and Wood Products Australia*. Available at <http://admin.forestworks.com.au/multiversions/10234/FileName/10.%20Wood%20recovery%20and%20recycling%20source%20book.pdf>

Teco (2009) *Wood-Based Structural-Use Panels and Formaldehyde Emissions*. Available at http://www.tecotested.com/techtips/pdf/tt_formaldehydeemission

Wiltcher, D., Borazjani, H., Diehl, S. and Stewart, H. (2000) *Composting of Phenolic-Bonded Softwood Plywood Waste*. Forest Products Journal . Forest Products Society. Oct, 2000 V 50,I10. Available at <http://www.freepatentsonline.com/article/Forest-Products-Journal/71325028.html>

US EPA (2011) *Potential Recycling of Medium Density Fiberboard*. United States Environment Protection Agency. FY2003 OSWER Innovation Pilot Results Fact Sheet. Available at <http://www.epa.gov/oswer/docs/iwg/fiberboard.pdf>

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Researcher's Disclaimer

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Appendix A – 2013/14 Waste Disposal & Recycling Charges

Disposal Costs – Landfilling

Around Australia fees for disposal to landfill are comprised of the following:

- Transport and bin hire fees (very variable)
- Actual landfill facility disposal charges (approx \$50 - \$220 per tonne depending on type of landfill and location)
- State and Territory Government Waste Landfill Levies (see Table A1 below)
- Carbon tax (applied to organic materials such as timber) (Range is \$12 - \$26 per tonne of wood waste disposed - Average \$18 per tonne)

Table A1: State and territory government landfill disposal levies 2013/14

STATE	2013/14 LANDFILL LEVY (per tonne)	Current levy trend
NSW	\$53.70 (Nth coast) \$107.80 (Sydney Newcastle, Wollongong)	Rising \$10 pa plus CPI
QLD	\$0	Stable
SA	\$23.50 (non-metro) \$47 (metro)	Rising to \$63 (metro) by 16/17
VIC	\$46.60 (rural) \$53.20 (metro)	Rising to \$58.50 (metro) by 14/15
WA	\$28	Stable
ACT/NT/TAS	\$0 - \$2	Stable

Disposal Costs – Recyclers

Fees for disposal to recyclers are comprised of the following:

- Transport and recycling bin hire fees (very variable)
- Recycling facility gate fees (approx \$0 - \$80 per tonne – see Table A2 below).

As no landfill levy or carbon tax is payable fees for recycling are often well below that for landfilling. A sample of approximate gate fees for a number of recycling facilities is included in the table below. Note that these are primary recyclers - that is facilities that accept separated wood for recycling and produce recycled products for sale on site. Fees are often negotiable for large and regular volumes. Gate fees at collection facilities (where the wood is aggregated and transported to another site for recycling) and at facilities that separate waste timber from other waste for recycling are substantially higher.

Table A2: Selection of timber recycling facilities gate fees 2013/14

State and recycling facility	Approx. gate fees for separated wood waste (per tonne)
New South Wales	
Australian Native Landscapes, Badgerys Creek	\$75
Direct Pallets and Recycling, Ingleburn	\$66 to \$77
D&R Henderson, Riverstone (sent to Benalla)	\$60*
Victoria	
Waste Converters, Lyndhurst	By negotiation
D&R Henderson, Benalla	\$0*
Queensland	
FPC30 Green Power, Woongoolba	By negotiation
CHH, Gympie	By negotiation*
South Australia	
Jeffries, Buckland Park	\$55
CHH, Mt Gambier	By negotiation*
Western Australia	
EMRC Timber Recycling Centre, Hazelmere (supply Laminex Particleboard)	\$80*

* Facility confirmed that it can accept H2F bluepine offcuts

Information Sources

EPA SA (2013) *Waste levy regulations*. Available at www.epa.sa.gov.au/xstd_files/Waste/Guideline/guide_levy.pdf [accessed 09/09/2013]

EPA Victoria (2013) *Landfill and prescribed waste levies*. Available at <http://www.epa.vic.gov.au/your-environment/waste/landfills/landfill-and-prescribed-waste-levies> [accessed 09/09/2013]

NSW EPA (2013) *Waste and Environment Levy*. Available at <http://www.epa.nsw.gov.au/wr/index.htm> [accessed 09/09/2013]

WA Waste Authority (2013) *Levy*. Available at <http://www.wasteauthority.wa.gov.au/about/levy/> [accessed 09/09/2013]

Recycling facility websites and personal communication.

Appendix B - Survey & Recommendations Report

Appendix B - Survey & Recommendations Report

Survey Report Summary

It is estimated that H2F treated structural pine, or “blue-pine”, comprises 30% of the frame and truss market. Anecdotal evidence from major producers is that issues with disposal and/or recycling of blue-pine offcuts may be a barrier to uptake of H2F pine in certain markets. There was also anecdotal evidence that state and local government regulators confuse the toxicity of preservatives used in blue-pine with copper chrome arsenate (CCA), thus contributing to reduced disposal and recycling options in some regions.

A comprehensive survey was sent to 331 frame and truss manufacturers throughout Australia. Fifty five manufacturers who utilise softwood and nine manufacturers who used hardwood responded to the survey. Responses were received from small, medium and large FTMs from all state and territories with the exception of the Northern Territory. Thirty nine of the softwood users (71% of softwood respondents) indicating they had no problems with disposal of H2F waste. Sixteen (29% of respondents) softwood user respondents indicated they had one or more concerns with disposal or recycling of H2F blue-pine offcuts.

At a confidence level of 95% the proportion of softwood respondents who indicated they have one or more concerns gives a confidence interval (margin of error) of 11%. This means that we can be "sure" that if the question had been answered by the entire relevant population (331 FTMs) between 18% and 30% would have one or more concerns. Given that the sample may be over represented by those who did have concern caution should be exhibited in interpreting the answers of respondents.

Waste offcuts and sawdust generation of surveyed FTMs averaged 7% of volume of wood purchased.

Only nine FTMs in New South Wales, four in Victoria and two Western Australia indicated a concern. Only one manufacturer in Queensland identified an issue. The main issue identified is the cost of disposal of H2F treated wood. Some FTMs also cited that local landfills would not accept the H2F waste. Half of FTMs with a problem cited that the issues were increasing. No FTMs cited that the issues were decreasing.

The costs of disposal do mean that some FTMs using H2F bluepine may be at a disadvantage compared to those FTMs not using H2F. In this the survey has found that the issues are a barrier in some markets. Costs of disposal and regulatory barriers are increasing in key markets in NSW and Victoria. Issues to do with handling, storage and worker health and safety are also having an impact on many respondents use of H2F.

There is some evidence that state government regulations in NSW do confuse toxicity of H2F when it comes to recycling into land applied recycled products or use in energy recovery facilities. This is probably a cautionary response from waste regulatory bodies reflecting widespread timber industry literature not recommending it for mulch or animal bedding applications as well as a lack of published information indicating otherwise.

It is recommended that:

- H2F waste offcuts recycling be monitored to see if it becomes a larger issue for FTMs.
- Work is undertaken with local environmental regulators and recyclers in NSW to clarify their understanding of toxicity of H2F timber and barriers to recycling of H2F waste.
- Timber suppliers and FTMs investigate, either individually or collectively, offcuts take-back schemes and/or arrangements with third parties in key sales locations, such as NSW, for recycling and/or energy recovery opportunities to underpin current and future sales of H2F product.
- The outcomes of this survey are broadly disseminated to frame and truss manufacturers as well as the softwood suppliers to those businesses.
- Independent research is undertaken into the effects of burning, mulching and land application, as well as use as animal bedding, of the offcuts treated with the predominant H2F treatment solutions applied to timber used in Australia.

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Introduction

It is estimated that H2F treated structural pine, or “blue-pine” comprises 30% of the frame and truss market. Anecdotal evidence from some major producers is that issues with disposal and/or recycling of waste blue-pine offcuts are a barrier to uptake of H2F pine in certain markets. There is also some evidence that state and local government regulators confuse the toxicity of preservatives used in blue-pine with copper chrome arsenate (CCA), thus contributing to disposal and reduced recycling options in some regions.

The first phase is an information gathering phase where timber producer’s customers will be surveyed either by phone and/or email survey to establish current disposal behaviour of secondary manufacturers of untreated timber compared to blue-pine off-cuts and residues.

This is to establish the types of problems being encountered (if any) and to prioritise any problems discovered. Responses will be analysed and weighted depending on the market share of those surveyed.

The second phase will be to provide recommendations to address the priorities identified in phase one. This will involve the understanding of alternative methods of disposal (for example recycling) or establish what information is lacking to encourage cheaper disposal via recycling.

The last phase of the research is to disseminate the information to suppliers so that manufacturers are informed of the recommendations. This will initially be via a brief guidance document but include one-on-one meetings with blue-pine producers and chemical suppliers.

Methodology

An online survey was developed in consultation with the Project Steering Group which was comprised of a representative of a blue-pine producer and two people with extensive contacts in the frame and truss manufacturers. The survey (included in Appendix A) went through a number of iterations. It was decided that the majority of responses to specific questions would not be mandatory as feedback from previous online surveys was that FTMs may not know many of the answers and would be dissuaded from providing any information at all if it required answers. Additionally confidentiality was identified as very important as it was considered individual FTMs would not necessarily want to divulge too much information if they thought it could benefit competitors or relationships with suppliers.

Agreement was sought with Kersten Gentle of the Frame & Truss Manufacturers Association to utilise their database of 331 known frame and truss manufacturers in Australia. This up-to-date database includes members and non-members of the FTMA across every Australian state and territory

An introduction email was prepared by TDA, distributed to FTMA and forwarded to the database for FTMA. The survey was open for a period of three weeks in March and April 2012. A reminder was sent out twice in this period which resulted in noticeable spike in responses each time.

Results were collated and supplementary phone calls by the researcher made to those companies who provided contact details and who responded they had an issue, to clarify the any specific concerns.

Aggregated data, with any identifying contact information removed, was provided to members of the Project Steering Group. A draft report was prepared for review by the group, amended and a final report prepared.

After the second phase of the project was completed and the final report circulated by FWPA subsequent consultation via teleconference with H2F producers and H2F preservatives suppliers was conducted in September 2013. This survey report and its recommendations was amended and recirculated to this group, comments received and the amended report finalised.

Results

Response Rate

The survey was sent to three hundred and thirty one FTMs throughout Australia. Sixty-three frame and truss manufacturers (FTMs) responded to the survey, giving a response rate of 19%.

State or Territory

Responses came from FTMs in every state and territory with the majority from the three eastern states, Queensland (QLD), New South Wales (NSW) and Victoria (VIC). The response rate varied between 0% from the Northern Territory (NT) to 50% of FTMs in the ACT. Responses from ACT, NSW, QLD, SA and TAS were above the national response rate of 19% while those for QLD, VIC and NT were slightly below the average response rate. See Table 1.

Nine of the FTMs indicated that they only used hardwood. Once this was indicated, no further questions were available to be answered. The results that follow are the results from the fifty-four companies that indicated they use softwood. See Table 1.

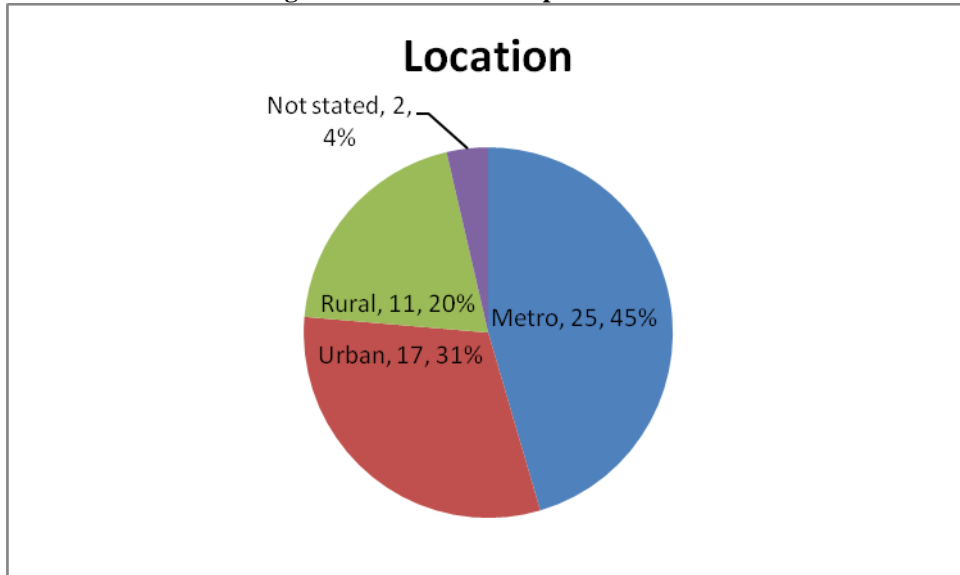
Table 1: State/Territory of responses

	State or Territory									Totals
	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	not stated	
No. of FTMs in FTMA database	4	101	4	74	24	9	96	19	-	331
No. of responses	2	21	0	13	5	2	14	5	2	64
Response rate	50%	21%	0%	18%	21%	22%	15%	26%	na	19%
No. of FTMs who responded and use hardwood only	0	4	-	3	0	0	1	0	1	9
No of FTMs who responded and use softwood	2	17	-	10	5	2	13	5	0	55

Location

Forty-two FTMs (76%) who indicated they used softwood were located in urban or metropolitan locations. Eleven FTMs (20%) were located in rural areas. See Figure 1.

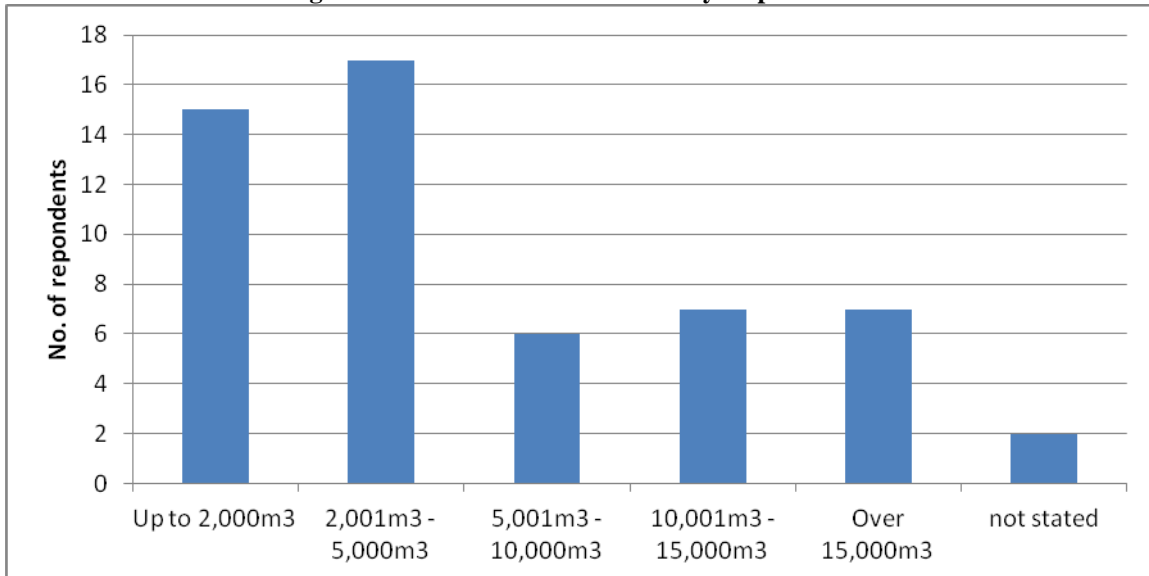
Figure 1: Location of respondent FTMs



Size of FTMs

Responses were received from small, medium and large capacity FTMs. In terms of the quantities of softwood used responses were from a wide range. See Figure 2.

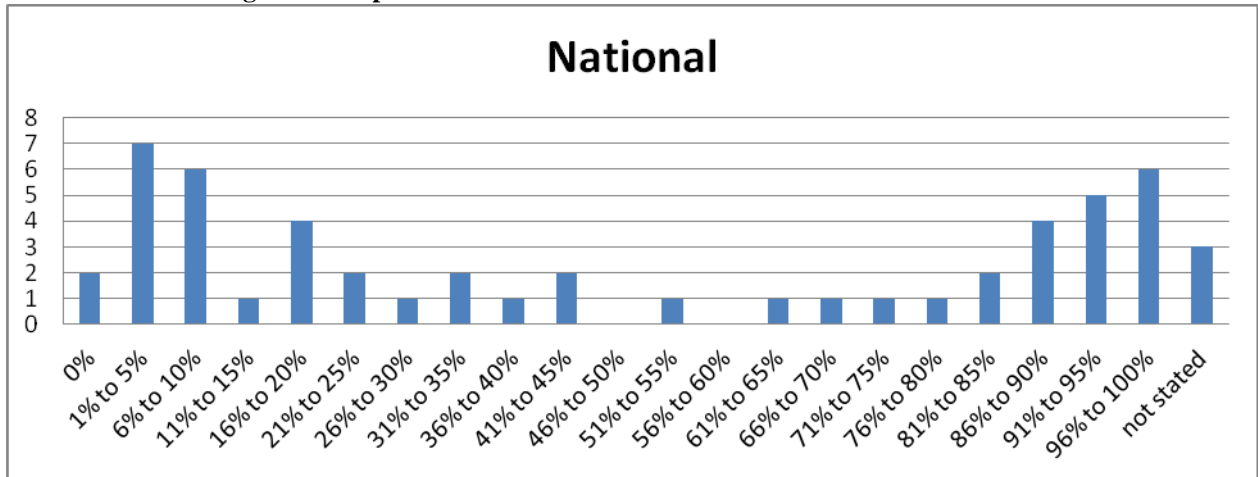
Figure 2: Volume of softwood used by respondent FTMS



Proportion of softwood that is bluepine

In terms of the proportion of softwood used that is H2F treated the range was as wide as possible, from 0% to 100%.

Figure 3: Proportion of softwood used that is H2F treated – National



The percentage of timber supply that is H2F treated varied significantly between states. Of those FTMs who indicated they use greater than 80% H2F, 3 were in NSW, 6 in QLD, 3, in SA and 3 in WA.

The majority of respondents in QLD, SA and WA indicated they used more than 50% H2F. Respondents from NSW were fairly evenly split between seven FTMs who used more than 50% H2F while eight NSW respondents said they use less than 50% H2F. In ACT, VIC and TAS, the overwhelming majority only use a small proportion of H2F. The exception in Victoria was one FTM in a rural location which uses a very high proportion of H2F. Feedback from FTMs in that state is that the uptake of H2F is driven by declarations of high termite risk by local governments. See Figures 4 and 5.

Figure 4: Proportion of softwood used that is H2F treated – ACT, New South Wales, Queensland and South Australia

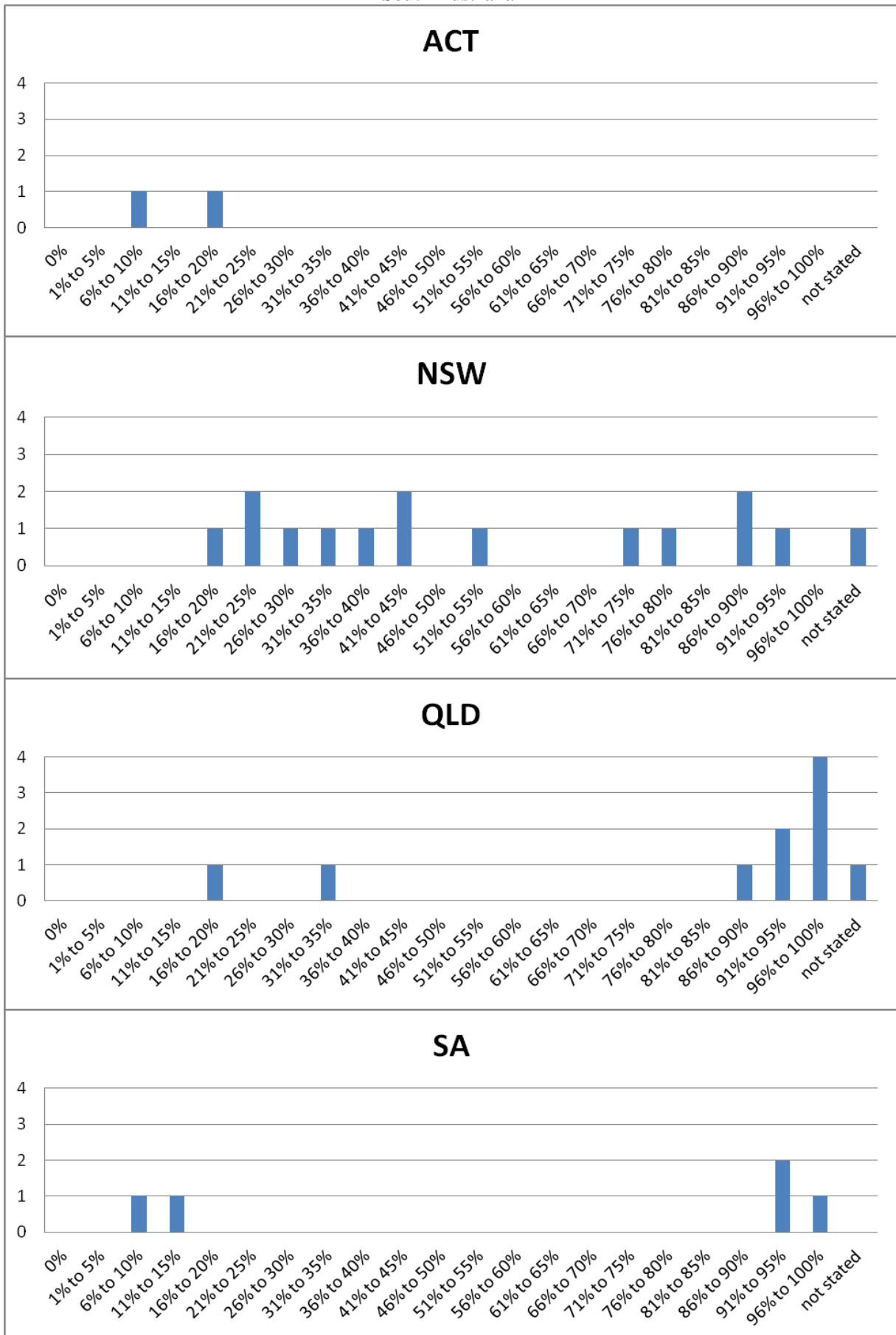


Figure 5: Proportion of softwood used that is H2F treated - Victoria, Tasmania and Western Australia



Waste generation rates

The volume of waste generated was not known by the majority (62%) of respondents.

The average waste generation rate was calculated from those who did provide estimates. The waste generation rate is a function of the volume of waste generated divided by the volume of softwood (midpoint of softwood volume provided¹).

Twenty-two FTMs were able to provide an estimate of volume of offcuts they generated each year. Fifteen FTMs were able to provide an estimate of sawdust volume generated. Only fourteen FTMs were able to provide an estimate of offcuts and sawdust volume.

The average waste generation rates for offcuts and offcuts and sawdust were the same – 7%. See Table 2.

Table 2: Waste generation rates of respondent FTMs

	Waste generation rate	No. of FTMs who provided an estimate
Offcuts only	7%	22
Sawdust only	1%	15
Offcuts and sawdust	7%	14

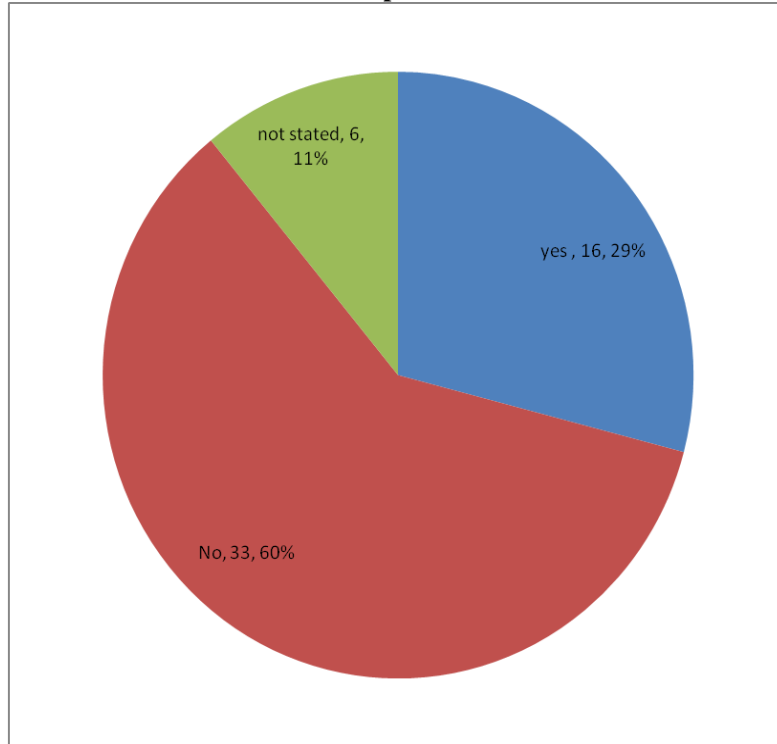
Issues

The majority of FTMs (71% of respondents) indicated they had no problem, or did not state they had a problem, with disposal of H2F waste. A small number of respondents (16 or 29% of softwood user respondents) indicated that they have problems. See Figure 6.

Statistically speaking, at a confidence level of 95% the proportion of softwood respondents who indicated they have one or more concerns gives a confidence interval (margin of error) of 11%. This means that we can be "sure" that if the question had been answered by the entire relevant population (331 FTMs) between 18% and 30% would have one or more concerns.

¹ The methodology used was that a midpoint for the quantity of softwood use estimated was chosen (that is if an FTM estimated that they used 0-2,000m³ a year a midpoint of 1,000m³ was chosen. For 2,001-5,000m³ a midpoint 3,500m³ was chosen and so on. For the range >17,500m³ a volume of 17,500m³ was chosen.).

Figure 6: Proportion and number of respondents who use softwood who had a problem with H2F waste disposal

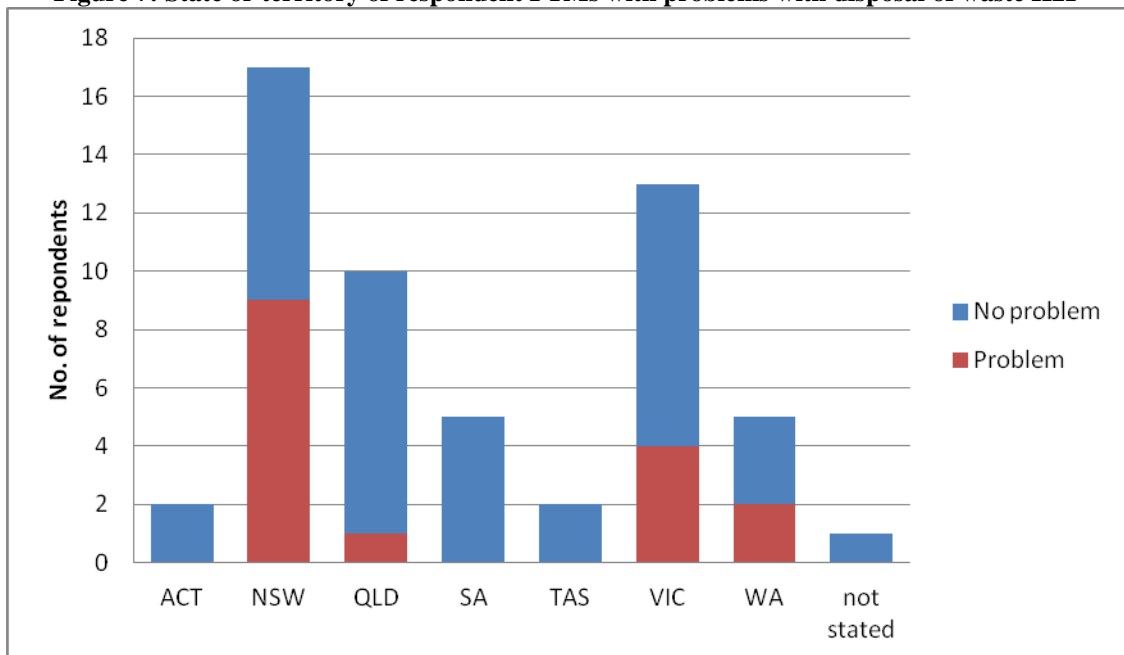


Location and type of FTMs that have issues

FTMs in four states - NSW, QLD, VIC and WA indicated that they have problems. No respondents from ACT, SA or TAS indicated that they had any problems.

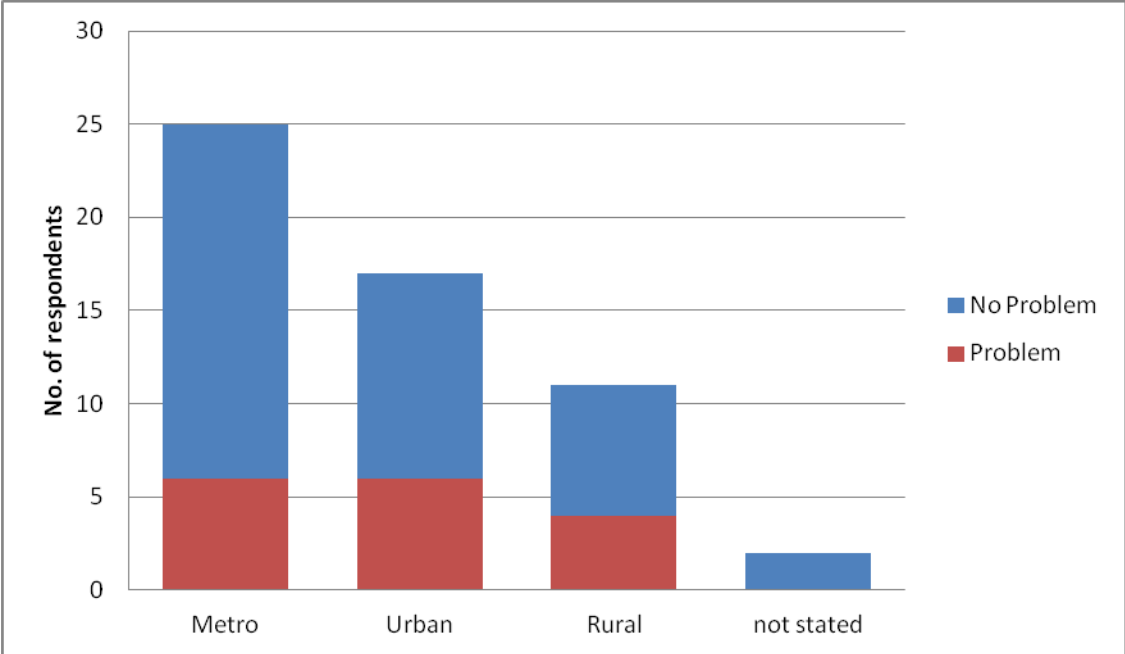
53% from NSW, 40% of respondents from WA and 30% from VIC have problems. Only one FTM in QLD (10% of respondents) indicated they had a problem. See Figure 7.

Figure 7: State or territory of respondent FTMs with problems with disposal of waste H2F



Those FTMs with issues were located in metropolitan, urban and rural areas. Though a higher percentage of FTMs in rural locations had an issue than those in metropolitan areas. See Figure 8.

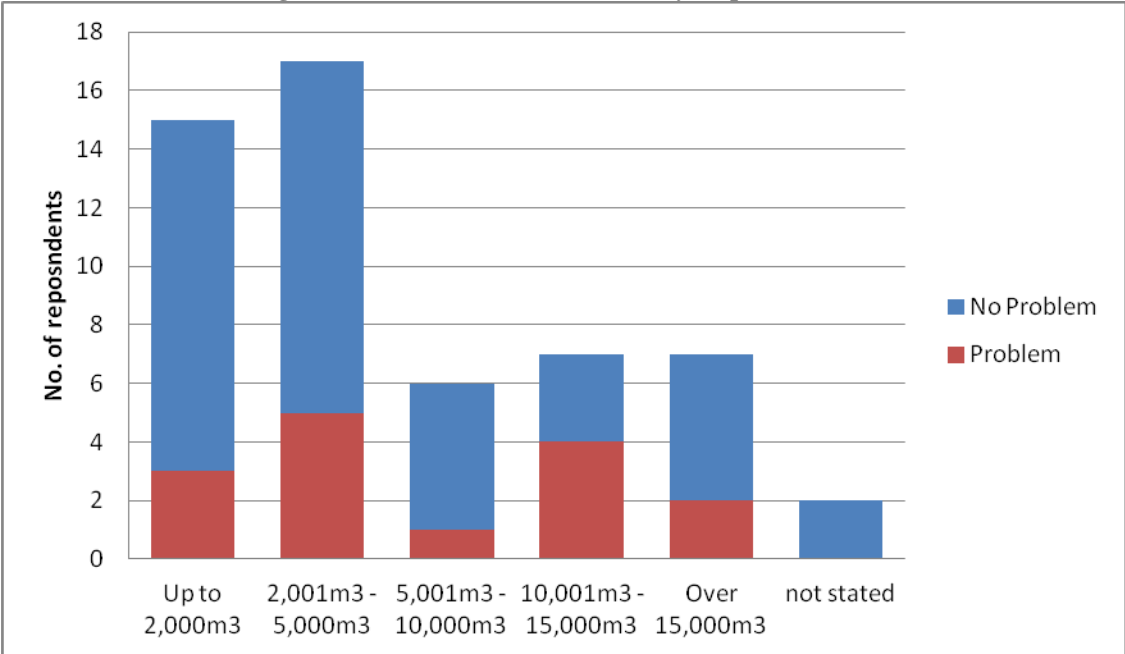
Figure 8: Location of respondents



Size of FTMs that have problems

The FTMs that do have a problem are from across the spectrum of sizes. See Figure 9.

Figure 9: Amount of softwood used by respondent size

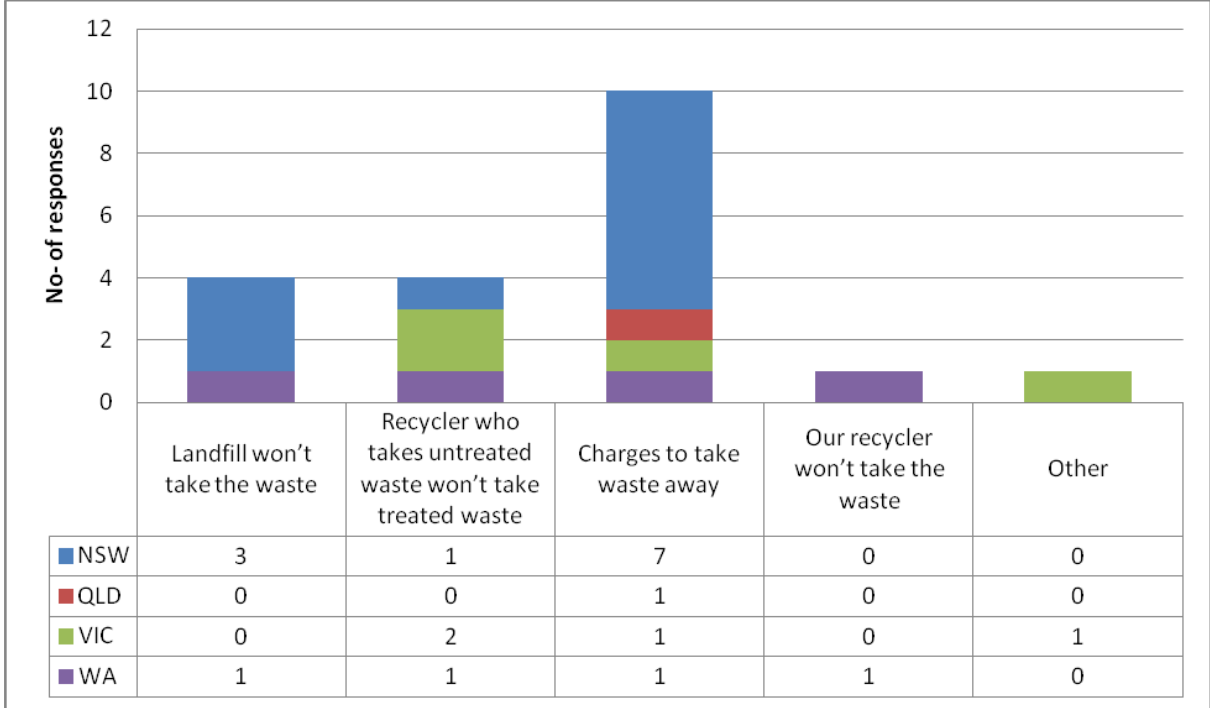


The issues

In the survey FTMs were able to nominate multiple issues. The dominant issue identified was the charges to take H2F waste away. Two issues identified by many were that their recycler and/or the local landfill would not take or accept the H2F treated waste. This required FTMs

to instigate arrangements specifically for H2F waste. The issue of local landfills not accepting the H2F waste was only identified by 4 FTMs in NSW and WA. See Figure 10.

Figure 10: Specific problems of respondent FTMs - by state



Specific comments

When asked about specific comments to clarify their response to the question above, the following comments were provided:

Closest recycler won't recycle treated timber as mulch and therefore charges us the more expensive builder's waste rate.

All treated material must go to landfill and cannot be disposed of otherwise. Therefore only use this material if forced to. Prefer to ban its use from my plant.

Cannot put treated waste with untreated. It has to go in general waste bins which are at much higher disposal rate.

All treated timber offcuts go to landfill at a substantial cost

Have to pay to send all waste to landfill.

Although H2 timber is supposedly recycled through waste provider, disposal is charged for.

Treated timber must go to landfill.

Goes into dumpster which needs to be emptied every 3 days.

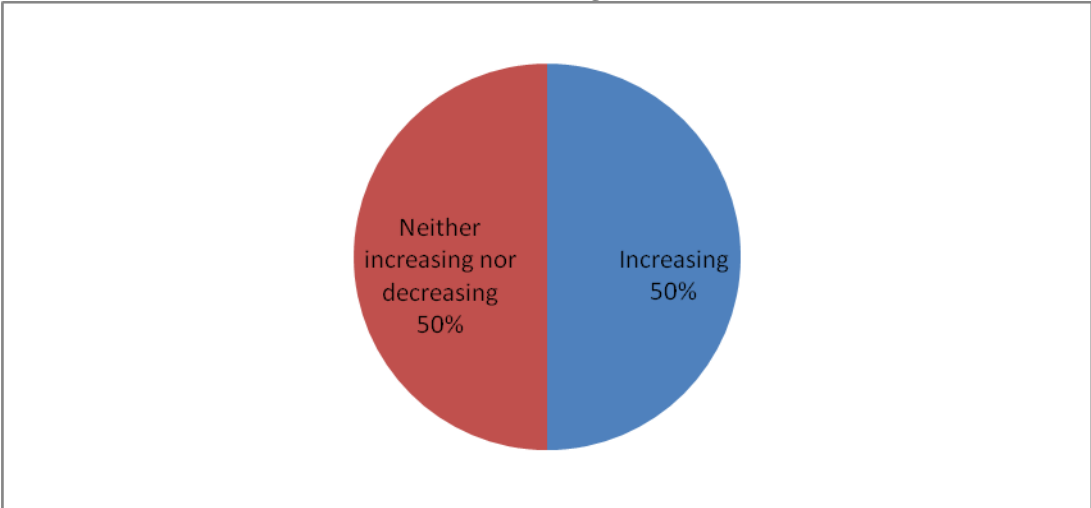
Issue with particular H2F supplier

No FTM responded that the issue related to a particular H2F suppliers product. FTMs cited that the issue was irrespective of supplier although a number did have comments about particular assistance by suppliers that had been helpful in resolving previous difficulties.

Trend in waste problems

Exactly half of FTMs who have problems stated that the problems were increasing. The other half stated that the problem was neither increasing nor decreasing. See Figure 11.

Figure 11: FTMs response to the question whether their problems with H2F disposal are increasing or decreasing.



Does the issue affect decision making?

A significant proportion of FTMs who have an issue with waste disposal said that is has influenced their decision to use H2F. There was a small increase in FTMs stating that it would affect their decision to use H2F in the future. See Figure 12 and 13.

Figure 12: Influence of problems on H2F purchase in the past

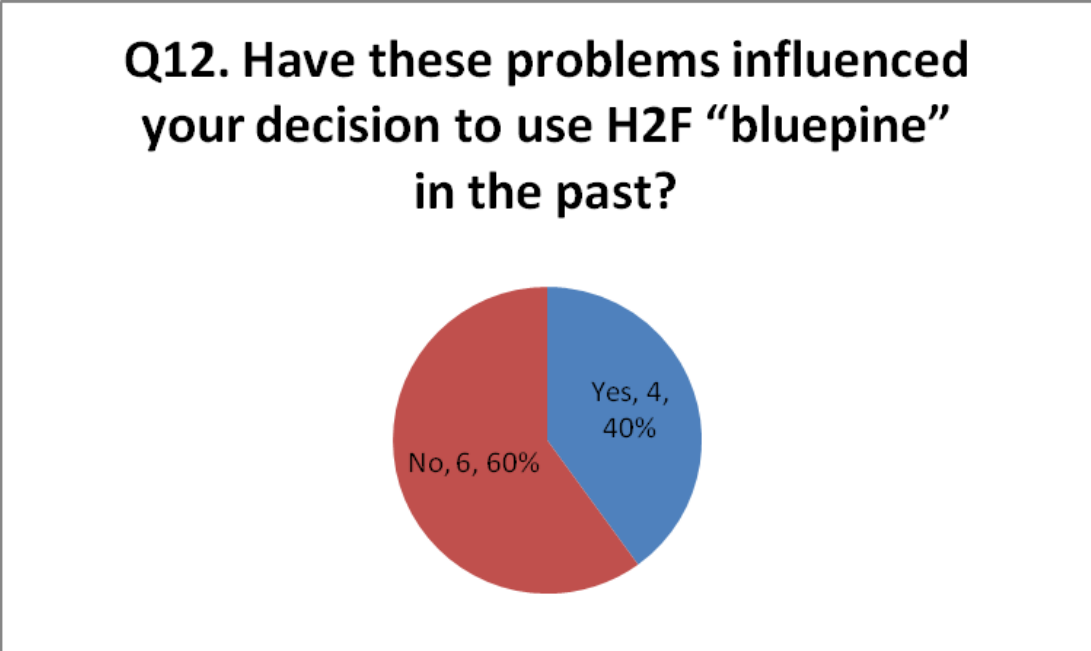
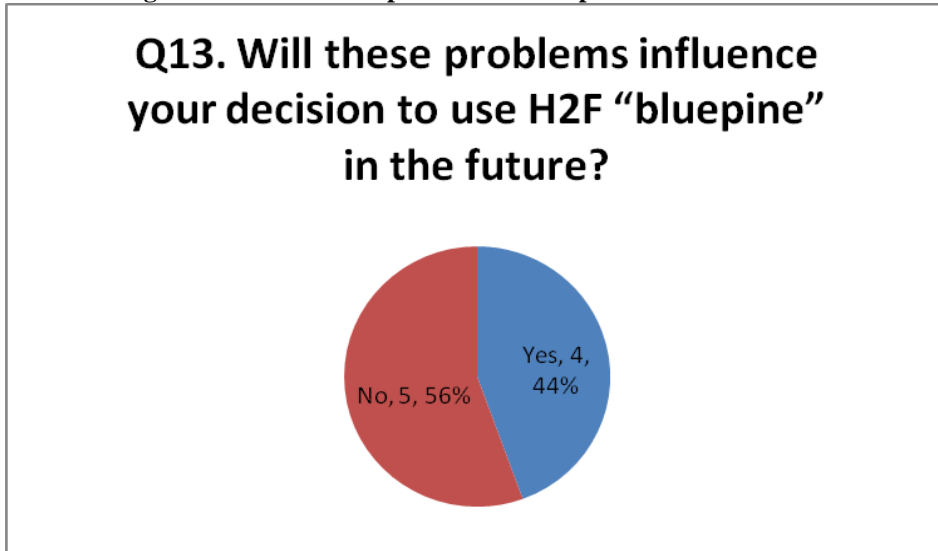


Figure 13: Influence of problems on HF purchase in the future



Waste handling

Separation of treated/untreated

The majority (59%) of FTMs do not separate the untreated timber from the H2F treated offcuts. See Figure 14.

Figure 14: Proportion of FTMs that separate untreated from H2F treated offcuts

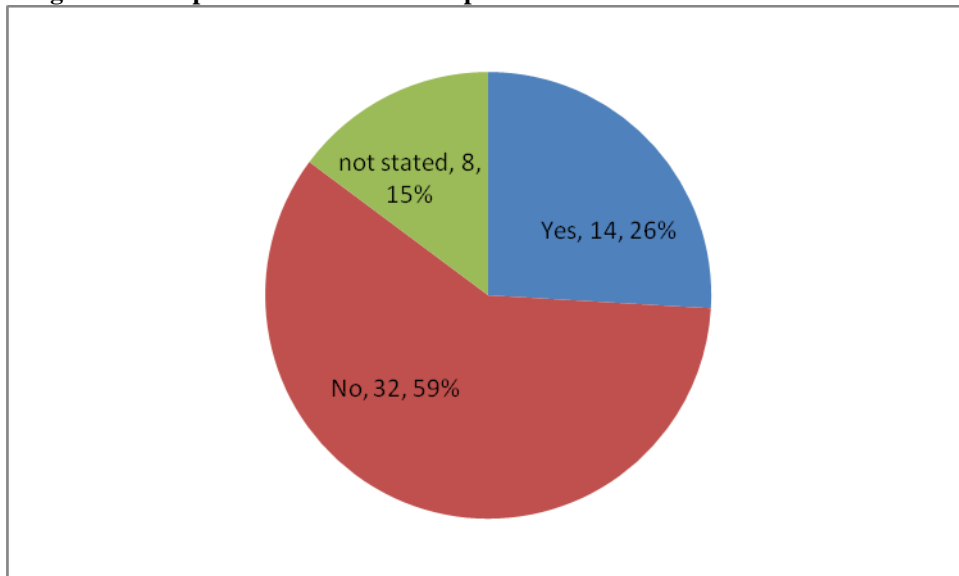
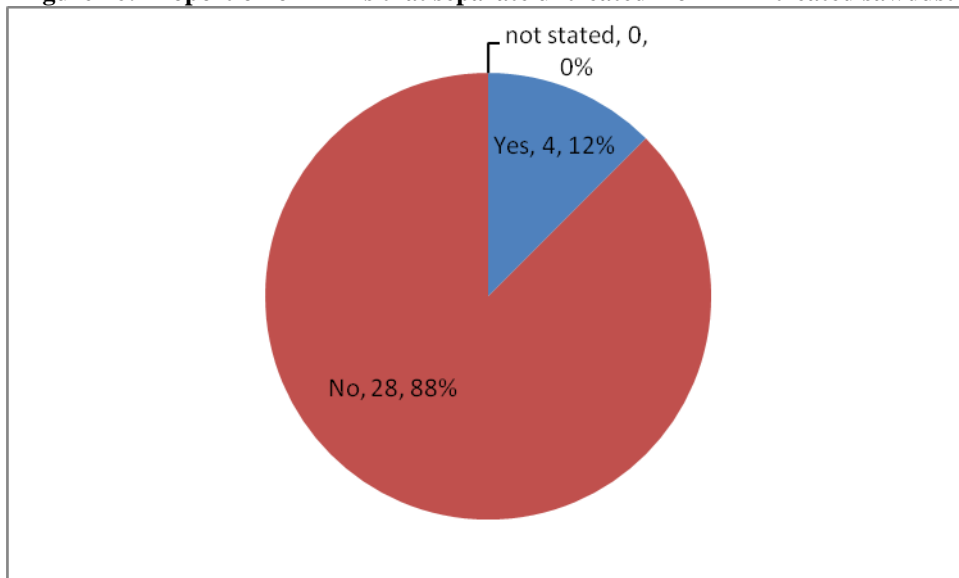


Figure 15: Mixed untreated and H2F treated offcuts



An even larger proportion of FTMs (88%) do not separate the treated from untreated sawdust. See Figure 16.

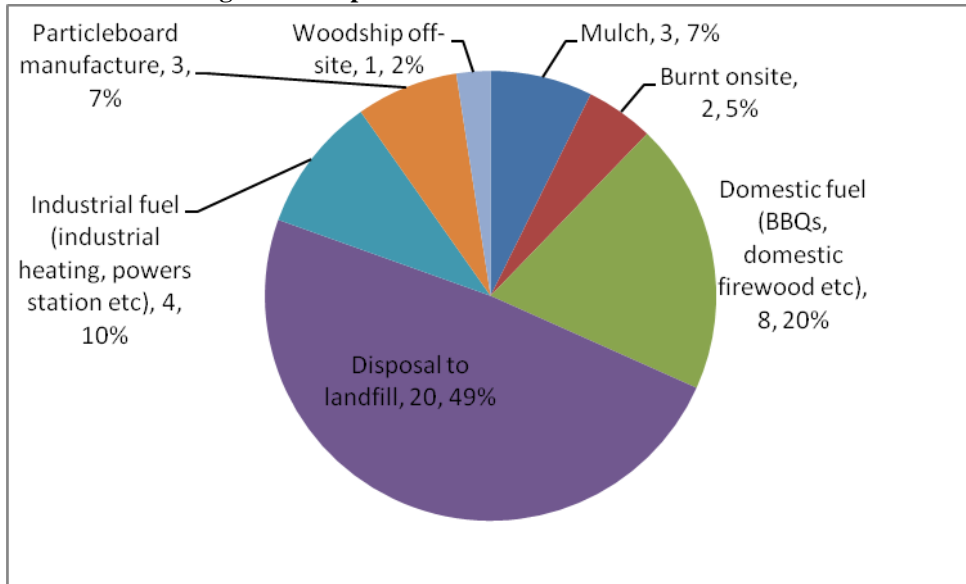
Figure 16: Proportion of FTMs that separate untreated from H2F treated sawdust



Disposal methods for mixed waste

For those FTMs that do not separate the untreated timber offcuts from the H2F treated offcuts, almost half dispose of it all to landfill. 20% of respondents dispose of the offcuts by supplying domestic fuel/firewood users. This method is used in ACT, VIC and NSW and one FTM in SA. Industrial fuel supply was cited by 3 FTMs in QLD. See Figure 17.

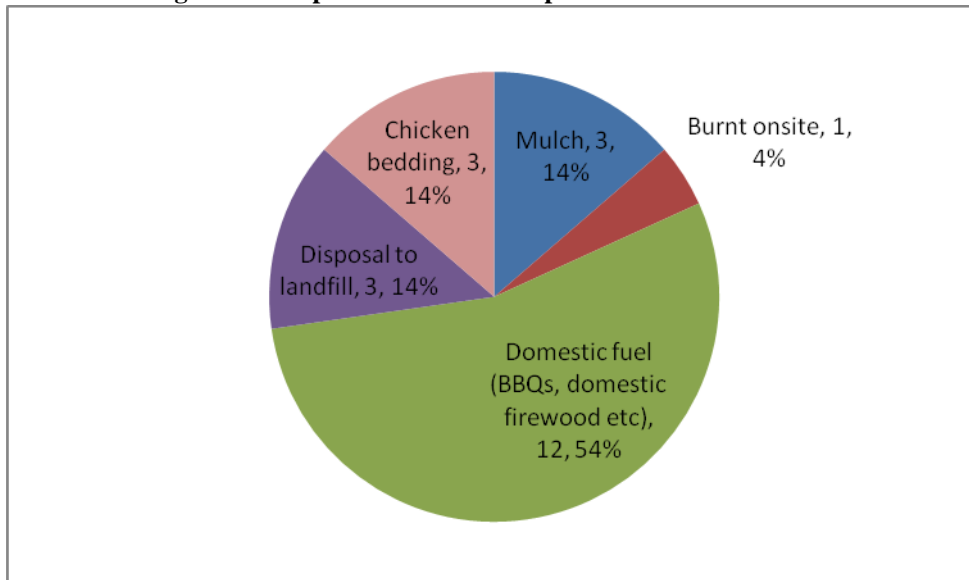
Figure17: Disposal methods for mixed waste offcuts



Disposal methods for the separated waste

The dominant disposal method for separated untreated offcuts is domestic fuel followed by disposal to landfill and supply for use as chicken bedding or mulch. A small proportion of FTMs burn onsite. See Figure 18.

Figure 16: Disposal methods for separated untreated offcuts

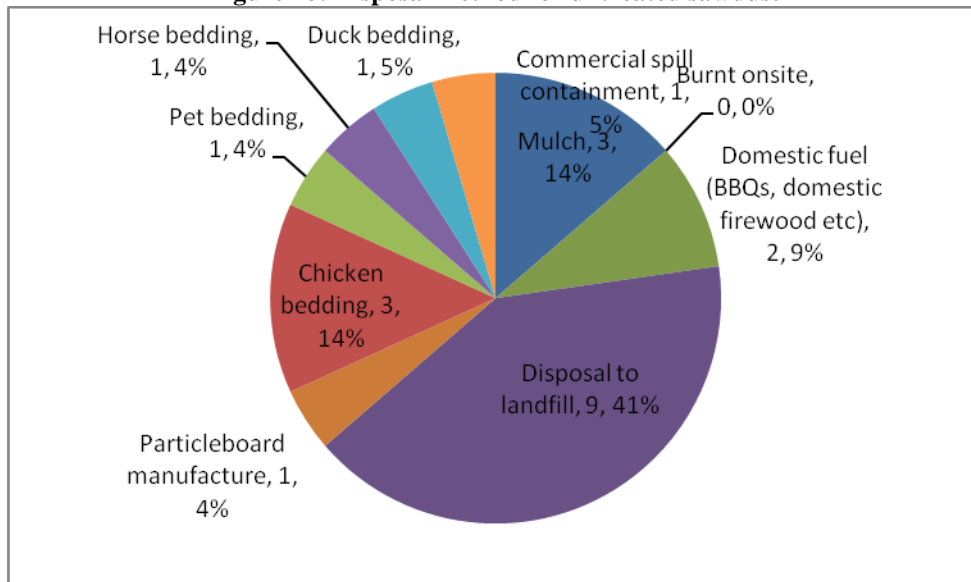


The dominant disposal method for separated and untreated sawdust is disposal to landfill. However the untreated sawdust is also disposed of the range of useful purposes including animal bedding, mulch, domestic fuel and particleboard manufacture. See Figure 19.

Figure 17: Separated untreated offcuts



Figure 18: Disposal method for untreated sawdust



Disposal of separated H2F treated offcuts is mainly by mulching. Disposal to landfill is the second most popular route. Use as domestic fuel or burning onsite are also used. See Figure 20.

Figure 20: Disposal methods of separated H2F treated offcuts

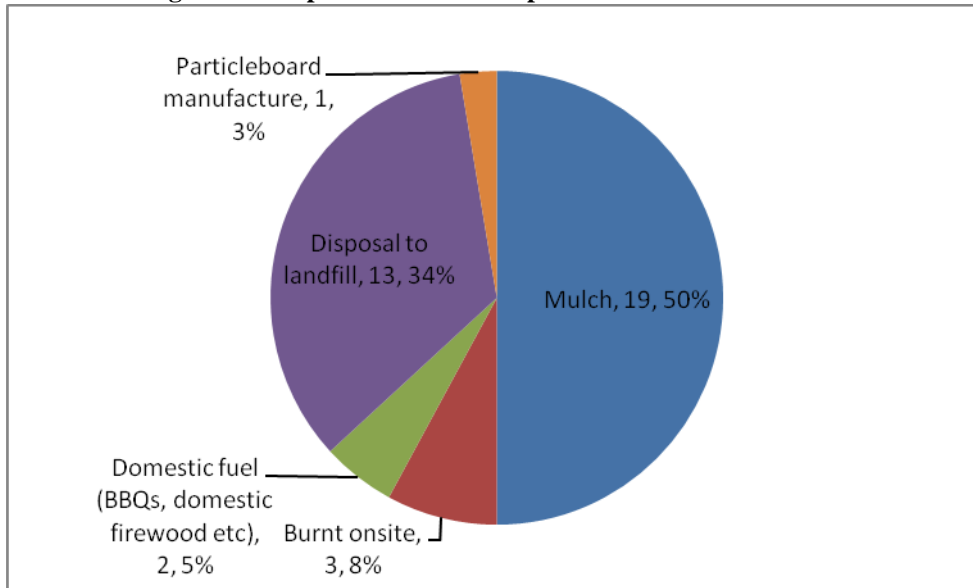
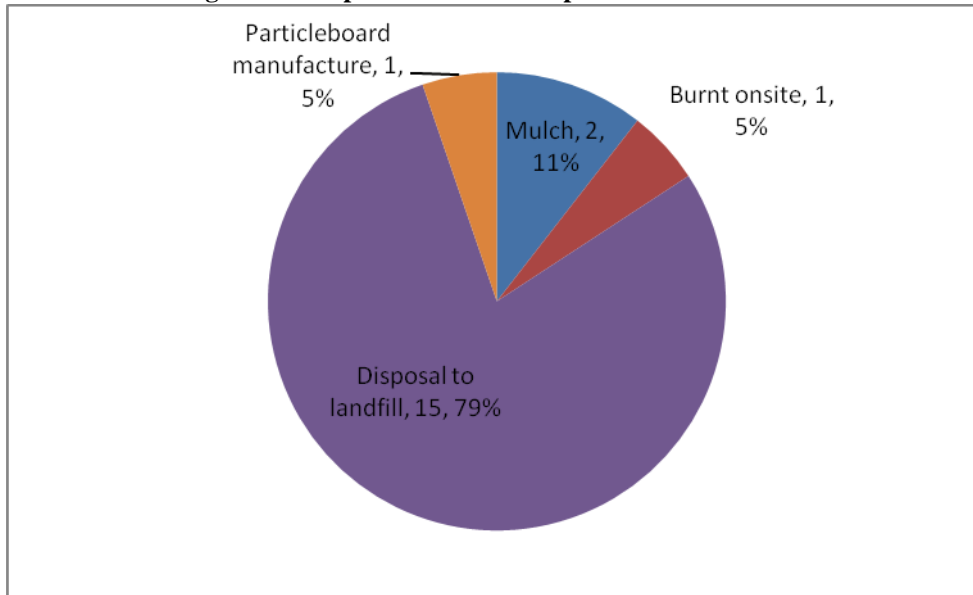


Figure 19: Separated H2F treated offcuts



Disposal of separated H2F treated sawdust is mainly disposal to landfill. Mulching, burning onsite and particleboard manufacture are other disposal routes used. See Figure 22.

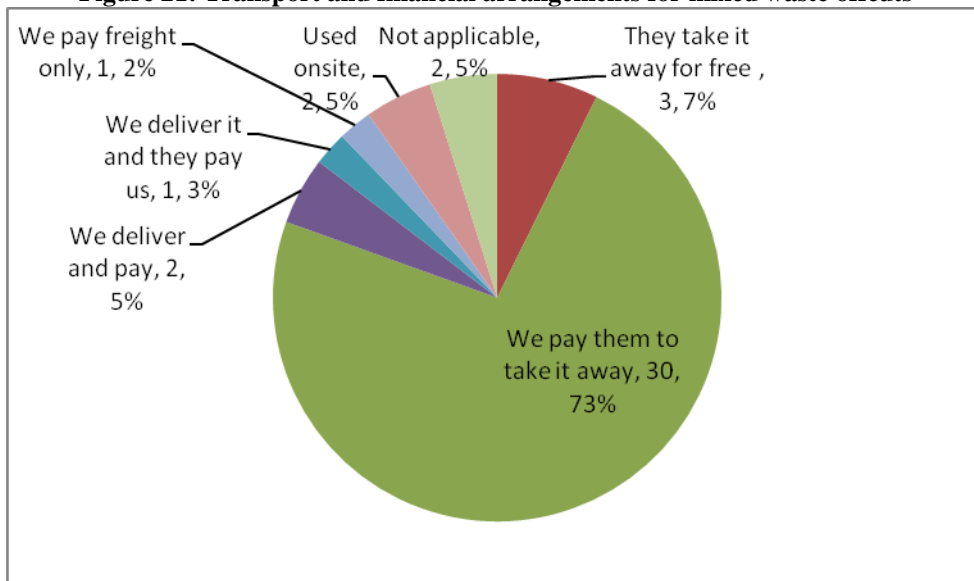
Figure 20: Disposal methods of separated H2F sawdust



Financial & Transport Arrangements - Mixed waste

The majority of FTMs stated that they pay waste and recycling contractors to take their mixed waste away. See Figure 23.

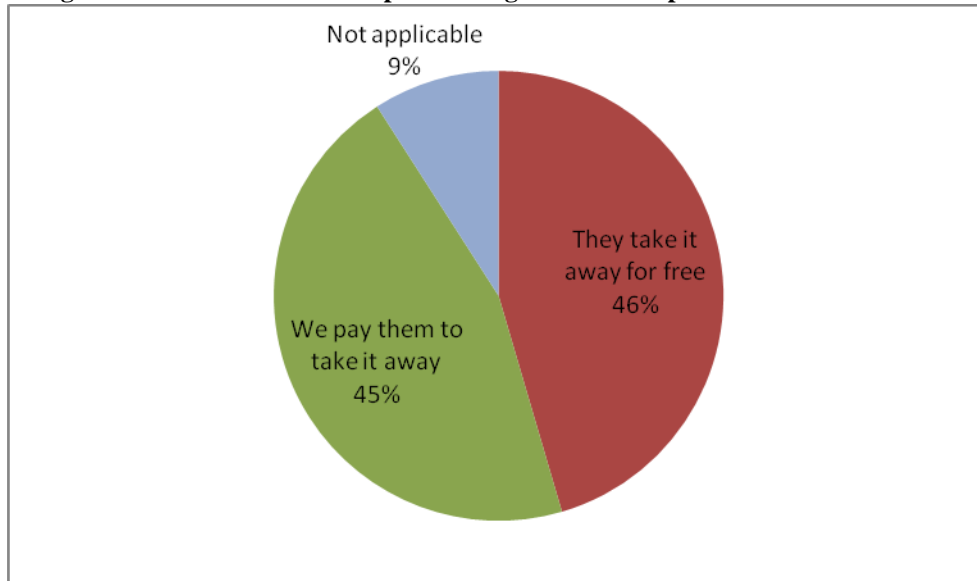
Figure 21: Transport and financial arrangements for mixed waste offcuts



Financial & Transport Arrangements - Separated waste

46% of FTMs said that their untreated waste is taken away for free. 45% of FTMs paid to have it removed. See Figure 24.

Figure 22: Financial and transport arrangements for separated untreated offcuts



Suggestions & Comments

Suggestions for specific issues

The following suggestions were made by FTMs

Would like to recycle all waste rather than landfill.

We also manufacture using full H2 LOSP treatment for selected customers. This increases the difficulty of separating waste streams between untreated, blue and H2 LOSP.

With the help of JJ Richards we separate all wood and cardboard waste in to a skip which is delivered to the power station. Plastic (including strapping) is separated and compacted and sold for recycling. Our general waste is minimal and our waste cost has more than halved.

Our suppliers tell us H2 is safe for landfill however our waste removalists will not OR the landfill people will not accept it as landfill. Landfill people need to be educated T2 OK to use as landfill.

We prefer the water based to white spirit based carrier.

Have considered onsite shredding but shredders are expensive. Unsure of what to do with it either.

Suggestions for general H2F bluepine issues

An industry solution along the lines of gathering all waste industry wide and reusing all the waste.

We only use LOSP H2 treated pine. I have answered all these questions with LOSP H2 in mind. If this is not ok, then you will have to discard my survey.

It would help the industry's image if we used blue treated pine to counter the perceived issues with timber (i.e. termites, rot etc). It would also help individual plants profitability with less stock etc. But unless the entire industry moves in a unified way, then market pressures for the

lowest cost will always result in untreated pine being offered. Perhaps the sawmillers / importers should unify their supply to blue only to address this industry issue?

Allow treated H2 timber as landfill.

All timber of cuts should be reused into chip board products, H2 off cuts into H2 sheet floor and many other products.

Comments on waste disposal and recycling

We have investigated various options for our wood waste including for power generation, use in soil conditioning etc. At this time, it is not financially viable for us to do so as it still costs significantly less to dispose to landfill.

Assurances were given by Hyne that H2 waste was suitable for mulch once the chipping process was complete. This info was passed onto our waste contractor, and we have had no issues with disposal over the past few years.

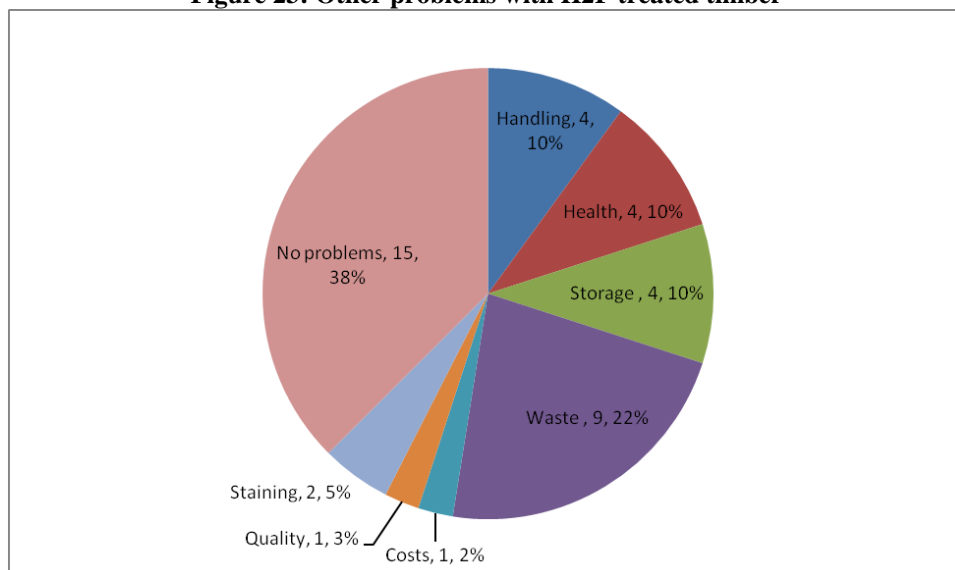
Stocking untreated and treated is costly and time consuming changing from one to the other when making jobs plus issues with separating waste. Why don't we just get all H2 as the main supply from mills and cut out the untreated.

It would be good if the timber industry could supply bins so that the offcuts could be recycled into particleboard etc like the steel recycling industry.

Non-waste H2F “bluepine” issues

A general question was also put to FTMs asking them if they had any other issues with the use of H2F bluepine. 38% of respondents had no problem. Waste disposal was the primary problem 22% of respondents had. Issues around storage, worker health and handling were issues for 30% of FTMs who gave a response to this question. Costs, staining (of clothes during handling) and quality were only an issue for 10% of FTMs who responded. See Figure 25.

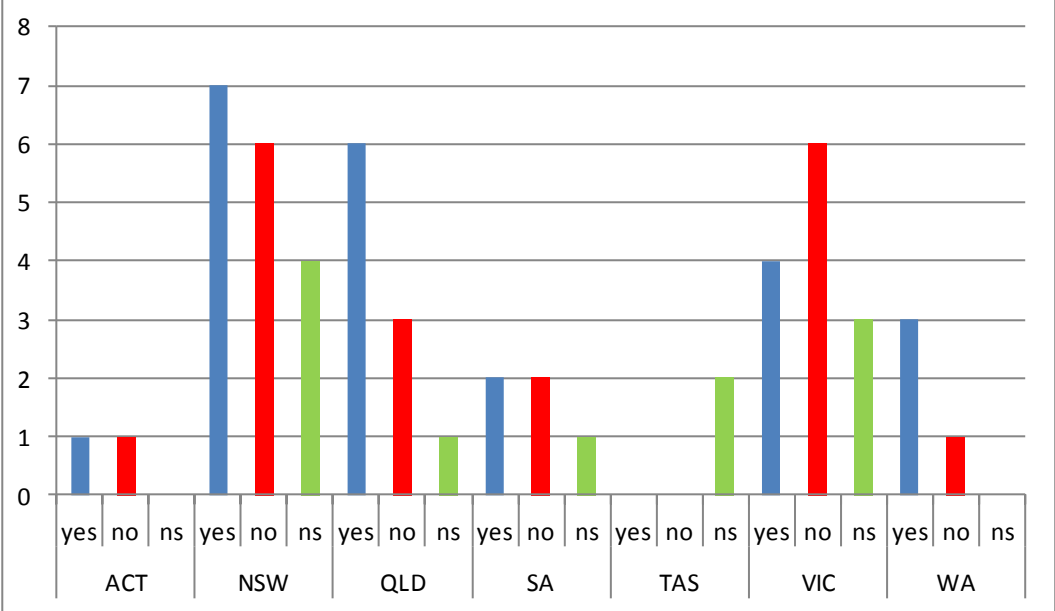
Figure 23: Other problems with H2F treated timber



Use of H2F bluepine

FTMS were also asked if, in their opinion, the use of H2F softwood should fabricators only use H2F “bluepine” treated timber. Many FTMs had no opinion on this question. Of those who did have an opinion, the majority in NSW, QLD and WA had the opinion that FTM’s should only use H2F softwood. FTMs in ACT and SA were evenly split while the majority of FTMs in VIC indicted that fabricators should not only use H2F treated timber. See Figure 26.

Figure 24: Should FTMs only use H2F?



Discussion

Given that the sample may be over represented by those who did have concern caution should be exhibited in interpreting the answers of respondents.

The problems with disposal of waste H2F are shared equally between large, medium and small FTMs located in metropolitan, rural and urban areas. For the moment the issues appear isolated to the states of NSW, VIC and WA. NSW and VIC have significant waste disposal levies.

Costs of disposal are definitely an issue. With increasing waste disposal costs and regulations it could be expected that these will affect FTMs in other states in time. Increased disposal costs mean that FTMs using H2F may be competitively disadvantaged in the market place compared to suppliers of frames and trusses using untreated timber.

Variability in waste generation is large. It is unclear if this is related to supply and timber quality or other issues and this may be worth further investigation.

Separating untreated from treated waste is driven by problems with disposal of mixed waste such as steep increases in waste disposal costs or non-acceptance by landfill and/or recyclers. Cost savings are realised by separation but additional costs are incurred by the separating processes. As a result FTMs only reluctantly go into separating their waste. Most don't bother with separating their treated and untreated sawdust so H2F sawdust is being used against recommendation in mulch and animal bedding products.

Further investigation of local regulations of the FTMs that had cited that recyclers and/or landfills would not take their H2F waste was undertaken. Two FTMs are located in metropolitan Sydney and it was found that recyclers were not accepting the H2F treated offcuts for recycling into mulch. Local landfills were actually accepting the H2F offcuts but at a much higher cost than the recycler charged. The recycler would not take the H2F treated waste as regulations in NSW specifically exclude any treated wood (no matter what treatment) from being used in mulch or any recycled product applied to land (Office of Environment and Heritage 2012).

Investigation of the other FTM in NSW who identified that their local landfill would not accept the H2F waste was found to be correct. The FTM in question, who utilises a large proportion of H2F (>90%) is located in a small town and the local landfill was in the process of being closed down as it was full. A new landfill had not been developed for the local area so all waste for the district was being trucked a long distance to another locality, at substantially greater cost. Local recyclers of untreated wood did not accept the H2F treated wood.

One FTM in WA cited that the local landfill would not accept the H2F waste. It was found that the FTM is located in a rural area and the local landfill was not licensed to accept any putrescible waste. The regulations in WA are unique in Australia in that they regard wood that is not from building and demolition process as a putrescible waste material in line with household garbage (Department of Environment 1996). Therefore it is not permitted to landfill wood waste in a non-putrescible landfill.

There are some examples of H2F timber suppliers assisting their customers with information that meant they could use alternatives to expensive landfill. This could be pursued in a more methodical way by some suppliers. The researcher is aware of some research which does exist

which supports the low risk use of H2F treated timber in fuel, compost, mulch and land applications however the research is tied to particular chemical formulations. While individual suppliers are tied to particular chemical preservative treatment companies products it would assist the softwood timber industry, and H2F softwood and suppliers and their customers more broadly if research to support alternatives other than landfill were in the public domain.

Additional research into the environmental and human health safety of mulching and animal bedding needs to be done to support current waste disposal practices and future, more economical, waste disposal practices.

Conclusions

Problems with disposal of H2F waste are currently restricted to FTMs located in NSW, WA and Victoria. The main problem is the cost of disposal compared to untreated offcuts and sawdust. The presence of H2F in the waste stream of FTs disrupts existing arrangements with recyclers.

A secondary issue is a problem with some landfills not accepting H2F offcuts. This situation is reported in NSW mainly but also in WA.

The environmental and health effects of H2F treated timber in mulch and other “low tech” recycling applications are not well understood by suppliers, FTMs or environmental regulators.

No general evidence was found that state regulators were confusing toxicity of CCA treated timber with that of H2F treated timber. However in NSW restrictions are placed on some recycling applications that do not distinguish between the toxicities of various preservatives.

Further investigation into the environmental effects of domestic burning and mulching/composting of H2F treated timber, in the public domain, would be beneficial in reducing current and future disposal costs for FTMs. Such research could also contribute ensuring further uptake of H2F by reducing disposal costs compared to non-treated product.

Investigation by softwood timber suppliers into take-back schemes or working with local recyclers and regulatory authorities in assisting arrangements with other parties who could utilise for offcuts and investigate is also warranted. This could be an opportunity for suppliers and a service that will win them more customers.

Recommendations

It is recommended that:

1. H2F waste offcuts recycling be monitored to see if it becomes a larger issue for FTMs.
2. Work is undertaken with local environmental regulators and recyclers in NSW to clarify their understanding of toxicity of H2F timber and barriers to recycling of H2F waste.
3. Timber suppliers and FTMs investigate, either individually or collectively, offcuts take-back schemes and/or arrangements with third parties in key sales locations, such as NSW, for recycling and/or energy recovery opportunities to underpin current and future sales of H2F product.
4. The outcomes of this survey are broadly disseminated to frame and truss manufacturers as well as the softwood suppliers to those businesses.
5. Independent research is undertaken into the effects of burning, mulching and land application, as well as use as animal bedding, of the offcuts treated with the predominant H2F treatment solutions applied to timber used in Australia.

References

Department of Environment (1996) *Landfill Waste Classification and Waste Definitions 1996 (As amended)*. Government of Western Australia. Available at http://portal.environment.wa.gov.au/pls/portal/docs/PAGE/DOE_ADMIN/GUIDELINE_REPOSITORY/LANDFILL_WASTE_CLASSIFCN_V3_2004.PDF

Office of Environment & Heritage (2012) *Resource Recovery Exemptions*. Government of New South Wales. Available at <http://www.environment.nsw.gov.au/waste/RRecoveryExemptions.htm>

South Australian Government (1994) *South Australia Environment Protection (Burning) Policy 1994 under the Environment Protection Act 1993*. Available at <http://www.legislation.sa.gov.au/LZ/C/POL/ENVIRONMENT%20PROTECTION%20%28BURNING%29%20POLICY%201994/CURRENT/1994.-.UN.PDF>

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Appendix 1 – Survey



H2F / “Bluepine” Disposal and Recycling Survey

About this survey

There is some anecdotal evidence that frame and truss manufacturers around Australia are reporting problems with disposal and/or recycling of H2F treated softwood (“bluepine”) framing offcuts and sawdust, compared to untreated softwood framing timber. The purpose of this survey is about identifying any problems and, if they do exist, finding out if they widespread or limited to a particular geographic region or size of fabricator. The project will analyse survey results and prioritise any issues discovered for further action.

Who is running this survey?

This survey is being conducted by the [Timber Development Association](#) (TDA) with the assistance of timber companies, and associations (including [FTMA Australia](#)) with funding from [Forest and Wood Products Australia](#). If you have any questions please contact TDA’s Senior Project Officer, Stephen Mitchell on 02 8424 3703 or email at stephen.mitchell@tdansw.asn.au.

How long does the survey take?

The survey should take no more than five minutes to complete.

Confidentiality

All identifiable contact and responses supplied will be kept confidential. Only aggregated data and unidentified comments will be shared in any reporting of survey results.

* Indicates Response Required

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General Information

Q1. Please provide the location of your facility. (For larger companies that have more than one plant or operate in different states, it would be appreciated if each plant could complete an individual survey on a plant-by-plant basis.)

State/Territory

Postcode of facility

Is the facility in a metropolitan, urban or rural area?

*** Q2. Does your facility only use hardwood?**

Q3. Please estimate the quantity of softwood timber used by your facility each year.

Q4. What percentage of your timber supply is H2F treated ("bluepine")?

* Indicates Response Required

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Progress: 17% Complete

General Information

Q5. Approximately what volume, in m³, of waste (treated and untreated) off-cuts does your facility generate each year? (Please don't include volume of off-cuts reused internally.)
Leave this blank if you don't know.

Q6. Approximately what volume, in m³, of sawdust (treated and untreated) is generated each year?
Leave this blank if you don't know.

Q7. Do you have any problems with disposal of H2F treated "bluepine" offcuts or sawdust waste?

* Indicates Response Required

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Issues with H2F treated timber waste disposal

Q8. What sort of issues do you have with H2F treated timber waste disposal? (Please choose one or more.)

- Landfill won't take the waste
- Our recycler won't take the waste
- Recycler who takes untreated waste won't take treated waste
- Charges to take waste away
- Other (please describe)

Q9. Please elaborate on the issues identified in the previous question.

Q10. Does the issue (or issues) arise with any particular H2F "bluepine" supplier's product?

- No
- Yes -- Which product?

Q11. Are the issues/problems increasing or decreasing (that is are they getting worse or better)?

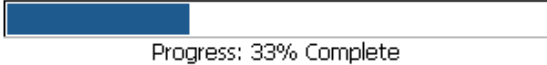
Q12. Have these problems influenced your decision to use H2F "bluepine" in the past?

Q13. Will these problems influence your decision to use H2F "bluepine" in the future?

* Indicates Response Required

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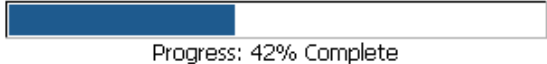
Separation of Off-cuts

*** Q14. Do you separate the off-cuts of untreated timber from H2F treated timber?**

 ▼

* Indicates Response Required

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Mixed Waste Off-cuts

Q15. How do you dispose of the mixed waste off-cuts? (Please select one or more)

- Burnt onsite
- Domestic fuel (BBQs, domestic firewood etc)
- Chicken bedding
- Mulch
- Particleboard manufacture
- Industrial fuel (industrial heating, powers station etc)
- Disposal to landfill
- Other -- Please describe

*** Q16. Do you separate the sawdust from untreated timber from H2F treated timber?**

 ▼

* Indicates Response Required

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Progress: 50% Complete

Mixed Waste Off-cuts

Q17. How do you dispose of the mixed waste off-cuts? (Please select one or more)

- Burnt onsite
- Domestic fuel (BBQs, domestic firewood etc)
- Chicken bedding
- Mulch
- Particleboard manufacture
- Industrial fuel (industrial heating, powers station etc)
- Disposal to landfill
- Other -- Please describe

* Indicates Response Required

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Disposal of Separated Waste

Q22. Do you undertake any shredding of waste offcuts yourselves onsite?

Q23. What transport and financial arrangements are set up for disposal of waste sawdust? (Please select one or more)

	They pay us and they take it away	They take it away for free	We pay them to take it away	We deliver it and they pay us	Not applicable	Other -- Please describe
Mixed untreated and H2F treated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="text"/>
Separated untreated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="text"/>
Separated H2F treated "bluepine"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="text"/>

Q24. What transport and financial arrangements are set up for disposal of waste offcuts? (Please select one or more)

	They pay us and they take it away	They take it away for free	We pay them to take it away	We deliver it and they pay us	Not applicable	Other -- Please describe
Mixed untreated and H2F treated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="text"/>
Separated untreated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="text"/>
Separated H2F treated "bluepine"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
						<input type="text"/>

* Indicates Response Required

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Progress: 83% Complete

Your Suggestions

Q25. Please provide any suggestions or recommendations that would assist in resolving any specific issues you have.

Q26. Please provide any suggestions or recommendations that would assist in resolving any general issues that you perceive with the use of HSF "bluepine".

Q27. Please provide any further comments about waste and recycling.

Q28. What problems have you experienced due to use of H2F treated "bluepine" timber? (Please select any that apply.)

No problems

Handling problems

Health problems

Storage problems

Waste problems

Other - Please describe

Q29. In your opinion should fabricators only use H2F "bluepine" treated timber?

* Indicates Response Required

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Contact Details

Please provide your company name and contact details .

This allows follow-up on any answers you have given. Please note that all contact details will be kept confidential and will not be divulged when reporting survey results.

Your Name

Company Name

Phone Number

Email Address

* Indicates Response Required

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Submit

Thank you for your participation!



More information about this project is available from the [Timber Development Association](#). The final survey and recommendations report will be available on the website of [Forest and Wood Products Australia](#) later in 2012. All survey respondents who have provided an email address will be notified when the report is available.