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Victorian Association of Forest Industries

Submission

Inquiry into ecosystem decline in Victoria

August 2020

ABN 26 727 002 595

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ABOUT VAFI

The Victorian Association of Forest Industries Inc. (VAFI) is the peak representative body for the Victorian timber and forest industry. We represent forest owners and growers, harvest and haul businesses, wood, pulp and paper processors, and manufacturers. VAFI advocates for its members, associated businesses, and individuals across both the native forest and plantations sectors and throughout the timber products supply chain.

Our industry plays a vital role in Victoria's economy because not only is wood beautiful and functional, it is a renewable, biodegradable, recyclable product, used for new homes, buildings, furniture, paper and fuel for green energy. Wood is simply an essential part of life and the ultimate renewable.

VICTORIA'S TIMBER AND FOREST INDUSTRY

The Victorian timber and forest industry utilises of a mix of hardwood (eucalypt) and softwood (pine) resources supplied from public forests and private plantations, with local and regional strengths in each sector. Victorian timber resources support a wide range of products including sawn timber products, engineered wood products, pulp and paper manufacture, and high-quality wood chips.

Victoria has a strong and sustainable integrated timber and forestry industry that works efficiently and effectively. It is highly regulated and based on sustainable forest management practices. The industry manages and draws on a natural asset that has a high social, environmental and economic value. Victoria's timber and forestry industry has a significant role to play in the low carbon future and combating climate change.

Through the combination of unique properties of sustainable timber products, suppliers, local communities and a highly skilled workforce, our industry delivers innovative and renewable products to local, national and international markets.

The timber and forest industry is vital for Victoria and a key contributor to the state's economy. Key economic drivers include:

- Approximately $7 billion generated in sales and service income annually.
- Direct employment of more than 15,000 people across the supply chain of forest management and harvesting; primary processing (e.g. sawn timber, particleboard, wood chips) and secondary processing (e.g. paper packaging, furniture).[2]
- Forest management and primary processing supports an estimated 10,000 further jobs generated through flow-on economic activity.
- The whole industry, including secondary processing, supports an estimated total of 40,000 to 50,000 flow on jobs.[3]
- The Central Highlands and Gippsland regions contain 55% of Victorian forest management, harvesting and primary processing jobs.
- The Melbourne metropolitan region contains 75% of secondary processing jobs.

[1] ABARES (2018) *Australian forest and wood products statistics: September and December quarters 2018.*
[2] Schirmer, J *et al.* (2017) *Socio-economic impacts of the forest industry Victoria: Green Triangle*; and Schirmer, J *et al*. (2018) *Socio-economic impacts of the forest industry Victoria (exc. the Green Triangle)*
[3] Schirmer, J (2010) *Socio-economic characteristics of Victoria's forestry industries*

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EXECUTIVE SUMMARY

- Victoria's forest ecosystems are currently extensively protected, with over 50% of public forest in the conservation reserve network.
- Forest ecosystems are at a lower risk of decline than many other ecosystems (e.g. grasslands).
- The primary threats to forest species are land-use change, bushfires, and pest plants and animals. Forestry operations are considered low risk in comparison.
- Victoria's forest harvesting operations are undertaken in a very small area annually and are subject to stringent regulatory controls to maintain environmental values.
- Forest harvesting does not affect ecosystem health or worsen landscape-scale threats such as bushfire.
- Policies for ecosystem management should maintain the capacity to address key threats, including active forest management approaches.
- Forest management can deliver cost effective approaches to improving ecosystem health through:
  - Bushfire risk management;
  - Climate change adaptation; and
  - Increasing forest cover through new plantings.

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VICTORIA'S FOREST ECOSYSTEMS

The Australian State of the Forests Report 2018[4] provides an assessment of primary, secondary and tertiary threats for all forest-dwelling listed threatened species, based on current listing advice. The total specified threats in each category were similar for both flora and fauna. In both cases, major threats to forest species are:

- Land-use change and forest loss caused by clearing for agriculture, grazing, and urban development (most significant for threat category for forest-dwelling fauna species)
- Small population size and localised distribution (most significant threat category for threatened forest-dwelling flora)
- Mortality agents (such as hunting, illegal collection, poisoning, road deaths, predation and grazing by native species)
- Unsuitable fire regimes
- Predation from introduced predators (e.g. fox, cat, rat and trout)
- Competition from introduced flora (primarily invasive and non-invasive weeds, and escaped pasture grasses)
- Competition from introduced fauna (e.g. rabbits, house mouse, foxes, cats, rats, trout, pigs and goats, and domestic livestock)
- Grazing (primarily grazing by domestic livestock, rabbits and macropods)

In contrast, the report concluded that forestry operations are "not a significant threat category for threatened forest flora" and are a "less significant threat category for forest dwelling fauna".

This assessment is supported by the current listings of threatened ecological communities in Victoria. An ecological community is a naturally occurring group of native plants, animals and other organisms that are interacting in a unique habitat. Its structure, composition and distribution are determined by environmental factors such as soil type, position in the landscape, altitude, climate and water availability.

There are processes for listing threatened ecological communities under both the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act)

Victoria currently has 15 ecological communities listed as threatened under the EPBC Act. Only six of these communities feature forest or woodland elements and none have forestry operations listed as a threatening process. Under the FFG Act, many of the threats identified by the Australian State of the Forests Report are listed as Potentially Threatening Processes for flora, fauna and ecological communities. Forestry operations are not listed.[5]

[4] Montreal Process Implementation Group for Australia and National Forest Inventory Steering Committee, 2018, Australia's State of the Forests Report 2018, ABARES, Canberra, December. CC BY 4.0. (p119)
[5] Department of Environment, Land, Water & Planning Flora and Fauna Guarantee Act 1988 Processes List December 2016

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VICTORIAN FORESTRY

Victoria has approximately 7.6 million hectares of native forest, of which around 450,000 hectares is available and suitable for harvesting.[6] Within this limited area, around 3,000 hectares of forest is harvested and regrown each year.

Commercial forestry at its current scale has not been demonstrated to worsen, or otherwise influence, the severity of bushfire impacts. A 2016 study of over 1 million hectares burnt in the 2003 bushfires in Victoria showed no discernible impact of timber harvesting on fire severity at the landscape scale.[7] Another landscape scale study of fire severity published in 2014 based on an analysis of over 2 million hectares burnt in Victoria in 2003 and 2007, showed again, that there is no significant difference between fire severity in Parks compared with State forests, including timber harvesting areas.[8]

Similarly, forestry in Victoria does not have a substantial impact on water yields in Melbourne's catchments. Some published studies have substantially over-estimated the influence of timber harvesting on water yield in Melbourne's drinking water catchments due to a misapplication of models of forest water during regeneration (the *Kuzcera Curve*).

However, the influence of timber harvesting regimes on catchment yields was assessed by the Government in 2008[9]. This report was re-assessed in 2020 by independent reviewers who concluded the findings remained valid. [0] This assessment concluded that the impacts of changing timber management regimes on cumulative water yield are relatively small compared to the large impacts of climate change and bushfires on water yield.

An evaluation of environmental values by the Victorian Environmental Assessment Council (VEAC) in the public forests in the east of Victoria, found little appreciable difference between State forests and national parks. This strongly indicates that historic State forest management regimes have not damaged forest health.

In light of the available evidence, the small area of commercial timber harvesting in Victoria in native forests cannot be reasonably claimed to influence the impact of bushfires or hydrology at the landscape-scale. Adopting the default stance that all multi-use forest management worsens landscape-scale trends is counterproductive. It will hamper current efforts to develop improved forest management approaches that can maintain natural values while providing sustainably harvested, high-quality timber products.

In the context of a changing climate and increasing likelihood of extreme fire conditions, active forest management has clear benefits to offer in managing future bushfire risks, adapting to climate change, and increasing forest habitat through new plantings. (See *The role of forestry in managing ecosystem threats* below).

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[6] VicForests (2017) *2016 - 2017 Resource Outlook*
[7] Tolhurst, K & McCarthy, G (2016) Effect of prescribed burning on wildfire severity: a landscape-scale case study from the 2003 fires in Victoria. *Australian Forestry* **79:1** 1-14 DOI: 10.1080/00049158.2015.1127197
[8] Atiwill, PM *et al*. (2013) Timber Harvesting Does Not Increase Fire Risk and Severity in Wet Eucalypt Forests of Southern Australia. *Conservation Letters* **7:4** 341-354 DOI: 10.1111/conl.12062
[9] Mein, R (2008) *Potential impacts of forest management on streamflow in Melbourne's water supply catchments Summary report*
[10] Jordan, P *et al*. (2019) *ERP25 - Review of 2008 Wood and Water Study*
[11] VEAC (2017) *Conservation values of state forests Assessment report*. Victorian Environment Assessment Council.

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LEGISLATIVE FRAMEWORK

Victoria's forest ecosystems are extensively protected. Victoria has approximately 6.6 million hctares of native forest on public land and nearly a million hectares more on private land. Of this, approximately 50% of public forest (3.3 million hectares) is under tenure as conservation reserves. [2]

Nationally, commercial forestry on public land is governed by the Regional Forest Agreements (RFAs) which have been in place in Victoria since 1999. A key element of the RFAs is the creation of a Comprehensive, Adequate and Representative (CAR) reserve system based on three principles:

- including the full range of vegetation communities (comprehensive)
- ensuring the level of reservation is large enough to maintain species diversity (adequate)
- conserving the diversity within each vegetation community, including genetic diversity (representative)

Targets for the conservation of ecosystems within reserves are set by the nationally agreed 'JANIS' criteria. [3] These targets are:

- 15 per cent of the pre-1750 distribution of each forest type
- 60 per cent of the existing distribution of each forest type if vulnerable
- 60 per cent of the existing old-growth forest
- 90 per cent, or more, of high-quality wilderness forests, and
- all remaining occurrences of rare and endangered forest ecosystems including rare old-growth

This level of protection in RFA regions is very high by world standards. The most recent assessment of land tenure within RFA regions found that, 47% of forests in these areas were under some form of conservation tenure and excluded from any form of harvesting. [4]

In contrast, other ecosystems are less well protected. In 2016, the Victorian Environmental Assessment Council (VEAC) made a state-wide assessment of all of Victoria's Ecological Vegetation Classes (EVCs) against the JANIS criteria. This comprehensive study found that EVCs with the lowest representation in conservation reserves were plains grasslands and grassy woodlands. These systems were typically poorly represented on public land and had a bioregional conservation status of endangered. [5]

Victorian forest managers are legally bound by the *Code of Practice for Timber Production 2014* to protect ecosystem structures and functions. There is a suite of mandatory actions to maintain environmental values and minimise impacts on cultural values and the visual landscape. These actions include:

- Managing harvested forest to perpetuate biodiversity values;
- Regenerating harvested areas using seed sources with provenance to the area;
- Maintaining species composition and representative gene pools;
- Monitoring and maintaining forest health (e.g. weed and pest control);
- Measures to protect all unharvested areas from the impacts of unplanned fires;
- Protecting waterways and riparian habitat using buffers and filter strips;

[12] Montreal Process Implementation Group for Australia and National Forest Inventory Steering Committee, 2018, Australia's State of the Forests Report 2018, ABARES, Canberra, December. CC BY 4.0. (Table 1.7: Area of native forest, by tenure and jurisdiction)
[13] Commonwealth of Australia (1999) *Nationally Agreed Criteria for the Establishment of a Comprehensive, Adequate and Representative Reserve System for Forests in Australia*
[14] DELWP (2019) *Assessment of matters pertaining to the modernisation of Victoria's Regional Forest Agreements 2019*
[15] VEAC (2016) *Statewide Assessment of Public Land Discussion Paper*, Victorian Environmental Assessment Council

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- Minimising water pollution; and,
- Maintaining the productive capacity of soils.

In addition to the actions mandated by the Code of Practice, VicForests has recently introduced extensive new procedures to further protect High Conservation Value (HCV) forest areas from the impact of harvesting operations. [6]

VAFI's position is that the current legislative framework governing commercial harvesting is more than adequate to maintain environmental values in public forests. It provides substantially more robust protections than are available to other ecosystems, such as grasslands.

THE ROLE OF FORESTRY IN MANAGING ECOSYSTEM THREATS

Policy responses to observed ecosystem decline should focus on the known major drivers listed above, such as land clearing, pest plant and animal control, biosecurity and landscape-scale bushfire management.

It is essential, therefore, to maintain adequate capacity to manage these threats. In the context of forest systems, active forest management has great potential to deliver cost-effective land management to manage bushfire risks, adapt to climate change impacts and increase forest habitat through new plantings.

Bushfire management

The interactions between bushfires, climate change and forest harvesting have been addressed extensively by independent scientific research, both in Australia and internationally. There is a body of directly observed evidence that active control of stand densities as part of multi-use forest management has considerable potential to increase forest resilience to fires, particularly in a changing climate.

Thinning is a natural forest process, where tree numbers in most even-aged forests reduce through competition over time. For example, mountain sh forests regenerating naturally after a severe fire might have hundreds of thousands of new seedlings per hectare that self-thin to a few thousand after 20 years, and a few hundred mature trees after 80 years.

Mechanical thinning for timber production is a well-established commercial forestry practice that reduces tree numbers, allowing the remaining trees to reach a valuable size more quickly at lower stocking density. This is to improve commercial timber quality, or to more quickly remove trees that would die through natural thinning. Thinning for broader environmental management is not common in Australia but can be used for a similar outcome, promoting the faster development of large, old trees.

Thinning forest stands also has the short-term outcome of removing fuel that would otherwise be burnt in bushfires. Overall, thinning can reduce fire risk by slowing the rate at which fire spreads, lowering flame heights and, in the long-term, improving recovery after a bushfire.

[16] VicForests (2020) *Management of High Conservation Values Status update May 2020*

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Internationally, there is strong evidence for the benefits of forest thinning. In the USA, combined thinning and burning treatments have been shown to reduce fire severity, tree mortality and crown scorch. [7, 8] Similar results have been observed in Spain. [9]

In Australia, there have been several recent experimental studies specifically examining the influence of stand thinning on bushfire fuel and fire impacts. A recent study in eucalypt forests in south-eastern Australia investigated the impact of commercial thinning on fuel hazard, fuel loads and bushfire behaviour. The study found after eight years, thinning decreased surface fuel hazard ratings and fuel loads but had no significant effect on the mass of coarse woody fuels. At the stand level, thinning reduced overstorey tree stocking by more than 50%, increased canopy openness and stimulated the growth of retained trees. Thinning also encouraged the profuse regeneration of saplings, compared to no sapling regeneration in unthinned forests.

This experiment was then used as the basis for a fire simulation under severe to extreme weather conditions, similar to those in the 2006/7 Great Divide Fires. There was an almost 30% reduction in fireline intensity and about 20% reduction in the rate of spread and spotting distance in thinned forest compared with unthinned forest. This study indicates the potential of thinning to reduce wildfire severity and to increase the fire-survival of eucalypts.[20]

A further study on thinning in eucalypt forests concluded that mechanical thinning deployed with burning was the most effective treatment for reducing above ground biomass and fuel hazard, showing major reductions in dead trees, stumps and understorey. Thinning in this study also generated stems removed for sale as pulpwood. The authors concluded that this result suggests the current Australian fuel hazard guidelines should be revised to better describe the benefits of thinning for fuel reduction.[2]

A study in East Gippsland examined the changes in the overall fuel hazard over a 15-year period after thinning. The fuel hazard at thinned sites was on average lower than in adjacent unthinned sites, primarily due to the reduction of elevated fine fuel (bark and shrubs especially). Thinning, by reducing the overall fuel hazard, may reduce the likely suppression difficulty by substantially reducing the potential for vertical development of fire at the flaming fire front. [22] However, this study observed an increased amount of coarse woody material on the ground after thinning, which may make it more difficult to completely extinguish fires. This issue should be addressed in management plans by, for example, removing woody material after thinning operations.

Active silviculture is one component of forest management across the entire landscape. VAFI supports a co-ordinated bushfire management strategy that places greater emphasis on fuel reduction using a regionally appropriate mix of approaches. The primary component of bushfire fuel reduction must be

[17] Kalies, EL & Yocom-Kent, LL (2016) Tamm Review: Are fuel treatments effective at achieving ecological and social objectives? A systematic review. *Forest Ecology and Management* **375**, 84–95. DOI: 10.1016/j.foreco.2016.05.021
[18] Wilson, J & Baker, P (1998) Mitigating fire risk to late-successional forest reserves on the east slope of the Washington Cascade Range, USA. *Forest Ecology and Management* **110**, 59-75
[19] Piqué, M & Domènech, R (2018) Effectiveness of mechanical thinning and prescribed burning on fire behavior in *Pinus nigra* forests in NE Spain. *Science of the Total Environment* **618**, 1539–1546. DOI:10.1016/j.scitotenv.2017.09.316
[20] Volkova, L Bi, H, Hilton, J & Weston, CJ (2017) Impact of mechanical thinning on forest carbon, fuel hazard and simulated fire behaviour in *Eucalyptus delegatensis* forest of south-eastern Australia. *Forest Ecology and Management* **405**, 92–100
[21] Volkova, L & Weston, CJ (2019) Effect of thinning and burning fuel reduction treatments on forest carbon and bushfire fuel hazard in *Eucalyptus sieberi* forests of South-Eastern Australia. *Science of the Total Environment* **694**, 133708
[22] Proctor, E & McCarthy, G (2015) Changes in fuel hazard following thinning operations in mixed-species forests in East Gippsland, Victoria, *Australian Forestry*, **78:4**, 195-206, DOI: 10.1080/00049158.2015.1079289

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planned burning across the whole landscape. However, conventional planned burning will continue to be constrained by environmental factors and landscape complexity. Regional approaches should therefore employ local expertise to implement a range of enhancing activities such as Traditional Owner fire management practices (cultural burns), mechanical fuel reduction and forest thinning as described here.

Climate change adaptation

As described in numerous assessments, climate change will pose significant challenges to forest ecosystems in the coming century. Potential direct impacts of climate change on forest ecosystems can include changes to tree growth and mortality; regeneration capacity; tree physiology; wood density and quality; and ultimately altered species distribution and stand composition.[23]

Other factors that contribute to ecosystem change (e.g. increased fire frequency/intensity; disease and pest impacts; invasive species; and wood supply) are typically managed separately but can also be driven by climate change and can be considered as indirect impacts.

Active forest management has a clear role to play in maintaining forest health and productivity in a changing climate.

In a recent assessment of the Central Highlands region of Victoria, 95 climate adaptation management options were identified as being relevant to the region and applicable to native forest management. These covered outcomes including conserving biodiversity of forest ecosystem, maintaining productivity capacity, health and vitality, protecting soil and water values, maintaining economic benefits from forests, maintaining socio-economic benefits and maintaining forest contributions to the global carbon cycle.

Of these 95 management options, 55 were considered to be current practice. Of the 40 that were not implemented, 22 were assessed to be relatively easily implemented at low cost. These options included developing gene management programs and off-site gene banks, ex-situ conservation and increasing cooperation in species management, increasing stand and regional species diversity, identification and deployment of more drought- or disturbance-tolerant species or genotypes, planning to reduce disease losses through monitoring and sanitation harvests, managing stand structure to reduce impacts on water availability and implementing silvicultural techniques to promote stand vigour, as practised elsewhere in Australia and internationally.[24]

Thinning our forests to wider spacings may also allow native tree species to survive a drying climate with longer and more severe droughts for the decades. Forest stands growing at lower densities (trees per hectare) tend to have lower mortality rates than stands growing at higher densities in the same climate conditions[25] and is used in the USA to improve drought resistance and provide greater resilience to future climate-related stress.[26]

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[23] Keenan, RJ (2015) Climate change impacts and adaptation in forest management: a review. *Annals of Forest Science* **72**, 145–167

[24] Keenan RJ & Nitschke C (2015) Forest management options for adaptation to climate change: a case study of tall, wet eucalypt forests in Victoria's Central Highlands region. *Australian Forestry*, DOI:10.1080/00049158.2015.1130095

[25] Horner, GJ *et al* (2009). Mortality of developing floodplain forests subjected to a drying climate and water extraction. *Global Change Biology* **15**, 2176–2186.

[26] Kerhoulas LP, Kolb TE, Hurteau MD & Koch GW (2013) Managing climate change adaptation in forests: a case study from the US Southwest. *Journal of Applied Ecology*, **50,** 1311–1320. DOI: 10.1111/1365-2664.12139

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Next generation plantations

Plantations can supply locally sourced and processed timber products, maximising the mitigation opportunities from timber. Increased plantation tree cover, achieved through a balanced mix of production zones, farm forestry, and environmental plantings can increase carbon sequestration and provide environmental co-benefits such as salinity mitigation; forest landscape restoration and linkage; and improved water quality.

In addition to commercial scale plantations, this also includes farm forestry – incorporating commercial tree growing into farming systems. This can be timber belts, alleys and widespread tree plantings. Farm forestry can provide farmers with an alternative source of income. It can improve agricultural production by providing shelter for stock and crops and can provide substantial environmental benefits such as salinity control.

Establishing new plantations of native trees on private property which are managed for harvesting can deliver landscape scale biodiversity benefits. For example, converting pasture to eucalypt plantations can protect adjoining remnant patches of native vegetation. Benefits to remnant patches include:

- Reducing negative effects of livestock grazing
- Reducing the magnitude of biophysical and biological degradation at edge of remnants
- Facilitating the dispersal of organisms between remnants
- Inherent biodiversity value in their own right, which is notably higher than agricultural land

Despite the demonstrated benefits of plantations in appropriate areas, the total plantation area in Victoria (hardwood and softwood) has remained stable, between 420,000 and 430,000 hectares.[27] This stable trend is in line with the national plantation estates, reflecting an extended stagnation in new plantation investment.

To address this, a recent comprehensive research project, funded by industry and co-ordinated through the University of Melbourne estimated that there is between 460,000 and 925,000 hectares of private rural land that meets environmental and commercial criteria for establishing new plantations.[28]

To establish the next generation of plantations, the project recommended developing and implementing a national strategy that delivers:

- Consistent and co-ordinated policy and regulations to support integrated plantations at the Federal, State and Local Government levels
- A national communication strategy promoting the benefits of forestry and trees in rural landscapes
- Financial instruments supporting innovative and sustainable approaches to plantation development
- "Honest Brokers" to facilitate trust and relationships between the finance sector, the forest industry and landowners

VAFI recommends that the Victorian Government promote and progress Next Generation strategy for developing new models for plantation funding and establishment.

[27] Downham, R & Gavran, M (2020) *Australian plantation statistics 2020 update*, ABARES, Canberra, June, CC BY 4.0. DOI: https://doi.org/10.25814/5ecb5411d91fa

[28] Bull, L & Keenan RJ (2020) *Next Generation Forest Plantation Investment Project Final Report*. Prepared for Forest and Wood Products Australia