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Submission

Inspector General for Emergency Management Inquiry into the 2019-20 Victorian Fire Season

April 2020

EXECUTIVE SUMMARY

The Victorian forest and timber industry, and the communities it supports, are exposed to considerable risks from bushfires. The industry also makes large contributions to bushfire preparedness through land management, and response on public and private land. With extended policy support, these contributions can be increased.

Key elements of VAFI's submission are:

- The Victorian fire landscape is complex and requires a range of tools to effectively address risks.
- Future bushfires are likely to become more frequent and more extreme, creating greater risks for Victoria's forests.
- A broad decline in the use of planned burning to control bushfire fuel loads has led to greatly increased impacts of large fires on biodiversity, ecosystem function and sustainable timber yields.
- Active forest management techniques, such as mechanical fuel reduction and stand thinning, have been shown to be effective in reducing bushfire impacts when used in conjunction with planned burning. Stand thinning to manage tree density can also create more resilient forests in the long-term.
- Landscape-scale fuel reduction through planned burning and complementary silviculture would therefore greatly reduce bushfire risks and lead to social, environmental and economic benefits.
- Forestry businesses are on the front line of fire response on public and private land, including direct firefighting and maintaining access tracks to fire fronts.
- Bushfire impacts to native and plantation timber resources are significant and flow-on social effects will last for decades.

In this context 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 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 employ a range of enhancing activities such as, Traditional Owner fire management practices (cultural burns), mechanical fuel reduction and forest thinning.

The current, ill-conceived Victorian policy of phasing out timber harvesting in State forests from 2024, with an end to operations by 2030, will generate little to no measurable reductions in bushfire risks while sacrificing the significant pool of expertise held by forest managers in bushfire preparedness and response.

VAFI therefore considers it essential that both the Commonwealth and State governments:

- Recognise the importance of timber and forest industries for:
 - Maintaining an efficient and cost-effective fire-fighting capability; and
 - Improving bushfire preparedness through land management.
- Support continued development and promotion of the benefits of appropriate silvicultural management (including mechanical fuel reduction and forest thinning) at the landscape-scale in reducing bushfire risks and improving forest resilience.
- Provide support for a coordinated bushfire fuel reduction program focusing on conventional planned burning augmented with a regionally appropriate mix of approaches such as Traditional Owner fire management practices (cultural burns), mechanical fuel reduction and

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forest thinning. Regionally appropriate land management should be achieved by encouraging State and Territory governments to maintain professional land management staff, working with local forest workers to maintain detailed geographic and fire knowledge of public forests.

- Develop clear communication of the broad range of social, environmental and economic benefits of bushfire fuel reduction.
- Undertake a broad assessment of the impact of historical landscape management on fire impacts and audit the implementation and outcomes of previous bushfire inquiry recommendations. This information should be used to guide development of local regimes for bushfire risk management.

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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 FORESTRY INDUSTRY

The Victorian timber and forestry industry utilises 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 the 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.¹
- 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.
- Melbourne metropolitan region contains 75% of secondary processing jobs.

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RECOMMENDATIONS TO THE INSPECTOR GENERAL FOR EMERGENCY MANAGEMENT

The Victorian Association of Forest Industries Inc. (VAFI) appreciates the opportunity to submit information to the Inspector General for Emergency Management's inquiry into the 2019-20 fire season. VAFI's submission to the Inspector General focuses on the unique position of Victoria's timber and forest industry which is highly exposed to bushfire impacts, while also making disproportionate contributions to preparedness and response. VAFI therefore considers it essential that both the Inspector General's office and State government:

- Recognise the importance of timber and forest industries for:
 - Maintaining an efficient and cost-effective fire-fighting capability; and
 - Improving bushfire preparedness through land management.
- Support continued development and promotion of the benefits of appropriate silvicultural management (including mechanical fuel reduction and forest thinning) at the landscape-scale in reducing bushfire risks and improving forest resilience.
- Provide support for a coordinated bushfire fuel reduction program focusing on conventional planned burning augmented with a regionally appropriate mix of approaches such as Traditional Owner fire management practices (cultural burns), mechanical fuel reduction and forest thinning. Regionally appropriate land management should be achieved by encouraging State and Territory governments to maintain professional land management staff, working with local forest workers to maintain detailed geographic and fire knowledge of public forests.
- Develop clear communication of the broad range of social, environmental and economic benefits of fuel reduction from a range of approaches.
- Undertake a broad assessment of the impact of historical landscape management on fire impacts and audit the implementation and outcomes of previous bushfire inquiry recommendations. This information should be used to guide development of local regimes for bushfire risk management.

LAND MANAGEMENT AND BUSHFIRE PREPAREDNESS

Planned burning

Done well, controlled burning limits a bushfire's spread and makes suppression easier, by reducing the amount of flammable material. Clearing or thinning vegetation on roadsides and other areas also helps maintain fuel breaks, allowing firefighters access to forests in an emergency.

Forestry experts recently conducted a review of the history of bushfires and its management in South Eastern Australia.⁴ This study reviewed the substantial body of fire and ecosystem science that has been generated in the past 50 years, with rapid technological developments to support planned burning and fire management. The study tracked the broad decline in planned burning for fuel reduction across all land tenures and concluded that increasing extent and occurrence of bushfire disasters in SE Australia indicates that current fire management regimes were not adequate in reducing impacts to environmental values (such as ecosystem processes and biodiversity) or loss of human lives and property. There was compelling evidence for the greater use of planned burning to reduce bushfire risks and impacts, in favour of than committing increasing resources to fire suppression. There are potential negative impacts from planned burning, however these can be managed effectively using existing knowledge and tools.

Climate change will exert increasing influence on future land management. Analysis of historical data (1950-2016) has demonstrated a clear trend toward more dangerous conditions during spring and summer, increased frequency and magnitude of extremes and an earlier start to the fire season.⁵ This trend will continue; recent projections of future changes in Forest Fire Danger Index show that there will continue to be broad-scale increases in the severity of near-surface fire weather throughout Australia.⁶

It is likely, therefore, that the lengthening fire season will limit land managers' ability to conduct safe and effective fuel reduction burning. Active land management to control fuel loads, such as hazard-reduction burning and forest thinning, is essential to state bushfire policy.

After the Black Saturday bushfires, the Victorian Bushfire Royal Commission (VBRC) recommended a target of average of 5% of all public land (~390,000 hectares) should be treated with fuel reduction burning annually. However, this target was never achieved and was replaced in 2014 by a risk-based approach, with the support of the VBRC Implementation Monitor, who noted "*concerns that the 390,000 ha target may not be achievable, affordable or sustainable. ... Area based hectare targets alone will not necessarily reduce the bushfire risk to life and property in Victoria and may have adverse environmental outcomes.*"⁷

Fuel reduction burning increased in Victoria in response to the VBRC recommendations, however this followed the longer-term decrease in treated areas in decades preceding 2009. Approximately 130,000 hectares burnt in 2018-19, but this area is unlikely to increase further due to environmental constraints on burning effectively and safely.

Victoria's planned burning is currently guided by the *Safer Together* policy, which aims to reduce bushfire risks through a suite of approaches, including strategic fuel reduction through planned burning and mechanical fuel reduction. *Safer Together* has a strong focus on agency partnerships and community partnerships as well as stronger relationships with Traditional Owners and increasing cultural burning where possible.

Currently, some cultural burning in Victoria is undertaken on Aboriginal freehold land or private land (in collaboration with landholders), with CFA involvement. Cultural fire is used over small areas for a variety of purposes, including but not limited to: ceremony, protection of cultural and natural assets, fuel reduction, regeneration and management of food, fibre and medicines. Victoria's Cultural Fire Strategy aims to develop more widespread cultural burning practices, while acknowledging that it will not be a suitable approach in areas that have been allowed to accumulate large fuel loads.⁸ It seems likely that a long-term transition to a more historically traditional cultural burning regime will play a key role in improved bushfire preparedness and landscape resilience.

In southwest Western Australia, there is a clearly observable reduction in the annual area of bushfires as the total area treated by planned burning increases.⁹ However, a similar relationship has not been observed in Victoria.¹⁰ The landscape in southwest WA is relatively flat and largely covered with highly flammable forest fuels making prescribed burning and fire suppression by direct attack possible across a large proportion of the area. A historical study of the region conducted in 2009 found that a trend in reducing bushfire extent only emerged when areas greater than 4% of a million hectares were treated.¹¹ This figure has not been achieved in Victoria for a range of reasons.

In contrast to southwest WA, Victoria has a greater variation in elevation, ruggedness, rainfall variability, fire weather extremes and larger area of public land that is unsuitable for prescribed burning. The Victorian fire environment is complex, and a co-ordinated land management policy must reflect this.

Large-scale fuel reduction burning, planned at the landscape-scale, must be the primary method of managing bushfire risks. Conventional planned burning should also be complemented by a mix of approaches suited to local conditions, including Traditional Owner cultural burning, mechanical fuel reduction and forest thinning.

Mechanical fuel reduction

In addition to planned burning, in 2018-19 the state of Victoria treated a further 12,000 hectares mechanically (primarily mowing, slashing, mulching and using herbicides). There remains great potential for further risk reduction through forest management, such as a strategic thinning program across State forests.

The current emphasis on smaller-scale fuel reduction burning near private property means burns are more labour intensive, reducing the overall level of fuel reduction that can be achieved in an increasingly narrow planned burning season. The outcome is that large areas of remote forest are left untreated, and fuel loads and bushfire risks increase accordingly.

Fuel reduction burning will remain essential in reducing bushfire risks and impacts, however, mechanical fuel reduction approaches can be used to complement planned burning in managing fuel loads and mitigating the impacts of extreme bushfires.

Fire risk can be reduced by targeted reduction of understory and dense forest regrowth in areas where planned burning is difficult or undesirable (e.g. close to at-risk towns and strategically important resource assets, such as water catchments, plantations and production forests). The reduction of understory vegetation would also remove the larger fuels that can allow "laddering" fires to access tree crowns, which results in catastrophic fire fronts.

A Deloitte Access Economics report produced for the Australian Forest Products Association (AFPA) found that the economic benefit of aggressive fuel load reduction massively outweighs the costs, through a combination of mechanical biomass removal and burning close to communities and assets. Biomass removal can complement fuel reduction burning and can deliver benefits six times greater than the costs involved.¹²

In 2016, the Forest Industry Advisory Council – a statutory advisory body to the Federal Government – recommended that the Australian Government commit to a \$300 million, 10-year programme of mechanical fuel reduction as a bushfire mitigation measure for forest and community protection.¹³

The Commonwealth and State governments – including Victoria – are currently conducting a \$1.5 million ‘Mechanical Fuel Removal Pilot Program’ in New South Wales, Victoria and Western Australia as part of the National Bushfire Mitigation Programme. These trials aim to establish whether mechanical thinning of forests can reduce bushfire risk around key assets, such as conservation areas or townships. The trials are gathering scientific, cost-benefit and social attitude evidence from a variety of forest types across Australia

VAFI supports these trials but notes that there is an existing and robust evidence base for mechanical fuel reduction and forest thinning to be embedded in a co-ordinated bushfire mitigation strategy.

Benefits of landscape-scale forest management

Constructive debate about forest management for multiple outcomes has been hampered by lumping a broad range of silvicultural approaches under the banner of “logging”. In the context of a changing climate and increasing likelihood of extreme fire conditions, active forest management has clear benefits to offer to mitigate future bushfire risks.

The current ill-conceived Victorian Government policy is to end all harvesting in State forests by 2030. 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.¹⁴ 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.¹⁵

In light of this evidence and the small area of commercial timber harvesting in Victoria in native forests (approximately 3,000 hectares annually, which required to be regenerated), removing productive forestry would produce little to no measurable outcome in terms of reducing bushfire impacts. This plan will also sacrifice the considerable demonstrated benefits that can be generated from appropriate silvicultural management at the landscape-scale.

Thinning is a natural forest process, where tree numbers in most even-aged forests reduce through competition over time. For example, Mountain ash 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.

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.¹⁶ 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. Recent research in the South East USA showed that forest thinning, a recommended approach in regions likely to experience climate change impacts, will need to be more aggressive than traditionally practised. This is intended to stimulate growth of large residual trees, improve drought resistance and provide greater resilience to future climate-related stress.¹⁷

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.

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.^{18,19} Similar results have been observed in Spain.²⁰

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. 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 forest.

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.²¹

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 enable it to better describe the benefits of thinning for fuel reduction.²²

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.²³ 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.

Some studies have noted that there are potential short-term fire hazards associated with stand thinning, such as observed increases in fuel loads on the forest floor. However, if thinning is done in relatively small patches, potential short-term fire hazards can be reduced by timing thinning to before the wet season, processing tree heads to mulch, and the removal of all larger wood from cut trees²⁴ (either by burning or as mechanical fuel removal, see above). This would maximise the benefits of thinning and minimise the risks and potential adverse impacts.

There is a body of directly observed evidence that active control of stand densities has considerable potential as a tool in increasing forest resilience to fires, particularly in a changing climate.

Thinning and forest carbon

Stand thinning can reduce the carbon stored in wood in forests.²⁵ However, this carbon would also have been lost to the atmosphere in the event of a bushfire. The act of reducing bushfire severity, through thinning and fuel reduction, may therefore reduce the likelihood of carbon losses from the remaining trees in the stand.

Furthermore, there are significant carbon benefits that arise from using wood fibre extracted from the forest as part of thinning and fuel reduction operations.

A recent study on carbon flows in managed forests identified substantial benefits from using wood fibre to avoid carbon emissions elsewhere. The study concluded that the greenhouse gas mitigation potential of paper products is greater than typically thought. When the wood fibre used in paper production is sourced from native forests in South-East Asia, the mitigation potential by using Australian native pulpwood is large. This is due to the high emission footprint caused by forest degradation and forest loss in SE Asia, especially when it occurs on peatlands.²⁶

This study also concluded that there are significant opportunities for native forest biomass to play a much larger role in the generation of renewable energy, especially with the recent reinstatement of native forest biomass as an eligible renewable energy source under the Renewable Energy Target (RET).

A thinning regime in State forests, guided by best available evidence for bushfire risk reduction could generate a valuable resource. Use of thinned timber for local heat and power generation, biochar and pulp products creates the potential for substantial cost recovery, further supporting land management and carbon abatement programs.

These potential benefits would not be achieved through fuel reduction burning alone and should also be considered when assessing the suitability of forest management approaches to reduce bushfire risks.

TIMBER AND FOREST INDUSTRY ROLE IN BUSHFIRE RESPONSE

Fire response by native forest operators

Workers in the forest growing, management and processing sectors generate lifetimes of experience in fire behaviour and preparedness, as this is an essential and non-replaceable asset for regional communities situated in fire prone areas. Forest workers located in the fibre baskets that support the fibre and wood products industry, also being fire-prone areas, are often the first personnel into action and have an excellent local knowledge base to apply strategic approaches to extreme wildfire situations.

Workers from the native forest and plantation sectors are highly skilled and formally trained in a range of aspects of fire management and action in extreme wildfire events. They are also highly experienced in operating machinery in forest conditions, road and track construction, tree felling, fire behaviour and overall local knowledge, whereas other operators are often inexperienced in those conditions.

Common skill sets in fire management of Australia's forest industry personnel include:

- Direct attack firefighting;
- Indirect firefighting, including backburning;
- Night firefighting where significant gains may be made under lower fire danger conditions;
- Strategic planning in fire containment and suppression, incorporating access tracks and other infrastructure;
- Fuel reduction implementation, including burning, mechanical and other forms of non-combustion fuel reduction;
- Local knowledge and experience; and
- OH&S and Risk Assessment in extreme wildfire situations.

As a condition of operating in the forest, the industry is required to supply its bulldozers and transport machinery and operating personnel to fight fires. This is particularly important in allowing rapid access for fire crews and creating fire breaks, and for first attack fire response.

Not only do many businesses train staff in fire prevention and firefighting, they also maintain the essential network of forest access tracks that allow other agencies to reach the fire front at short notice. The 'first strike' response is vital to containing a fire before it burns out of control, and forest access is key in this regard. In this respect, operations in State forests support risk reduction at the landscape scale that can also benefit neighbouring national parks.

This expertise was crucial during the 2019-20 bushfire season. VicForests staff, and forestry contractors engaged by VicForests, played a critical role in fire suppression and recovery - in support of the many agencies involved in the bushfire response. In some cases, VicForests staff are leading the response, particularly in emergency road clearance.

Over the course of the season a total of approximately 90 VicForests staff and contractors were deployed. This comprised approximately 30 VicForests employees, who led the response; and 15 harvesting crews working in East Gippsland (all the crews operating in the region) and the North East – approximately 60 staff and 45 pieces of specialised equipment.²⁷ These crews undertook bushfire support, including:

- Direct (close to the fire edge) and indirect attack (away from the fire edge) of active fires through the preparation of mineral earth (free of vegetation) tracks;
- Preparation of fallback or contingency lines by constructing fire breaks in the forest or around communities that can be burnt from to protect key assets;

- Clearing of road lines along highways and forest roads to remove hazardous trees to ensure the safety of firefighters and the community; and
- Leadership of highly developed safety management systems and standards in bushfire-affected areas.

Forest Industry Brigades

The timber and forest industry also plays an active role in fire response across private land through the Forest Industry Brigades (FIB): fire brigades run by forest plantation companies. Victorian legislation requires that plantation owners fund and run a fire brigade where they have over 500 hectares of plantation within 25 km, to provide their own asset protection. In 2019 there were 22 FIBs registered across Victoria.²⁸

The industry-based brigades are set up by plantation companies who provide much of the equipment and pay staff members to attend. However, the FIBs are structured as normal CFA brigades and come under the operational control of the CFA, which sets standards and provides training. FIB members must meet the same accreditation requirements as all other CFA brigades. FIBs are also required to maintain fire access tracks and have available water points.

Industry brigades are only legally required to service the companies' plantation assets for bushfire response and fire management planning. However, FIBs regularly attend callouts to fires outside their designated area (HVP reports 55% of the fires they attend are outside their managed land) and many have adopted a position of shared responsibility for fire response. VAFI members that maintain their own brigades include Midway and HVP. The latter manages seven brigades across its plantations and made a substantial commitment of staff and equipment during the 2019-20 bushfire season, which are outlined in Table 1.

Table 1 Summary of HVP bushfire response activity , 2019-20 bushfire season²⁹

Number of days on fireline – 20 Dec to 14 Feb	54/55 days
Only day no deployment	Christmas Day
Individuals deployed by HVP	230
Estimated time worked	29,000 hours/16.5 years
Busiest period	3 January – 18 January
Average number of people during busiest period	89 people per day
Biggest day: 9 Jan 2020	117 people 25 items of heavy plant 39 operators and off-siders
Number of nights personnel deployed	26 nights
Biggest night shift	40 people
HFM and HQP personnel deployed*	24 people

*HFM and HQP personnel were specialist plantation firefighters from cousin companies in New Zealand and Queensland

The active role played by forest businesses and workers on both public and private land highlight the great need for a viable timber industry that is able to supply firefighters and plants with experienced operators who have local knowledge and experience working in remote forested locations.

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Community access to public and private forests

If the Victorian Government plan to phase out native timber harvesting by 2030 is achieved, access tracks for industry will no longer require maintenance. Unmaintained forest roads and unsafe bridges are a major impediment to accessing small fires in the timely manner needed to bring them under control. It is also crucial to recognise the capacity within VicForests – the government owned agency responsible for managing State forests for timber production. VicForests staff includes some of Victoria’s most experienced bushfire management practitioners. Continued reduction of operations in State forests area creates the risk of making VicForests operations unviable before 2030 and subsequently losing crucial capacity to manage and respond to bushfires.

Bush tracks within the plantation estate are equally important. These private tracks may also function as safe egress paths for neighbours if their regular pathway is not available because of fires. In these cases, the perceived condition of these tracks is a key issue.

However, it is not practical for growers to make all entry and exit points within their plantation estates available for public use at all times due to the expense of maintaining tracks which would otherwise be used infrequently as part of normal operations. It will therefore be necessary to consider funding support (at the local, State or National level) for growers to upgrade tracks and associated infrastructure to support neighbouring communities who are threatened by advancing fires, thus maintaining safe egress for communities fleeing fire.

ECONOMIC IMPACTS OF EXTREME BUSHFIRES

The timber and forestry industry is a crucial element of many regional economies in Victoria. The full impact of the 2019-20 bushfire is still being assessed but, based on the impacts of previous large fires, it is expected to be very large with critical impacts to the viability of local businesses and flow-on social impacts.

Two of the largest bushfire events in recent history were the Alpine Fires of January-March 2003 and the Great Dividing Range Fires of 2006-7. Both these fires resulted in relatively small losses of residential property but had very large impacts on the timber and forestry industry, each burning over 1 million hectares of forest. In 2003 the estimated losses from native and plantation timber were over \$1.3 billion, 81% of the total financial impact of the fires; over 2006-7, the economic impact to timber was nearly \$700 million, 64% of all losses from fires. (See Table 1). The combined impact of the Alpine (2003), Dividing Range (2006/7) and Black Saturday (2009) is 189,000 hectares of ash-type forests, which contain a crucial timber resource.³⁰

Table 1 Selected estimates of financial losses from major bushfires in Victoria³¹

Bushfire event	Area burnt (hectares)	Economic losses – dwellings (\$)	Economic losses – timber (\$)	Total economic losses (\$)	Timber as a percentage of total losses
Ash Wednesday (1983)	174,881	556,12,500	29,850,197	946,581,042	3.2%
Alpine (2003)	1,300,000	7,841,250	1,391,993,388	1,715,286,629	81.2%
Great Divide (2006-7)	1,200,000-1,300,000	13,578,750	692,461,833	1,077,615,049	64.3%
Black Saturday (2009)	450,000	611,842,500	78,900,464	1,826,197,051	4.3%
2019-20 bushfire season	~1,500,000 ³²	<i>Unknown</i>	<i>Unknown</i>	<i>Unknown</i>	<i>Unknown</i>
Total	~3,170,000	647,825,750	2,193,205,882	5,690,197,042	38.5%

The full economic effects of timber losses may take many years to become evident. In 2017 the Carter Holt Harvey softwood sawmill in Morwell closed, with the loss of 160 jobs in the Latrobe Valley. This was largely as a result of a reduction in log supply caused by the 2009 Black Saturday Churchill fire. The 1983 Ash Wednesday fires in South Australia resulted in approximately 20,000 hectares of pine plantation being burnt. It has been estimated that without those losses, the additional resource that may have been available 20 years later could have supported an additional sawmill in the region.

In 2019-20, Victoria's softwood plantation resource (managed by HVP Plantations) was subject to significant impacts with over 6,300 hectares of softwood plantation lost to fire.³³ Of a major concern is the impact of the total plantation loss in the Murray Valley National Plantation Inventory area (North

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East Victoria and South New South Wales in the Snowy Valley' Council area). Almost 30% of the total softwood plantation resource has been impacted by fire. This will have a long-term impact on the viability of the industry and regional employment for the whole region.

Flow-on impacts of this nature must be assessed on a regional basis which crosses state borders, as timber processors in Victoria and NSW are supplied from both sides of the border. The major loss in NSW will impact Victorian growers as the industry they supply in NSW may now be threatened.

VAFI supports further research into the long-term economic and social impacts of fire on the regionally important timber and forest industries.

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