

**Submission
No 145**

**INQUIRY INTO LONG TERM SUSTAINABILITY AND
FUTURE OF THE TIMBER AND FOREST PRODUCTS
INDUSTRY**

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Date Received: 27 May 2021

NSW Parliamentary Inquiry: Long term sustainability and future of the timber and forest products industry.

Submission by Mick Harewood, May 2021.

Whether one thinks forests should be managed for wood, wildlife, water or whatever, the primary objective of management must now become the reduction of damage from catastrophic bushfires. All the above forest values are degraded by bushfires such as we have seen in the spring and summer of 2019/2020. Settled areas outside the forests are also at great risk from uncontrollable bushfires spreading from forests in severe fire danger periods.

This submission refers to some documents which give the history of how we got to this sad state and offers some suggestions about how forests might be managed to ameliorate fire risk.

Forest History in the Eden Management Area.

The history of forest management on the far south coast and tablelands of NSW is described in some detail in the following documents:

- Appendix (vi) to the Environmental Impact Statement on Woodchip Exports Beyond 1989 (Harris-Daishowa EIS 1986) entitled “Historical changes in Vegetation in the South East Forests.”
- “Integrated Logging and Regeneration in the Silvertop Ash-Stringybark forests of the Eden Region” R.G.Bridges, FCNSW 1983.

In brief, much of the country south and west of Eden was burned every winter by local cattlemen to stimulate green grass growth. Sawlog extraction and sleeper cutting was limited to areas accessible by rudimentary road access, generally along ridge lines. The forests were left in poor condition because the frequent burning allowed termites and fungi to enter the trees at their base and degrade the timber. In addition, many of the best, accessible trees had been removed and the remaining stands were dominated by “old stags”. These trees generally have hollow trunks and poor prospects for timber production but have more recently been recognised as vital for providing nesting hollows for arboreal marsupial, bats, owls and various parrots.

The poor condition of the forests was used as a justification for clear-fell logging in large compartments. The subsequent erosion and impact on possums and gliders lead to the adoption of alternate coupe logging in very small alternate coupes. The prospects for fuels management by prescribed burning in small alternate coupes was described by Phil Cheney as “difficult and expensive, if not impossible to carry out.” (HD EIS 1986). The very small alternated coupe logging regime lasted long enough for the Yambulla Catchment Hydrology Project to be established. Larger coupe size (generally 40 Ha or more) were soon adopted.

The November 1980 Timbillica fire had led to the adoption of more comprehensive fuels management by prescribed burning as well as the ban on accumulation of large amounts of bark at log landings. (The Timbillica fire had burnt out 46,000 Ha of forest in 6 hours. It started from a smouldering bark pile lit 5 months earlier). A prescribed burning guide for regrowth forests was developed by the National Bushfire Research Unit (Cheney, Gould and Knight, 1992). However, the implementation of this policy in recent years has been limited by the shrinking window of

opportunity for safe prescribed burning due to global warming and the staff requirements to treat a constantly growing area of vulnerable regrowth. There is also quite a long period when young regrowth does not have thick enough bark to withstand even low intensity fire, perhaps for the first 15 or so years.

The 2019/2020 fires followed 3 years of severe drought and record (2019) temperatures. The “border” fire impacted Mallacoota on New Year’s Eve. It seems to have crossed the Victorian border on January 4th and combined with the Nungatta fire (also started originally by a lightning strike) to destroy thousands of hectares of regrowth forest, 40 out of 70 houses at Kiah and ignite the chip pile at the Eden woodchip mill.

The town of Eden was very lucky to escape the fire, thanks to a wind change. A drive out the Towamba road from the Princes highway reveals just how close Eden came to disaster. Cobargo was not so lucky (on New Year’s Eve).

Proposals to Ameliorate Forest Fire Risk

The NSW Inquiry into the 2019/2020 fires found that the area treated by prescribed burning for fuels management had not decreased in recent years. Rather, it was the dryness of fuels which caused the catastrophic fire behaviour in severe fire weather. The inquiry also emphasised the importance of initial attack to limit the size of fires as early as possible. To this end, the **availability of water resources throughout the landscape** is likely to be an important factor. Fire trucks carry a very limited supply of water and the larger trucks with more water necessarily travel more slowly and are more limited in the areas they can access.

Aerial resources, in particular helicopters, are likely to play an increasingly important role in attacking fires at the earliest possible stage. However, the volume of water that a helicopter bucket can hold is extremely limited. Re-supply from surface water bodies throughout the forested landscape is vital. “Helicopter Dams” have been constructed in East Gippsland (e.g. Erinunderra plateau) and should be tried in NSW. The 2018 Yankey’s Gap Road Fire (an escape from the re-ignition of an approved prescribed burn) was attacked with helicopters which refilled their buckets from the effluent ponds at the Bega sewerage treatment plant, a ridiculously long and expensive journey.

Natural water resources in the forest estate are generally limited to narrow creeks and rivers in deep, steep gullies. It is difficult and dangerous for helicopters to access these places. Tankers have to ascend steep slopes fully laden after refilling at these sites. It would be far preferable to construct dams near the ridge lines and fill these dams with the surface run-off from roads. The use of “smart culverts” (a culvert with a through-pipe, with a limited diameter, continuing along the table drain to the dam and set lower in the culvert well than the entrance to the culvert going under the road) can facilitate the frequent filling of dams without too much risk of erosion in the spillway or along the table drain.

In recent years the fire danger period has been extended into the early spring and even late winter months due to dry conditions. This is reasonable and sensible. However, in the recent autumn, we had lots of rain in March but the fire danger period continued throughout March. This meant that anyone wanting to do pile-burning had to apply for a permit and delay ignition for 24 hours after

informing the neighbours and the local RFS headquarters. **The fire danger period should end as soon as there has been sufficient rain to make conditions safe.**

Silviculture.

There has been a great deal of opinion expressed about whether logging increases fire risk in forests or has no effect. I viewed on-line the webinar series on prescribed burning hosted by the CRC for Bushfire and Natural Hazards in 2020. Amazingly, I do not believe there was a single mention of the relative fire risk in logged versus unlogged forests in the three seminars.

Irrespective of one's opinion, it is obvious that regrowth from intensive logging is highly susceptible to intense fire damage. A drive up Ben Boyd road west from the Princes highway reveals how regrowth up to 20 years old was killed to ground level and the trees have then regenerated as multi-stemmed coppice. These stands are so dense that, on low site quality areas, they can get into a "locked" condition, with no individual trees able to get ahead of the pack. Productivity of such stands is very poor for decades.

Bridges (1983) has said "From a timber production point of view, the worst damage to regeneration occurs from intense wildfire in stands of 15 to 20 years old. At this stage, the trees are too small, on current utilisation standards, for commercial salvage operations following the fire. The fire damages the tree by killing a length of the upper bole. Epicormic shoots develop from the lower bole and these develop into a number of competing branches around the dead bole spike. The form and the future productive potential of the trees are seriously downgraded. At lower fire intensities, this downgrade of form and productive potential will affect stands of younger than 15 year age."

In the early years of the woodchipping operation, no post-logging burning was carried out. It was not required to achieve adequate stocking rates in the regenerating coupes (in wetter areas in Victoria and Tasmania forestry managers have deemed it essential) and the logging slash helped a bit to limit surface erosion within the coupes (but not stream-bank erosion). Following the devastating November 1890 Timbillica fire, a comprehensive program of pre and post logging burning, and burning under regeneration was introduced. (See appendix 26 (ii) of the Eden Native Forest Management Plan 1982, SFNSW May 1983). That plan gave first priority to burning at 3 to 5 year intervals in all regrowth stands. This has since changed to burning at 4 to 7 year intervals in regrowth (1994 EIS, SFNSW). The extent to which this has been implemented is questionable, due to the limited window of opportunity for safe burning and staff cuts. The rapid fuel accumulation in the Eden forests also brings into question the value of prescribed burning after a very few years. (Newman, 1977, cited in Raison et al).

In brief, Newman found that fine fuels accumulate rapidly following fire to reach an equilibrium level (where the rate of litter-fall equals the rate of decomposition) of about 10 tons per hectare. By 3 years, the fine fuel load is about 8.8 tons per hectare. Ground crews generally cannot attack a fire if the flame height is greater than 1.5 meters (you just can't get close enough due to radiant heat). Using the MacArthur forest fire danger meter in reverse, it is clear that in very high and extreme fire danger weather, there would need to be a fuel load of less than 5 tons per hectare for direct attack by ground crews to be feasible. So, fuels in the Eden region need to be less than 2 years old for a modest prospect of direct attack on wildfires to succeed in the (warming) future.

Even the most enthusiastic proponent of prescribed burning who presented at the March 2020 CRC for Bushfire and other Natural Hazards webinar, Neil Burrows, only advocated burning 8% of the landscape every year. This means that, on average, any one area might be burnt every 12 years.

However, a very good prescribed burn was carried out by Forestry NSW in the winter of 2019 in an area bounded by the Edrom Road, Shelley's Forest Road and Ash Road. All of this area had been intensively logged or at least thinned (in 1952 fire regeneration) and some of it had not been burned for up to 40 years. In spite of some windy days and prolonged dry weather, there was very little crown scorch. When the 2020 Border fire and Nungatta fires struck from the south-west, the western end of this block sustained a crown fire. There is no discernible difference in fire intensity on either side of Ash road. The head fire seems to have continued more or less down the river corridor to ignite the chip pile at the Chip mill. However, to the eastern end of the block, between Shelley's Road and the Edrom Road, the prescribed burn conducted about 6 months earlier, seems to have had a protective effect.

A very high proportion of the south east forests has been burnt in the 2019/2020 fires. It is impossible to say reliably, from post-fire observations, exactly what the effect of growth stage on fire behaviour was. It depends very much on the weather conditions prevailing when the fire front arrived, and if it was the main head fire, a spot fire or a flank, burning at more or less right angles to the prevailing wind. However, driving around the South East Forests National Park, it is obvious that forests in an oldgrowth condition fared much better than regrowth stands. Most of the oldgrowth has survived by epicormic shoots even where it sustained a crown fire. Some of the oldgrowth still has intact canopies. Most of the logging regrowth has been killed to ground level and is regenerating with a combination of coppice from surviving root systems and dense seedling regeneration. The multi-stemmed coppice tends to dominate. This leads one to consider the **options for future silvicultural treatment**. These are broadly:

- Business as usual
- No native forest logging
- Selective thinning

Business as usual, that is, a continuation of "integrated harvesting" for pulpwood and sawlogs is not really an option. The oldgrowth/multi-aged forest sawlog resource was mined out in the first Regional Forest Agreement period. There are very few sawlogs left and most are essential for recruitment habitat and seed trees. This means that a continuation of commercial logging will be dominated by pulp supply and the regenerating forest will remain in a regrowth state indefinitely.

As the climate warms, catastrophic wildfires will increase in frequency and severity. The forests will become a malley-type scrub and perhaps eventually heathland. (Chis Dickman from the NPWS has suggested that some areas will become grassy woodland but I do not believe the site quality in most of the southeast forests is high enough to sustain grassland vegetation.)

A complete ban on native forest logging is attractive to some. This begs the question of who will manage the fire risk and at what expense? Staffing levels in the NPWS are such that they can barely attempt to manage fire risk on the existing National Parks estate, even though much of it is in a condition that can tolerate prescribed burning in a much wider range of conditions than those suitable for burning in regenerating forests following intensive logging.

Selective thinning for pulpwood may help return regrowth stands to an oldgrowth condition more quickly. Oldgrowth stands of around 100 or fewer stems per hectare are far easier to manage for fire risk. The window of opportunity for safe prescribed burning is much greater. On gently sloping sites, mechanical fuels management becomes more practical.

Whatever option is chosen, managing the fire risk must be the first priority for the survival of the forests and everyone in areas within many kilometres of the forests.

Continuing to do the same thing and expecting a different result is one definition of madness.

Pine Plantations.

Much of the pine plantation estate in the south east was destroyed by the 20019/2020 fires. This occurred in spite of the great effort expended by SFNSW to protect these areas with fire suppression resources.

Pine plantations cannot tolerate prescribed burning. Pines cannot survive damage to the bark which allows ingress of fungi and the complete degradation of the value of logs. Young pines are killed by wildfire and these areas require windrowing of the debris and replanting.

Some more availability of water resources for refilling tankers and helicopter buckets might help a bit with early suppression. Given the warming climate, a better long-term strategy might be re-naturalisation of pine plantations with **mixed species eucalypt plantation**.

Plantations offer greater productivity because site preparation by deep ripping greatly enhances the crop tree access to water and nutrients in the soil and subsoil. Optimal spacing of selected species also enhances growth rates. If deep ripping were carried out for naturally occurring eucalypt species, much greater productivity could be expected. These crop trees would then be able to tolerate fuels management by prescribed burning at a relatively young age and at later ages they would tolerate more intense wildfire without total destruction of the resource.

I am **opposed to the expansion of plantations** on previously cleared land or “naturally” occurring grasslands (these are most likely areas that have been maintained in a grassy condition by indigenous burning). When grasslands are replaced by plantations, the albedo is greatly decreased. This means more solar heat is retained in the landscape rather than being immediately reflected back out in space. Overall, the warming effect is likely to outweigh any beneficial effect of CO₂ sequestration by the crop trees.

As the planet warms, forest will become net emitters of CO₂. This is partly due to increased decomposition rates of biomass and largely due to the increase in frequency and severity of wildfires. This threshold of forests becoming net emitters of CO₂ may have been reached already in the 2017-2019 drought and 2019/2020 fires. Kelp forests probably offer our best hope of atmospheric CO₂ reduction by bio-sequestration. (Flannery, 2017)

Forest outside the Eden Management Area.

The Interim Forest Operations Approvals for Coastal Forests Remake (2018) seemed to be an attempt to justify the intensification of logging operations further up the NSW coast. I wrote in my submission to that process a critique of intensive logging in the Eden Management Area under the

framework of the Montreal Process. (Copy attached). Included was the prediction that wildfires would be uncontrollable and more damaging to all forest values.

Summary of recommendations:

- Forest management must give the greatest priority to the reduction of damage from catastrophic wildfires both to the forest estate and nearby lands, irrespective of what one thinks forests are for.
- Surface water resources throughout the landscape should be developed to assist in wildfire suppression.
- Silvicultural treatments should aim to return forests to something like the oldgrowth condition as soon as practicable.
- There should be no expansion of pine plantations on to previously cleared land.
- Re-naturalisation of pine plantation areas with mixed species Eucalypt plantations should be implemented, rather than the re-planting of exotic pines.
- The fire danger period should be varied to reflect recent weather conditions.
- Fuels management by prescribed burning should prioritise strategic areas and complete blacking-out of areas treated must be given appropriate effort and resources.

References.

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