



1 April 2021

The Chair
Legislative Council Environment and Planning Committee
Parliament of Victoria
Spring Street
East Melbourne 3002

IFA/AFG submission on the Inquiry into Ecosystem Decline in Victoria

Dear Ms Terpstra,

On behalf of the Institute of Foresters of Australia incorporating Australian Forest Growers (IFA/AFG), thank you again for the opportunity to present our submission and supporting evidence to the Environment & Planning Committee, for its Inquiry into Ecosystem Decline in Victoria.

At our Committee public hearing on 10 March this year, we addressed a range of questions arising in relation to our submission dated August 2020. We also took a set of questions on notice. Following up on the hearing, we are pleased to submit the following responses to those questions.

We trust that our responses, set out below, will address the Committee's questions in full and provide further information and clarity around the issues we have raised and our discussion at the hearing. Should the Committee like any further information or to discuss these matters further with the IFA/AFG, please do not hesitate to contact us.

Yours sincerely,

Dr Michelle Freeman
Vice President
The Institute of Foresters of Australia & Australian Forest Growers



Question 1 from the Committee:

Your submission notes that you do not support the Victorian Forestry Plan. I would like you to be more specific about that in terms of the detail about why you do not support it, what you do not support and why?

Firstly in response, please note for the transcript records, that our submission in August 2020 does not specifically state the IFA/AFG does not support the Victorian Forestry Plan (VFP).

However, the IFA/AFG does have concerns that the VFP, released publicly as a three-page document, presents the State government's vision at a high level, plus a series of funding and policy announcements; but these are yet to be supported by a clear strategy that sets out how the VFP will:

- address ecosystem and species decline in native forests;
- maintain Victoria's capacity to respond to threats posed by climate change and bushfires;
- find and manage the land required to support long-rotation plantations that are required to grow high quality timber that we currently source from native forests; or
- avoid reliance on imports or less environmentally friendly substitute products in meeting domestic demand for timber and wood products into the future.

Based on the three-page summary document, the IFA/AFG understands the policy decision to implement the VFP was based on three key tenets:

- that the cessation of native forest timber harvesting will provide improved outcomes for bushfire management and wildlife protection;
- the industry can transition from native forest timber harvesting to plantation fibre only by 2030;
- that consumer preferences are changing.

The IFA/AFG challenges these tenets, based on the following points:

- i. The VFP is premised on a debatable view that sustainable native forest timber harvesting is one of the major threats to bushfire management and wildlife protection across Victorian landscapes.
- ii. By adopting the VFP in its current format, Victoria will forego the opportunity to transform to different forms of sustainable timber harvesting in native forests, which could realise a range of benefits that would be complementary to a plantation industry and increase resilience to future climate change and bushfire risks. This includes opportunities for Traditional Owners to implement traditional management practices and develop new types of businesses based on their natural resources and drive.
- iii. The VFP may lead to a reduction in the number of skilled persons working in native forests, reducing capacity to manage increased risks of bushfire under climate change and adapt using science-based silvicultural (forest management) techniques.
- iv. There are significant limitations on the further development of Victoria's plantation estate; notably the challenges of procuring large areas of suitable, arable land within designated hubs; challenges of meeting investor return requirements from greenfield plantations; and, the long rotation periods (indicatively 30-50+ years) required to replace native forest timbers.
- v. The VFP is unlikely to change Victorian consumer demand for hardwood timber products. It will simply lead Victoria to becoming increasingly reliant on imports and in doing so, shift responsibility for sustainable forest management to other jurisdictions over which Victoria will have little to no influence.

These perspectives are outlined further below.



i. Timber harvesting is not the major threat to bushfire management and wildlife protection.

The IFA/AFG does not agree with the argument that the cessation of native forest timber harvesting will remove a major threat to Victoria's forests, nor will it meaningfully benefit bushfire management or wildlife protection.

It is now well established that the major threats to forest ecosystems in Victoria are:

- Large scale, high intensity bushfires (refer for example, Nitschke et al, 2020¹), which are occurring at increased frequencies due to climate change;
- introduced feral pest animals (e.g. cats, foxes and deer) and plants (e.g. myrtle rust); and
- a historical legacy of extensive clearing of forests for agriculture as well as ongoing impacts of urban expansion.

The impact of these factors on forest ecosystems is evident across all public land tenures, including in national parks and other conservation reserves that have been subject to minimal direct human disturbance. This is evident from Victoria's State of the Forests reports. Ceasing native forest timber harvesting will not assist in mitigating declines caused by these major landscape-scale threats.

For example, over the past 20 years, Victoria has seen multiple large-scale bushfires that have burnt extensive areas of all public native forest tenures— notably in 2003, 2006/07, the Black Saturday bushfires of 2009, and most recently the catastrophic bushfires of the 2019/20 summer. The increasing extent and occurrence of bushfire disasters in south-eastern Australia indicates that current fire management regimes (focussed principally on suppression, more so than mitigation through land management), will not allow the full range of ecosystem processes and biodiversity to be sustained, nor reduce to an acceptable level the impact of bushfires on human lives and property.

Furthermore, we note that native forest timber harvesting currently occurs in a small proportion of Victoria's public land estate – the area of State forest harvested on an annual basis in recent years equates to approximately 0.04% of forests on public land.

In this context, we contend the cessation of native forest timber harvesting – in a small proportion of public lands - will not, in and of itself, provide improved outcomes for bushfire management and wildlife protection. There are significantly larger threats to these values that will continue to have an impact on native forests across public and private land tenures across the state.

ii. Active management in native forests is needed to provide multiple benefits for society.

Active management of native forests is required to address ecosystem declines and has the potential to provide multiple benefits for society, and in particular Traditional Owners. The IFA/AFG is concerned that the VFP will lead to foregoing these benefits and result in potentially adverse forest management outcomes over the longer term.

The Intergovernmental Panel on Climate Change (IPCC) has noted previously that: "*In the long term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fibre or energy from the forest, will generate the largest sustained mitigation benefit*"².

Supporting this, current research³ suggests that one of the most effective tools we could utilise to combat the negative effects of climate change on forests is restoration silviculture, including forest thinning and selective harvest. For example, these approaches can expedite the recruitment of large trees across the landscape, minimise tree mortality during bushfires and mitigate negative effects of pests and diseases, to name a few.

¹ Nitschke C, Trouvé R, Lumsden LF, Bennett LT, Fedrigo M, Robinson AP & Baker PJ (2020) Spatial and temporal dynamics of habitat availability and stability for a critically endangered arboreal marsupial: implications for conservation planning in a fire-prone landscape. *Landscape Ecology*, May 2020. <https://doi.org/10.1007/s10980-020-01036-2>

² <https://www.ipcc.ch/assessment-report/ar4/>

³ This research was summarised by Dr. Patrick Baker, Professor of Silviculture and Forest Ecology at the University of Melbourne, in a recent seminar for the Royal Society of Victoria <https://rsv.org.au/events/changing-forests/>



The VFP is unclear, however, about what forms of native forest harvesting may be allowed to continue or how management aspirations of Traditional Owners will be supported. In particular, serious consideration should be given to ecologically important tools like restoration silviculture.

Further, the benefits to society from sustainable native forest timber harvesting extend beyond timber products and include:

- the provision of road access for recreation, ecotourism, and the production of non-timber products like honey,
- a large seed collection program and maintenance of seed extraction and storage facilities that have proved to be a significant benefit for restoring forests after repeated bushfires, and
- access to highly skilled machine operators, with millions of dollars' worth of machinery, to respond quickly to bushfires in difficult forest terrains.

These benefits are currently resourced largely through income from the native forest industry and therefore, to mitigate negative non-timber-related flow-on impacts of ceasing native forest harvesting, the VFP would need to ensure these investments and skills can be replaced to maintain effective forest management capacity into the future.

For example, the IFA/AFG is concerned the closure of the native hardwood industry by 2030 may remove an important imperative to maintain the forest road and track network that has always been integral to effective forest and fire management. This is already being acutely felt during fire-fighting operations in national parks where the former track network has reduced due to lack of resourcing for maintenance, or deliberate management decisions to restrict public access.

Without more detailed consideration of how important management tools and Traditional Owner aspirations will be supported, the phased closure of Victoria's native hardwood industry could exacerbate ecosystem decline in forests, because any small gains from not conducting timber harvesting and regeneration in a relatively small proportion of the state's forests will likely be overshadowed by the much larger adverse impacts resulting from significant reductions in forest and fire management investment and restrictions to management options.

iii. The VFP is expected to reduce the number of skilled persons working in public native forests.

Regardless of whether native forest timber harvesting continues, native forests will require targeted active and adaptive management to address ecosystem declines and build resilience to threats from climate change, bushfires and invasive species. The VFP does not address the issue of where the required skills and resources will come from to manage these threats into the future.

For example, it is not well appreciated how maintaining a strong native forest timber industry is integral to maintaining effective fire management across forested landscapes and reducing the risks of catastrophic impacts on forest values and society. Experienced forest managers and timber harvesting crews working in native forest have the skills and familiarity to use the plant and equipment required to confidently mount rapid and aggressive first attack on any fire outbreaks.

The 2019/20 summer has highlighted the increasing threat of forest bushfires in Australia. Over the last 25 years, there has been a reduction in the number of experienced forest managers and timber harvesting crews working in native forest with the skills and capacity to use the plant and equipment required to confidently mount rapid and aggressive first attack on any fire outbreaks.

This decline in skills and capacity has coincided with an observed shift from a proactive land management approach to an emergency response approach to fire management. This reactive approach carries with it a conservative attitude to risk, which tends to avoid early direct attack on fires and relies more on aircraft to suppress fires. The cessation of native forest timber harvesting would further reduce the presence of and investment in skilled personal working in the bush, with negative flow-on effects to fire response capacity.

Without substantial interventions and a robust transition plan focussed on maintaining human capital, the phased closure of Victoria's native forest hardwood industry by 2030 may result in the loss of many bush-experienced forestry and harvesting personnel and mechanised equipment that have always been integral to dealing with the summer bushfire threat. The loss of experienced harvesting contractors and their machinery is already being acutely felt due to past closures of

parts of the industry. Their former effectiveness in forest firefighting cannot be readily replaced by machinery and operators who do not normally work in the bush.

In addition, silviculture is a specialist skillset that is largely maintained within native forest timber harvesting agencies. Managing forests for the future (see point ii. above) will require planning for how this specialist skillset will be maintained in Victoria in the absence of a native forest timber harvesting operations and agencies employed to conduct these operations.

iv. There are significant limitations on the further development of Victoria's plantation estate.

The IFA/AFG observes there are major critical impediments to the substitution of native forest timber resources with domestic plantation resources, which are not yet resolved by the VFP. These impediments constrain the validity and practicality of the State Government's vision under the VFP, which will result in Victoria relying on interstate and international imports to meet local demand for a considerable period following the step down in native forest timber harvesting in 2024/25 and the cessation of harvesting in 2030.

To be clear, the IFA/AFG actively supports the further development of Australia's plantation estate, including through farm forestry and agroforestry models that integrate forestry into farming land and systems. There is a range of small-scale examples in Victoria of native hardwood species being grown on longer rotation cycles for high quality sawn timber and wood panel products, and the IFA/AFG is fully supportive of the further development and expansion of these initiatives. There are multiple benefits to be realised through this expansion of plantations and farm forests, not least of which are carbon sequestration and storage and an increased supply of renewable, low emissions intensive construction products that can strengthen a circular economy in Australia.

Plantations play a significant role in Victoria, supplying softwood timbers that are not available from our native forests. Victoria also has fast-growing hardwood plantations that supply wood fibre for pulp and paper production, to a predominantly overseas market.

However, plantations in Victoria are yet not proven to produce high quality hardwood timbers in the quantity and quality that can be obtained from sustainably managed native forests. With more research, this may be possible but the VFP is essentially calling for transition of the native forest hardwood sawlog industry (based on sawing 80 – 100-year-old logs) to plantation-grown hardwood sawlogs in just 10 years (i.e. 2030). Victoria does not yet have an available, ready-to-use hardwood plantation sawlog resource, and growing one from a very small base will require tens of thousands of hectares of farming land to be acquired, planted and grown for 40–50 years.

Recent studies (Indufor, 2014⁴; Whittle, 2019⁵) have highlighted the lack of new hardwood sawlog plantation establishment in Victoria, and Australia more broadly, due largely to unattractive returns on investment, significant risks (such as pests, diseases and bushfire) and limited access to suitable land at a scale and price that can support commercial viability or profitability. At the recent ABARES Outlook 2021 conference⁶, David Shelton of New Forests (one of the leading plantation investment companies in Australia) stated: *"The economics at the moment currently don't support plantation establishment, that's simple. And it won't happen until there's a change in those policy settings or a change in those commodity prices or change in the carbon price."* Compounding this is a current lack of social license amongst farmers and rural communities for industrial-scale plantation establishment (see presentation by Penny Wells⁶).

Whittle (2019) provides a stark analysis of future hardwood plantation potential. ABARES' Australia-wide research indicated new, short rotation hardwood plantations would only be economically viable in Western Australia; whilst few if any new long rotation hardwood plantations would be established anywhere in Australia under current policy settings and economic conditions.

⁴ Indufor (2014), *Guidance on the likely establishment of new timber plantation in Australia*. Final Report, Department of the Environment, Canberra.

⁵ Whittle L, Lock P & Hug B (2019) *Economic potential for new plantation establishment in Australia: outlook to 2050*, ABARES research report, Canberra, <https://doi.org/10.25814/5c6e1da578f9a>

⁶ ABARES Outlook 2021 conference proceedings relating to "Growing the plantation estate" available here: <https://www.agriculture.gov.au/abares/outlook/program/2021-growing-plantation-estate>

v. Demand for timber is increasing and consumers still prefer locally grown timber over alternatives.

Locally grown timber is a renewable, carbon neutral resource. The lack of local supply of native forest timbers resulting from the VFP will lead to increased reliance on substitution with alternative products (including fossil fuel intensive alternatives such as aluminium, concrete and steel, and coal or petroleum-based fuels), or timber and wood fibre imports, often from developing countries whose forests are not managed to the same high environmental standard as in Australia.

The IFA/AFG considers this outcome is not aligned with consumer preferences. As outlined above, our domestic demand for high quality hardwood timber products cannot yet be met from plantations and this will not change any time soon. Demand for high quality hardwoods in Australia is expected to remain steady over the next 30 years⁷, which does not reflect the “changing consumer preferences” that are cited as a key driver of the VFP. Market research by Pollinate⁸ reveals more of the story (summarised in Fig. 1), which shows that consumers are comfortable with timber harvesting if they know the trees are replaced, and clearly disagree that importing more timber is preferable to sourcing trees locally. However, there is a disconnect between the strong consumer preference for wood above other alternatives and perceptions that cutting down trees is “bad for the environment”.

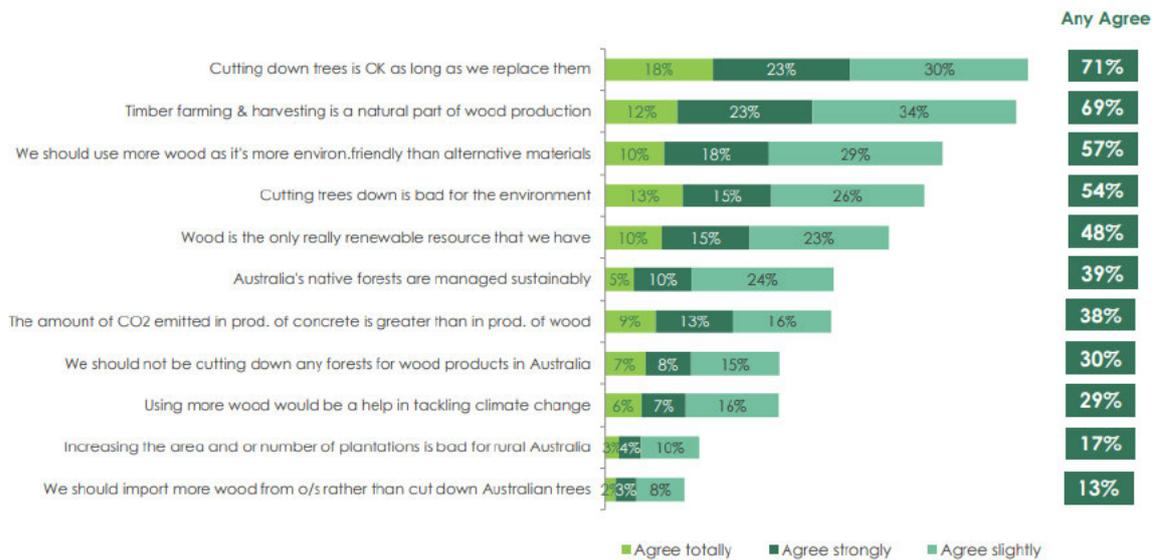


Fig 1 Summary of market research of consumer preferences for wood and perceptions of timber harvesting (Pollinate, 2014)

It can be argued importing wood products rather than conducting sustainable timber harvesting in our own native forest is morally questionable given Australia has the sixth largest area of forests in the world; and is amongst the world's top five in per capita consumption of wood products.

Currently Australia has a ~\$2 billion trade deficit in forest products. This is in large part due to imports of paper and packaging products sourced from other countries; as well as imports of wooden doors, mouldings, and sawn timber, all sourced from overseas rather than our own forests.

The IFA/AFG also notes that recent bushfires, most notably the 2019/20 fires, led to large scale losses of plantation resources as well as native forests; and this loss of plantation timber and fibre will exacerbate Australia's timber shortage. We consider the responsible option is sustainably managing Victoria's native forests for a broad range of values, including addressing in part our own hardwood timber requirements, while concurrently expanding our plantation resource to complement this native forest resource over the longer term.

⁷ Whittle L, Lock P & Hug B (2019) *Economic potential for new plantation establishment in Australia: outlook to 2050*, ABARES research report, Canberra, <https://doi.org/10.25814/5c6e1da578f9a>

⁸ Pollinate market research on consumer preferences for wood summarised here: <https://www.fwpa.com.au/images/webinars/FWPA-Webinar-presentation-Final.pdf>



Question 2 from the Committee:

Also in regard to the Victorian Forestry Plan, its investment of \$110 million in the Gippsland plantations investment program, which is aimed at incentivising plantation investors to undertake industrial-scale planting to add 30 million trees to the plantation timber supply over the next decade, is one aspect that I would particularly like you to comment on. Also in regard to that, what is needed to transition to solely plantation-supplied timber?

The IFA/AFG is of the view that realising a transition to solely plantation-supplied timber will require a more detailed strategy or roadmap, to guide a multi-faceted implementation plan that recognises the existing constraints on further plantation development in this state.

First and foremost, the IFA/AFG would like to see the State government present a clear strategy that addresses the issues raised above (in relation to Question 1), which would provide opportunity for stakeholders (including the IFA/AFG) to engage further in addressing key implementation issues. The strategy should incorporate consideration of further research and development requirements, as well as practical demonstration and extension programs to support farm forestry and agroforestry as well as larger scale plantation development that is integrated into farming landscapes.

Secondly, the IFA/AFG considers \$110 million (i.e. the State government allocation to date to the Gippsland Plantation Investment Program, GPIIP) is insufficient to increase the plantation estate by the area required to meet the full demand for native forest wood – perhaps an additional 50,000 hectares (ha) of plantations in total. Private investors are required. Private investors have required hurdle rates on their investment, whilst uncertainty over future timber prices, land availability and other risks will be factors in their decisions.

It is important to recognise that plantations are also not universally welcomed in rural Victoria. They are considered by some farmers to be a competitor for land and others are concerned about social or environmental impacts. New types of tree growing models that are complementary to farm operations and provide environmental and social benefits may address these concerns, but these will take time to develop and gain social support. See reports from the Next Generation Plantation Investment Project undertaken by the University of Melbourne⁹ for more detailed information.

Furthermore, it will take much more time than 10 years to transition to solely plantation-supplied timber. The existing softwood plantation resource will continue to provide a substantial resource base for structural products and a range of paper and packaging products. However, national forecasts have highlighted the existing plantation resource base will be insufficient to meet Australia's increasing consumption requirements and, without further plantation expansion over the next 10-20 years, there will be a need for increasing levels of imports¹⁰. In relation to higher value appearance grade timber, including timber flooring and other feature grade applications, there will be a supply gap in Victoria for the foreseeable future, as hardwood plantations would need to be grown for 40 – 50 years to provide these types of timber products.

The GPIIP commitments to invest \$110 million in plantation establishment may assist Victoria to establish more short-rotation plantations to supply suitable woodchip fibre for pulp and paper manufacturing requirements within the state; but it will not address increasing society demand for structural and appearance grade timber needed for the construction of more sustainable houses and commercial buildings.

In short, what is required to transition from native forest to plantation timber is time, money, land and social support. The VFP currently does not provide a clear strategy for addressing these needs.

⁹ Next Generation Plantation Investment Project: <https://blogs.unimelb.edu.au/nextgenplantations/#tab187>

¹⁰ Whittle L, Lock P & Hug B (2019) *Economic potential for new plantation establishment in Australia: outlook to 2050*, ABARES research report, Canberra, <https://doi.org/10.25814/5c6e1da578f9a>



Question 3 from the Committee:

Just in response to Mrs McArthur's line of questioning you made some pretty strong claims about an academic scientist, who we are going to hear from very shortly—this afternoon, actually—about a perception of bias in basically their research outcomes and findings, given their activism in this space. That is a whole big topic to unpack, but you made those pretty strong claims. I wanted to ask you: given that you, it seems, represent an industry, an industry that requires these wood products for profitability, and therefore as an industry association I would presume you have an interest in representing the ongoing viability and continuation of that industry, are there any conflicts of interest or biases that you yourselves bring to the table in presenting your evidence here today?

As described in our introductory statement, the IFA/AFG is an independent professional association of forest scientists, managers and growers operating in all aspects of forest and natural resource management throughout Australia and across all land tenures. It is important to clarify that the IFA/AFG is not an industry association. Our purpose is to promote credible science-based discourse and respectful discussion around forest issues.

Like many other professional associations, such as Engineers Australia and the AMA, our primary source of income is from annual membership fees. A portion of our members are employed by public agencies and private companies that conduct timber harvesting, however many of our members are also academics, researchers, scientists working in government agencies, conservation, forest fire management, private forest companies and urban forest management. Our members also include forest consultants and private landowners. IFA/AFG events are often financially supported by agencies and companies that have commercial interests in forests.

As scientists representing the forestry profession, we do advocate. We advocate for good science, good solutions and good outcomes for forests across Australia. We advocate for active and adaptive land management across all land tenures (national parks, State forests and private forests). We consider that Australia's forests, if managed well, have the capacity to support all forest values including biodiversity, conservation, water, carbon and social and commercial interests. We also believe that the future of forest management should include two-way capacity building with Traditional Owners.

Dr. Michelle Freeman is a Principal Consultant and Director at Hollow-wood Enterprises Pty. Ltd. Hollow-wood is a niche forest and land management consultancy with strong technical forestry, GIS and remote sensing, community engagement and forest policy, regulation and compliance expertise in the Australia and Pacific region. Hollow-wood clients have included: the Department of Environment, Land, Water and Planning (DELWP); VicForests; Forest Solutions; The University of Melbourne; The Forest Trust; Hargy Oil Palm Ltd.; New Britain Oil Palm Ltd.; Guadalcanal Plains Palm Oil Ltd.; Ramu Agri Industries Ltd.; Earthworm Foundation; the United Nations Development Program; and, the High Conservation Value Resource Network.



Question 4 from the Committee:

Your submission—both yours and other industry groups we have heard from—suggests that Parks Victoria does not adequately manage fire and invasive species in our national parks and protected forests. Do you support additional funding for Parks Victoria to undertake these activities?

Please note for the transcript record, that our submission in August 2020 does not suggest that Parks Victoria does not adequately manage fire and invasive species in our national parks and protected forests.

Rather, the IFA/AFG submission (pages 2, 3, 11, 13, 28) identifies that the expansion of the national parks and conservation reserves estate over recent decades has been accompanied by a reduced management capacity in these reserves. This is not a reflection on Parks staff or that organisation per se. Rather, it identifies that the management limitations imposed on national parks through legislation and regulatory requirements, and the limited funding made available for strategic, longer-term active management initiatives across all Parks (especially those in remote locales) is not adequate to address major threats exacerbated by climate change, including increased frequency of large high intensity bushfires and invasive species.

The IFA/AFG strongly supports increased funding for managing national parks and other conservation reserves. However, this comes with some caveats. This funding should be recurrent funding that is targeted at executing the nature conservation mandate of Parks Victoria across all Parks, as opposed to being targeted at recreation infrastructure or activities only in Parks with 'iconic' status. The funding should also support science-based active and adaptive management and support activities that allow monitoring and reporting against performance indicators that address ecosystem health, resilience and function.

Question 5 from the Committee:

Victoria has a plantation industry. Can you tell us about this industry and how we might keep plantation logs here instead of exporting them so Victoria can benefit from the jobs and economic activity that would come with secondary processing of plantation logs into timber, paper and other products?

The IFA/AFG is an independent professional association for forest scientists, managers and growers, and therefore we suggest the Inquiry direct this question to industry associations. However, while deferring this question to industry representatives, we can make the following high-level observations.

Professional foresters support local processing of timber from native forests and plantations to maximise the broader contribution that sustainable timber production can make to local economies and communities. More diverse timber markets can also support more resilient industries and provide a range of options for plantation growers.

In this context, there are multiple reasons why the plantation industry and individual commercial enterprises may choose to export logs instead of directing them to local or domestic markets. These reasons generally include, but are not limited to:

- In the case of hardwood plantations established in southwest Victoria, and other regions around Australia, many of these plantations were established specifically to supply export pulpwood markets in Asia-Pacific, notably Japan, and this means plantation locations, species and management regimes were optimised to suit these export markets.
- International market prices for plantation woodchips have historically provided superior returns to local markets, and at least in part, supported the investment rationale for the initial establishment of these plantations.
- Export markets for particular products can be considerably larger than domestic markets and can potentially provide a broader range of alternative markets when the domestic market or other selected markets are subdued or constrained for various reasons, e.g. economic slowdowns or supply chain constraints. This enables major plantation growers in Australia to shift their products to alternate or new export markets, rather than be confined or constrained to a domestic market.
- Maintaining export markets also contributes directly to ensuring Australia is an internationally competitive producer of products, through direct exposure to international markets and investment pools. This has flow on benefits for other sectors of the forest industry, and the broader economy, at regional and national levels.

In addition to these reasons why logs are exported rather than processed in Victoria, there are factors that may present considerable constraints to switching from export markets to domestic supply. These include, but are not limited to the following:

- Maintaining export markets requires the development and maintenance of a critical mass in supply, to enable reliance on regular shipments that support the investment rationale for critical infrastructure, e.g. port facilities, centralised log storage and primary processing facilities, and major roads and other arterial roads to these facilities. In this context, there are constraints on industry capacity to simply divert some or large proportions of the supply to domestic markets, particularly if there continues to be a requirement for or benefits in maintaining export markets.
- There are considerable transportation and logistical challenges to redirecting supply to timber users such as Australian Paper. The IFA/AFG acknowledges the proposals by some stakeholders in Victoria for the State government to facilitate the redirection of hardwood plantation fibre growing in southwest Victoria and southeast South Australia (the 'Green Triangle' region) to replace the supply of native forest hardwood fibre to Opal Australian Paper's pulp and paper facility at Maryvale.

Beyond the issues outlined above, there is also the key issue of significant transportation costs to haul the plantation fibre across the state, from near the South Australian border to Central Gippsland - indicatively, over 400 kilometres, through regional and metropolitan areas.



This logistical issue would need to be addressed in the context of the broader range of issues outlined above, including the need for maintaining a critical mass of supply to meet existing and ongoing contractual commitments associated with export markets.

- If the proposition is to process plantation timber in new facilities in Victoria - for example, greenfield development of engineered wood product facilities, or in existing facilities with substantial retrofit or redesign programs - this would likely require substantial capital investment, which would in turn require a critical mass of ongoing supply to support the investment rationale. This further highlights the observation above that there are constraints on industry capacity to divert some or large proportions of the supply to domestic markets, particularly if there continues to be a requirement for or benefits in maintaining export markets. The development of more local processing of plantation wood would require a coordinated strategy to identify suitable timber resources, sites for processing, investment, markets and supporting enterprises. That this has not happened has been a failure of Australian forest industry policy over the last 30 years.

The IFA/AFG also recognises there are a broader range of considerations, including current plantation ownership structures and contractual arrangements, and the broader economic impacts associated with supplying to export markets as well as domestic markets.

With these observations, the IFA/AFG encourages the Inquiry to discuss this issue further with industry representatives as well as representatives of State government agencies responsible for industry policy, i.e. DJPR.

Question 6 from the Committee:

You raised the issue around ash forests being in need of some TLC in a big way, but you also said that there is not sufficient collection; that is how I heard it. If you had the purse strings of the state, what sort of funding is needed—and where and how—to facilitate ash seed collection? Where are the gaps in our current practices?

Forest Solutions are experts in the field of forest silviculture and have been major contributors to and coordinators of the Ash forest recovery program in Victoria. They have provided a memo to the IFA/AFG with a detailed response to this question (attached), which is in addition to the memo that the IFA/AFG previously shared with the Inquiry.

In summary, restoration silviculture can be used to recover Ash populations and reduce the trend towards forest type change; however, the following resource gaps will need to be addressed to implement such a program at the required scale and into the longer term:

- Better data and mapping of the full extent of Ash forests in national parks – the Ash forest extent and species boundaries in national parks is currently largely unknown;
- Sufficient stores of seed - 40 tonnes is ideal, but a minimum 20 tonnes is required;
- Capacity to assess, plan and manage seed sowing requirements – silviculture is a specialist skillset that will need to be maintained into the longer-term; and
- A strategic, proactive plan to address the above challenges in advance of the next bushfire occurring, as opposed to the current model of reactive post-bushfire response to re-seeding requirements.

Forest Solutions notes that there has been a significant Alpine Ash flowering event in 2021 at a scale that would enable seed collection in quantities not seen for over a decade. This seed would remain available for collection until June 2024. To capitalise on this significant opportunity to address the seed store shortage, the State will need to adequately fund and resource a collection, extraction, and storage program.

Forest Solutions advises that the following funding commitments would be required to fully address the above needs:

- **\$15M** funding from July 2022 to June 2024 to make up the projected Ash seed storage shortfall predicted for this period and support DELWPs Laverton seed facility to remain operational;
- **\$3M** to obtain high quality data and imagery of all Ash forests in National Park and create a new digital mapping inventory and database of forest types and extent across the landscape; and
- **\$9M** to plant Ash seedlings to re-establish forest cover in some of the 12,600 ha predicted to type-change following the 2020 Black Summer Bushfires (not all can be practically treated).

Question 7 from the Committee:

You raised frequency and intensity of fires, but then you spoke about the Indigenous cool firestick burns and mosaic burns. I am not verballing you; I am just checking. My question is: it is not necessarily the frequency of burns, it is the intensity and the widespread footprint that they make, so you can respond to that if I have got that correct.

Increased frequency of high intensity bushfire is the primary threat from fire that the IFA/AFG is concerned about. Studies have shown that climate change in Australia will lead to longer and more severe fire weather periods in Victoria and, given a surplus of natural and human-caused ignition sources, this will lead to both more bushfires and more severe bushfires across Victoria.

Despite this, fire is a critical ecosystem process in many Victorian forest types. For example, it can assist plant species to regenerate and potentially adapt and move across the landscape to better habitats as the climate changes. Through managed, strategic and cultural low intensity and mosaic burns, we can work to minimise the prevalence of high intensity fires and maintain this important ecological process in the landscape at scales and intensities that can maintain biodiversity and support connection to country. Prescribed and cultural burning is not a panacea, but human resources like fire tankers and aircraft cannot, and have not, been able to match the scale and intensity of recent large-scale bushfires. Prescribed and cultural burning can provide opportunities to mitigate large scale, damaging bushfires and whilst maintaining "healthy" fires in the landscape.

Of course, any managed burning can also pose risks. Including that increased frequency of fire, even of low intensity, can disadvantage some species and have social and economic flow on effects, including to community anxiety. This is why we advocate for a strategic, mosaic approach that is targeted at clear objectives and includes planning to maintain ecological, social and economic values that might be negatively affected. The potential risks of prescribed burning must be weighed up against the risks associated with uncontrolled bushfires which produce far more carbon dioxide and are far more damaging to ecosystems.

Question 8 from the Committee:

But also there has been a document produced by a number of scientists, Professor Lindenmayer being one of them, that speaks about logging of forests having a profound effect on fires'—and I am assuming he is meaning bushfires—severity and frequency. I have got this document. So you might like to respond to what the IFA's position is on that document.

The IFA/AFG presumes that the document being referred to here is *Bushfire Recovery Project Report No. 3: What are the relationships between native forest logging and fire?* (February 2021)¹¹ by Professor David Lindenmayer, Professor Brendan Mackey, Dr. Sue Gould, Dr. Pat Norman, and Dr. Chris Taylor (hereafter 'the Report').

Contrary to its aim, the Report does not fully examine “*the relationships between native forest logging and bushfires*” because it does not address critically important context. Ignoring key context is important. Much of the scientific literature underpinning the key conjecture of the report that “*Native forest logging increases the severity at which forests burn*” extrapolate from local stand-based studies to landscape-level implications without supporting their extrapolations with landscape-level evidence. Additionally, the conclusions are based on modelling exercises that have not been cross-checked with field-based evidence. In the absence of such a holistic approach, the connectedness of the landscape in space and time and dynamic interactions between parts of the landscape cannot be captured and therefore should not be extrapolated.

Ultimately, to address issues of risk, holistic, long-term and professional view of forest and fire management is needed rather than short-termed, single-issue perspectives. For example, the scientific articles underpinning the Report do not account for fundamentally important aspects influencing fire severity and risk, including:

- The effectiveness and efficiency of fire suppression operations including the effectiveness of first attack strategies and efforts, including backburning
- The level of training and experience of the firefighting crews and machine operators
- The location and timing of fire ignition points
- The state of the fuel levels and dryness across the landscape (seasonal and diurnal)
- The nature of the terrain where the fires occurred (ruggedness, elevation)
- The ease of access to fires (tracks, steepness, density of vegetation)
- The weather conditions on the day

Fire behaviour is the resultant interaction of fuel, weather, topography and the fire itself. Questions about drivers of forest flammability, landscape-level fire severity and risk are complex, with multiple interacting factors that are almost impossible to untangle.

The Report correctly points out the well-known phenomena that younger regrowth comprised of smaller trees with crowns closer to the ground are prone to being more severely impacted by fire; but fails to acknowledge that such regrowth is mostly derived from past bushfires rather than timber harvesting, which now occurs at a scale of only 0.04% of the forested landscape.

Key examples that provide different evidence to assertions that timber harvesting increases landscape-level fire risk and severity include:

- The landscape-level analysis of fire severity and extent by Attiwill et al. (2014)¹², which concluded that there was no measurable difference in the severity or extent of fires in landscapes where timber harvesting had occurred compared with areas without timber harvesting and managed primarily for conservation values.
- Data from the 2019/20 fire season, which showed 37% (3.3Mha) of conservation reserves in south-eastern Australia were burnt and 36% (1.8Mha) of multiple-use public forests in south-eastern Australia were burnt. At a landscape-scale, this does not indicate that bushfires are any more

¹¹ https://www.bushfirefacts.org/uploads/1/3/2/1/132188020/lr_bushfire_science_report_no._3_-_bushfires_and_logging.pdf

¹² Attiwill PM, Ryan MF, Burrows ND, Cheney NP, McCaw L, Neyland MG, Read SM (2014) Timber harvesting does not increase fire risk and severity in wet eucalypt forests in southern Australia. *Conservation Letters* 7, 341-354. doi: 10.1111/conl.12061

extensive in landscapes where timber harvesting is undertaken as surmised by Lindenmayer et al. (2020)¹³.

- Bowman et al (2016) found that extrinsic factors such as such as fire weather and climate cycles were far more important influences on fire severity in alpine ash forests than past harvesting history, stand age or structural development¹⁴.
- The study by Taylor et al. (2014)¹⁵ that purported to look at fire severity across a landscape, but their conclusions were limited to local site level factors associated with clearfall timber harvesting, rather than comparing landscapes with and without harvesting or recognising the role of bushfire as a major cause of younger-aged forests across the landscape.

What we do know is that the effects of timber harvesting on flammability differ depending on the harvesting regime (silviculture) and forest type (e.g. wet eucalypt versus dry eucalypt forests) and that the flammability of forests changes as forests age. Fire severity, as measured by canopy impact, is greater in some regrowth stages than in very young regeneration and mature stages, all other fire behaviour factors being the same. Further, fuel structure and composition differs in harvested forests compared with unharvested areas of similar growth stages, at least in early developmental stages. Finally, fire behaviour in Australia is very different to elsewhere in the world because our forests are dominated by eucalypts. As such, observations about the effect of timber harvesting on bushfires from non-eucalypt dominated landscapes in other parts of the world have very limited relevance to Australia.

The IFA/AFG considers we would be better served by looking at the long-term fire management across all forested landscapes: national parks, State forests and private land; and should also be looking at the impacts of climate change on increasing fire severity. We should be critically assessing how to increase the workforce with bush skills and knowledge to manage our Victorian forests, actively and adaptively.

Finally, the IFA/AFG would welcome investment in further research that addresses key questions, which are not yet resolved by the scientific literature:

- What difference is there in the number, extent and severity of bushfires in forested landscapes where timber harvesting is and is not occurring?
- What difference does the density of access roads make to bushfire abundance and size?
- What difference does having local timber harvesting workers and equipment available for firefighting make to the size and impact of bushfires?
- What difference is there in the ability of bushfires to spread in a landscape where regrowth from timber harvesting occurs, landscapes where no harvesting regrowth occurs, and in a theoretical landscape where a “natural fire regime” operates?

Answers to these questions would be very helpful in further informing forest and fire management policy and decision-making.

¹³ Lindenmayer DB, Kooyman RM, Taylor C, Ward M, Watson JEM (2020) Recent Australian wildfires made worse by logging and associated forest management. *Nature Ecology & Evolution* doi: 10.1038/s41559-020-1195-5

¹⁴ Bowman DM, Williamson GJ, Prior LD, Murphy BP (2016) The relative importance of intrinsic and extrinsic factors in the decline of obligate seeder forests. *Global Ecology and Biogeography*, 25, 1166-1172

¹⁵ Taylor C, McCarthy MA, Lindenmayer, DB (2014) Nonlinear effects of stand age on fire severity. *Conservation Letters* 7, 355-370. doi: 10.1111/conl.12122

23rd March 2021

CONTENT: Statement from Forest Solutions to the IFA.
RE: Requirements for the recovery of Ash forests impacted by Bushfires
TO: Institute of Foresters Australia (IFA).
CC: Department of Environment, Water, Land and Planning
FROM: Owen Bassett, Director, Forest Solutions Pty Ltd (FS)

OBJECTIVE

To brief the IFA about actions and resources needed to recover Ash forests impacted by bushfires, including current efforts in Victoria, and preparations needed given the certainty of future bushfires.

BACKGROUND

Mountain and Alpine Ash¹ forests are fire sensitive and 'obligate seeders'; that is, fire easily kills them and they will only self-regenerate if seed is present in the forest canopy at the time of death. These species need to be at least 20 years of age to produce seed. If a young Ash forest <20 years old is killed, for example by bushfire, it will not 'self-regenerate', leading to population collapse and type-change. 'Type-change' means a shift away from Ash forest, usually resulting in two outcomes; either (1) open woodland of non-Ash eucalypt trees, or (2) total loss of forest to variable combinations of Acacia species, bracken and snow-grasses.

ISSUES

(1) The need for stored seed and the lack of it

Bushfires in Victoria have been unusually frequent in the last two decades, and a localised population collapse of Ash forest can occur where short-interval bushfires overlap (Fagg *et al.* 2013; Bowman *et al.* 2014; Fairman *et al.* 2015). The interval between these bushfires are shorter than the period required for reproductive maturity in Ash species², resulting in large areas of immature forest being fire-killed and at imminent population collapse and type-change. The State can intervene using a form of restoration silviculture; by aerially sowing seed to recover populations and reduce the trend towards change. However, sufficient stores of seed and a capacity to sow it are required to enable this intervention. Prior to 2020, the State has been able to sow up to 3 tonnes of seed after each bushfire (Fagg *et al.* 2013; Bassett *et al.* 2015). Limitations include seed stocks and the aerial capacity to deliver. Following the 2020 Black Summer Bushfires, the State managed to extend its performance to 4.5 tonnes sown, but the actual quantity of seed needed was not present at the time, resulting in

¹ Mountain Ash (*Eucalyptus regnans*) and Alpine Ash (*E. delegatensis*)

² Average period of 4 years: 1998, 2003, 2006/07, 2009, 2013, 2018, 2019, 2020

an under-sowing³ of 11,500 ha and a further 6,700 ha left unsown based on priorities (memo from Forest Solutions (FS) dated 5th March 2021 and submitted on 10th March to the Parliamentary Inquiry into Ecosystem Decline by the IFA). A further 2,700 ha needing treatment could not be sown given site conditions were not viable. The problem of limited seed stocks for forest recovery following bushfires has been known for a decade (Ferguson 2011; [Bassett & Fagg 2018](#); [Bassett on ABC 2020](#)) and recognised by Victoria's Auditor General as an issue that requires action (VAGO 2013, 2018).

Following the 2020 bushfires, all State-owned seed was depleted.

(2) Area of Ash forest now Type-changed

Within the 2020 bushfire extent alone, there is now 12,000 ha of forest expected to Type-change (FS memo dated 5th March). Outside the 2020 extent we conservatively expect at least a similar area (perhaps up to 20,000 ha) to have already type-changed following the 2006/07 Great Divide Bushfire. Natural seed supply in Ash forests at the time of this bushfire was very poor, leading to large areas either understocked or type-changed. There was insufficient quality seed in store for sowing at the time to sufficiently address this issue.

(3) Unprecedented area of immature Ash forest now vulnerable to bushfire

The area of immature Ash now present, due to the frequent large bushfires in Victoria over the last two decades, is extensive – most which has self-regenerated from seed falling from fire-killed mature trees, and a smaller component regenerated using silvicultural intervention. The full extent has not yet been defined. In the 2020 bushfire area alone, Forest Solutions identified 43,000 ha of Ash that will remain or become live immature Ash. Outside the 2020 bushfire area, we expect an area in excess of 100,000 ha to be immature. Any further bushfires are expected to impact increasingly larger areas of immature Ash. Either these are left as large areas to change into something other than tall forest, or a strategic store of seed be developed to support silvicultural intervention and the maintenance of iconic forest types as we know them. If forest extent is lost, then other values also decline – such as habitat for iconic fauna species, carbon sequestration, oxygen release, quality water production, and human recreation under such stately forests.

(4) Inadequate knowledge of Ash distribution in National Parks

Successfully managing our natural resources requires knowledge about them. Within Victoria's National Parks we do not know the full extent and location of Ash forests. We know they exist, because we can observe them when visiting or if flying over them. Some areas are 'modelled', but this data is highly inaccurate. In reality, their extent and species boundaries remain unknown. During the recent rapid response efforts for forest recovery following bushfires, this has caused major project delivery issues, dictating the need for Foresters to undertake impromptu mapping of Ash distribution in Parks and delaying Ash recovery assessments. In 2018 for example, fire-killed Ash in the Tamboritha-Dingo Hill Track bushfire (Alpine National Park) required remapping and was also not sown because forest recovery assessments occurred too late. The area of modelled Ash in that fire area was effectively doubled as a result of accurate mapping ([Bassett and Galey 2018](#)). A far greater knowledge of Ash forests is required in National Parks if they are to be correctly managed.

³ Sown at a lower rate than is required to achieve a fully stocked forest. The lower-than-ideal rate enabled a larger area to receive enough seed to ensure a minimum 'ecological stocking'.

RECENT AND CURRENT ACTIONS

- To address growing concerns about seed supply and Ash forest recovery, the Department of Environment, Land, Water and Planning (DELWP) began actions a decade ago to develop an improved system of seed storage and supply for Victorian forests:
 - (i) In the face of a changing climate and an outlook of increasing bushfire frequency, DELWP commissioned work by the late Professor Ian Ferguson (Ferguson 2011) and Forest Solutions (DELWP 2011; Bassett & Fagg 2018) to develop a policy and plan for a Victorian Strategic Seed Bank for eucalypt seed, with a priority for building capacity to recover Ash forests following bushfire. Note that from this work the recommended storage level total is 40 tonnes ideal, with a minimum 20 tonnes – the latter recognising practical constraints and a more realistic target.
 - (ii) A state-of-the-art seed processing and storage facility was built at Laverton by DELWP in 2011, in preference to updating the many regional facilities that were aging. Victoria’s total seed processing capacity now includes DELWP’s Laverton facility and five regional centres maintained and used by VicForests.
 - (iii) Prior to 2020, DELWP has occasionally purchased seed from VicForests, or commissioned them to collect seed, in order to build forest recovery seed store levels. However, these earlier purchases have been relatively minor compared to storage requirements in (i) above.
- VicForests has often met the challenge of supporting the State’s diminishing seed capacity at short notice by supplying seed following recent bushfires. For example, after Victoria’s 2020 bushfires VicForests supplied just under 3 tonnes of the 4.7 used to recover a proportion of the fire killed immature Ash (61%). However, such supplies have been reactive at the time of the fire and should not be relied upon in the future. Because DELWP seed stocks were depleted by the 2020 bushfire response, VicForests is currently the only holder of stored Ash seed.
- The State government rapidly responded to recover Ash forests following the 2020 bushfires. To supplement the limited store of available seed, DELWP commissioned VicForests to undertake seed collection. This reactive response has been the long-term model used for collecting seed following bushfires. However, it is fraught with risk given Ash trees only produce seed sufficient for collection in about 3 years per decade. About 1 tonne of new seed was added in 2020, assisting recovery efforts, but still falling well-short of the total seed quantity required.
- As an extension to Phase 1 post-fire operations in 2020, the State government has provided \$9 million for DELWP to oversee a ‘Phase 2’ collection operation of 8-10 tonnes of Alpine Ash seed during the 2020/21 and 2021/22 operating seasons and begin establishing Victoria’s Strategic Seed Bank. Forest Solutions predicts that 8 tonnes of seed will be collected by close June 2022 with a gap in seed requirements of 12 tonnes remaining.
- As part of Phase 2, a significant flowering of Alpine Ash in 2021 has been assessed and mapped, indicating that significant quantities of new seed will become available for collection in March 2022, and that up to a further 10 tonnes could be collected. We predict that this seed will remain available for collection until June 2024. Alpine Ash seed has not been available for collection in these quantities for over a decade.



RECOMMENDATIONS

1. To build on current seed collection activity, momentum and seed-crop availability...

To achieve the minimum Ferguson seed targets...

To enable DELWP's new Laverton seed facility to remain operational...

To mitigate risk to Victoria's rapidly increasing immature Ash forest estate...

To manage and reduce the trend of Ash forest loss by Type-change related to fire damage...

A further **\$15M funding** is required from July 2022 to June 2024 to make up the projected Ash seed storage shortfall predicted for this period. This funding will produce a further 12 tonnes of seed, enabling (for the first time) the State government to be fully prepared for the large bushfires predicted to occur in the next decade.

2. To support Parks Victoria with the management of iconic Ash forests in National Parks...

To assist future post-fire forest recovery assessments...

To create an accurate mapping data base of Ash forest distribution within National Parks...

Fund a new project worth **\$3M** to obtain high quality remotely sensed imagery of all Ash forests in Park and create a new digital mapping inventory and database for use by forest managers and foresters when assessing fire damage and considering forest recovery options in National Parks.

3. To recover some of the 12,600 ha predicted to type-change following the 2020 Black Summer Bushfires (not all can be practically treated)...

Fund a new project worth **\$9M** with the objective of planting Ash seedlings to re-establish forest cover on at least 3,000 ha of this area predicted to type-change. Depending on planning outcomes and cost management and efficiencies, a further 1,000 ha may be possible with this funding.