



Title	Mr
First name	Michael
Last name	Grady
I am making this submission as	Emergency services
Submission type	Personal
Organisation making the submission (if applicable)	
Your position in the organisation (if applicable)	
Consent to make submission public	Public
Your story	<p>I am a local resident of the Lower Bago area, part of the Snowy Valleys local government area on the border of the former Tumut and Tumbarumba shires with state forest and private pine on both sides. I am a volunteer member of the local bush fire brigade and have had experience with fires for most of my life, predominantly through hazard reduction burning on our property as well as attending local fire brigade callouts for lighting strikes. During the Christmas holidays I attended the Dunns road fire which started at Ellerslie approximately 20km north-west of Lower Bago in a pine forest plantation. I attended the fireground with the Lower Bago crews the first Saturday afternoon-Sunday morning after the fire started (28th-29th December). My brothers attended both during Sunday afternoon-Monday morning and during the day on Monday before the fire entered the Green Hills state forest. All of us were then involved on the Monday Night-Tuesday morning when the fire front burnt through the Lower</p>

Bago area including our property. We were also involved on the following Saturday (4th January) when the second front flared up in the pine plantation to the south west.

To my knowledge, the Dunn's road fire was started in a pine plantation in Ellerslie from a lightning strike. Due to its isolation, by the time it was discovered it was too big to easily contain. During this initial period there were significant aerial bombing aircraft on site however the fire was not able to be effectively controlled until bulldozers were on site and could form effective breaks. This was primarily due to the terrain that prevented truck crews from accessing the active front to clean up after bombing runs. With bulldozers forming breaks and with the backburn put in on Sunday night, the fire was mostly under control. However poor weather conditions on the Monday allowed the fire to burn back through the pine plantation and jump into the Yaven Valley. On Monday night the fire entered the Green Hills state forest and by the following day the fire had reached Cabramurra and was over 100km long.

After the fire burnt through our property, it was eventually being controlled along the Westbrook road (although it did cross it in several places), however the north western front coming down out of the pines was only able to be stopped after the front had exited the pine into the open grassland and in many cases only once reaching the Taradale road. While the main front was extinguished there were still hotspots and trees alight within the burnt area. Over the following days, bulldozers and graders were used putting in additional firebreaks, in particular a wide break both sides of the Westbrook road between the pine plantations to try and save the remaining plantation. During this period, several fires flared up and were extinguished.

The Saturday was very hot and the windy conditions saw several more trees flare up again; some were left to burn out as they were surrounded by burnt ground and had no risk of spreading, and others were put out as were potential risks to unburnt ground. A tree burning on the fire edge near Westbrook road flared up and several trucks were on site attempting to put it out. However, its location made access difficult and before it could be extinguished a gust of wind spread it into nearby unburnt ground, jumped the road and entered the pine plantation.

Once it entered the pine, all trucks withdrew for safety reasons and concentrated on preventing the spread outside the pine, however much of the area alongside the plantation was burnt as the weather conditions made fighting the fire difficult. A major problem was that the access road along the edge of the pine was so close to the trees that it could not be used safely and the fire front was well past the road before any attempt could be made to extinguish it. New fires were also constantly being started due to spots coming out of the pine and often relighting areas where fires had only just been controlled. The fire was eventually extinguished but not until the pine had finished burning and weather conditions improved.

While the fire continued burning for over 50 days and eventually joined with the Green Valley and Ournie Creek Fires, my experience and knowledge is of the initial fire in our local area as well as the flare up the following Saturday.

1.1 Causes and contributing factors

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The primary cause of both the ignition and the severity of the Dunn's Rd fire is due to the NSW state government Forestry and Private Pine plantations.

Location:

- The initial ignition point was in a private pine plantation that was planted in a lightning prone area. This was known by local residents who warned the forestry when it was proposed, however these warnings were ignored.
 - The location of the site was also an issue for access due to the steep and rocky terrain, Cat 1 tankers were only able to access
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the lower reaches of the fire while the main ridge was only able to be accessed by Cat 7s and Cat 9s in addition to local slip on units.

- This was then further compounded by the lack of water supply in the area, as no water supply was able to get to the top of the ridge except in smaller trucks. As a result it was up to an hour round trip to come off the ridge and fill up from the Cat 1 units and get back to the fire front. The Cat 1's then needed to travel out to the main road and fill up from bulk water tankers.
- One of the reasons that water was so scarce in local dams and creeks is that the pine plantations are so water intensive they prevent much of the little runoff available in summer reaching dams and consume so much groundwater that many of the small creeks are diminished to the point they are unusable, if they don't disappear completely. Proof of this came two days after the fires had passed when the Kavanaghs creek began running again, having dried up during the preceding months. No other changes occurred, no rainfall local or otherwise, but within 2 days of the pine burning out in the creek headwaters, the creek began flowing again.

Planning Layout:

- Pine plantations were far too heavily planted with a minimum spacing to achieve a higher concentration of trees. This also included planting close to roads and boundaries with minimal or no safe clearance zones, to the extent that the permanent access roads within the plantation had to be cleared with a bulldozer before they could be used by fire trucks. This is more economical for the plantations but meant that the fire was of a much higher intensity than it should have been. The higher concentration of trees meant more fuel available and in a single continuous source. Pine trees are especially fuel intensive because they consist of large quantities of thin, fine material thus a high surface area. This resulted in a fire that burnt very hot and very fast and allowed rapid spread through the pine and into all adjacent properties.
- The location and interconnection between forestry the plantations was another factor in the fire spread. The Green Hills, Bago and Maragle state forests, as well as numerous private pine plantations all interconnect and so form a single continuous mass. This becomes even larger when considering the areas of national park or native vegetation blocks that back onto these plantations, all with heavy timber loads and minimal maintenance measures. Due to the speed and intensity of fires in this type of environment, you couldn't control the fire once it entered these areas, and as a result the fire could spread unchecked.
- The lack of effective breaks or spacing between timbered areas meant there were no suitable areas to form an effective firebreak and this resulted in an unstoppable fire front that essentially continued until it ran out of fuel, by which time it was over 100km in length.
- All boundaries of pine plantations should be planted with a minimum of 100m clear ground that provides an effective break location and the ability to effectively control a firefront. This area should be grassed only (no trees, weeds or shrubs) and either grazed or mown to minimise its fuel load. Ideally this should also contain a hard boundary (such as a permanent road) along the outer area to provide access for firefighting vehicles and if necessary, a ready firebreak from which to backburn. This 100m break should exist at all boundaries, either side of all public roads and at a consistent internal spacing within plantations (such as every 10km) to break the solid mass and provide potential locations to halt a fire. Additional breaks of a minimum 50m should be provided at every internal road, along power lines and around all other permanent infrastructure within the plantation area.

Maintenance of plantations:

- Maintenance of the local pine plantations was also not undertaken as it should have been. The trimming/removal of the lower branches of the trees was not undertaken on most of the local plantations. This meant that there was a continuous fuel load from ground level to the upper canopy that allowed smaller fires on the ground to quickly spread into the canopy and ignite the entire tree, resulting in much greater fuel loads and intensity and thus much more severe fires.

- A clear example of this is the outside edges of the plantations at the intersection of the Taradale and Westbrook roads. The outside perimeter of trees is unburnt, as the fire only consisted of a small grass fire, however once it was underneath the trees, it quickly climbed the untrimmed branches and burnt the remainder of the plantation the full height of the trees. A better managed pine plantation in the same area that had the lower branches trimmed was still burnt, however to a much lower extent and in some cases, only the lower levels of the trees were burnt, Whether the trees are capable of surviving this lesser damage is yet to be seen.

- The maintenance of weeds within the pine plantations was also not being undertaken as should be required (and IS required for farmers in the same area). Of note is the maintenance of Blackberries within pine plantations. Formerly classified as a noxious weed this condition was removed for pine plantations as it was considered a "financial burden" for them to control. As a result, the plantations were heavily infested with blackberry bushes that created a huge fire risk and acted as a seed bank that increased the concentration of blackberries in the surrounding areas, increasing their fire risk as well.

- The build-up of weeds within the plantations (especially blackberry) not only added to the fuel loading, it had a significant impact on the spotting behaviour of the fire. Woody weeds like blackberry are an almost perfect carrier for embers, in a fire the runners from blackberry bushes can form embers several inches long that are both long lasting and light enough to easily be carried by the wind. This allows ember attack to spread into the nearby areas, creating multiple spot fires that can quickly burn out of control and allow repeated fires to occur compared to a single flame front that when extinguished is much less likely to reignite. During the second flare up on the Saturday, crews were able to put out spot fires that had ignited across the creek from the plantation, however by the time they had refilled with water, other fires had started and often areas previously saved were lost to the second front. I believe a major cause of those spot fires was from blackberry bushes within the plantations that were not maintained or controlled.

Burning pattern of pine plantations:

- The manner in which pine forest burns was another key factor. Due to the high concentration of fine material, the resulting fires were able to rapidly escalate from a low containable grassfire to a 20m high flame front in the space of 10m and maintained this front until the fire exited the plantation. This is much greater than compared to native vegetation that does not consist of such uniform fuel loads.

- The rapid burning pattern of the trees results in a high intensity, fast moving fire front. This means the flames travel through trees very rapidly, increasing in size very quickly. However also means the fire burns out very quickly. This can allow large sections of fuel to be missed depending on localised conditions such as topography and moisture, including the effects from retardant runs. This then leaves unburnt fuel for future fire fronts. In the Dunn's road fire, this resulted in the fire burning through the plantation a second time and resulted in the spread during poor conditions on Monday that eventually reached the Green Hills state forest.

- Essentially, once the fire was in the pine plantations, you could not fight it and had to wait until it entered open grassland before it

could be effectively fought and controlled. Due to the way the forestry was planted, this was not possible until the fire was over 100km in length.

1.2 Preparation and planning

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NSW Forestry & Private Pine

Upcoming sale of plantations:

- I believe a big influence on the lack of preparation for the fire season was due to the NSW governments plan to sell the forestry plantations. To make the plantations more appealing to buy, the associated costs within the plantation were reduced as much as possible. This included reducing the number of forestry employees and the closure of forestry equipment depots (including the former depot in Batlow). This resulted in a lack of forestry equipment and personnel, particularly in the local area where they were needed.
- The effect of this was twofold, There was less forestry personnel available to survey the area and keep track of current conditions, which in a lightning prone area like Ellerslie was a serious problem, and during the fire there were less personnel available (particularly more experienced personnel) to assist with firefighting activities and consultation. Secondly, there was no local forestry equipment available, this meant that heavy plant such as bulldozers, which are invaluable for fire fighting activities, were not on site and were required to be transported from other areas. This resulted in several hours delay, during which the fire was able to expand and grow.

Ongoing Maintenance:

- A significant issue with fire preparation by forestry was the minimal maintenance of plantations as mentioned previously. The planting concentration of pine trees, no thinning or trimming of low lying branches conducted, no clean-up of dead fuel loads underneath trees and no control of weeds (Blackberries) resulted in heavy fuel loads for the full height of the trees and was a cause of the ease and speed at which the fire escalated.
- Within the Ellerslie area, a particular issue was the additional fuel loads of unburnt residue within the plantation area from the previous land clearing conducted prior to planting. This residue was not burnt or removed during clearing as it should have been as this would have resulted in a delay for planting (at the expense of forestry). Because of this, there were large quantities of dry seasoned hardwood within the plantation that added to the fuel loading and would also burn for longer than initial burn through the pine. Whether this resulted in the second burn through the pine on the Monday is something I do not know. However, the decision to leave such a high fuel load present within the plantation was certainly a poor decision with regards to fire preparation and planning.

Road Access:

- Road and access paths within the plantations were another area that was not well prepared for the fire season. Many of the tracks around the plantations were not suitable for Cat 1 fire tankers; this meant that only Cat 7 and Cat 9 tankers were able to access the fire front which severely diminished the fire fighting capabilities of the crews on site. In many cases the roads were not even suitable for these smaller vehicles and access was restricted until a bulldozer was on site and available to clear and re-grade the roads.
- These roads should have been maintained and if necessary repaired in the lead up to the fire season to ensure suitable access was available, both for access in the event of a fire, but also to allow monitoring of the site during poor weather conditions for forestry personnel.
- There should also have been better access to the upper

ridgeline for Cat 1 tankers, the lack of access for heavier firefighting trucks had a significant impact on the firefighting capabilities of crews on site due to lack of water. As the Cat 1s could not access the upper ridge, refilling of the cat 7 and cat 9s required an hour long round trip, significantly reducing the local firefighting abilities.

- All access roads within the forestry should be accessible, particularly during summer. The fact that a bulldozer was required to clear the roads before they could be used showed a significant lack of preparedness on the forestry's behalf. For starters the trees should not have been planted so close to the roads, as this risks the roads becoming blocked and trapping crews on site as well as not allowing a buffer zone to protect crews that may be forced to use those roads during adverse conditions. The trees should also have had their lower branches trimmed as mentioned previously which would have improved the existing road access.

- The lack of maintenance of these plantations shows a lack of preparedness and may have been another factor influenced by the decision to sell the forestry plantations.

Additional Fuel Loadings:

- While the plantation trees by themselves have always been a significant fire hazard, they could be better managed through minimising additional fuel loadings that would reduce the likelihood of igniting the trees and resulting in a crowning fire front.

- Two of the key factors of fuel loadings are trimming the trees of their lower limbs and blackberry and other weed maintenance as mentioned previously. However a factor that hasn't been mentioned is the reduction of basic grass loading due to stock grazing. Grazing has been irrefutably proven as an effective means of hazard reduction with regards to bushfires. Our house is still standing because we heavily stock the paddocks surrounding it in the lead up to summer specifically for that reason. We had sections of fire that were extinguished in a dead straight line at the limit of our fences due to grazing. Other areas where the fire also extinguished itself are also present in the high country areas where brumby and deer had stripped the areas clean of fuel. Even when not conducted to that extent, any reduction in fuel load due to grazing results in a reduction in fire intensity when it does burn.

- There are two main reasons why grazing is conducted at a minimal level in forestry plantations (private only as state government plantations have legal issues involved). The first is due to poor fencing standards, I have yet to see a stock proof fence on forestry that wasn't erected by the landholder on the other side. This is once again due to the forestry's unwillingness to spend money it doesn't deem necessary. They don't own stock so to their view they don't need fencing. The second is that no sane individual wants to put stock into a pine plantation for fear they would never be able to get them out again. This comes back to the lack of maintenance of forestry plantations means that mustering stock out is almost impossible.

- As a result, the only grazing in forestry is due to feral populations of deer and kangaroos and as a result, the grass loads within plantations can be as out of control as the weeds and when dry provide a perfect location for embers to ignite and spread before igniting the trees themselves.

- The forestry should have effective fences and maintenance procedures to enable and encourage grazing within the plantations, and if they are not willing to do so, they must provide for the land to be mown to reduce fuel loads in the same manner as is required for council land along roads.

Limitations on landholders for land clearing:

- A significant issue with property owners preparing their properties for bush fires is the legal issues and restrictions on land clearing on their own land. Landholders need to have the ability to create an effective fire break at boundaries and dangerous locations without the concern about legal ramifications.
- The restrictions around land clearing need to be reduced when it comes to a matter of fire planning, particularly with regards to boundaries, and more importantly, needs to be clearly and concisely stated so that there can be no misinterpretations. The typical legal ass-covering scripting needs to be removed and a simple and clear definition implemented and made widely known. Essentially, it needs to be written for the farmers who will be following it, not the lawyers who profit from misunderstanding it.
- Ideally a 50m break should be allowed as the minimum for all boundaries (either side of the property boundary) to create 100m wide break, this would provide the potential to halt a crowning fire and allows access for fire crews or aircraft to effectively suppress fire front either directly or through use of retardant. Areas of higher fire danger such as forestry plantations or national parks should be allowed a wider break up to a 100m (in addition to the 100m break that should be on their side).
- Internal fence lines and access tracks should also have a minimum 50m break for firefighting purposes before, during and after the fire front. Part of this is the need for clearance from trees to prevent falling hazards and trees potentially blocking roads.

1.3 Response to bushfires

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Forestry response

Monitoring:

- A significant problem with the forestry was that they had no active monitoring of their plantations. As a result there was no early warning while the fire was small. By the time the fire was discovered it was too big to be easily controlled.
- Forestry also didn't take the initial fire seriously enough; there were minimal forestry crews on site and no large fire fighting units at all. Essentially it was left to the RFS to handle.

Response Time:

- There was also a significant delay in the response to the fire, even when it did become serious. An example is how long it took to get bulldozers (invaluable on a fire-front) on site. A local private operator was on site quickly after fire the fire was identified, and a second one was not far behind, meanwhile the forestry dozer took over 6 hrs before it arrived, primarily due to the travel requirements as there was no local plant available after the closure of the Batlow depot.
- Another issue was the lack of forestry operators available to operate the machinery that was on site. Before the fire entered the Green Hills state forest, there were 2 forestry bulldozers sitting at the perimeter doing absolutely nothing as there were no operators in the area to use them.

Bureaucracy & Red Tape:

- The forestry's approach with regards to red tape and paperwork also hindered progress on the fire front. Everything had to be organised and recorded for the purposes of insurance, costs and claims at a later date and prevented the forestry crews on site from actually doing the job they were there for.
- While much of this would have gone on in the background, there was one clear example heard over the radio during the second front on the following Saturday. A forestry bulldozer on firefighting activities (at an active fire front - within 1km) was creating a firebreak around a house when it was ordered by the forestry to cease operations because the paperwork hadn't been

completed yet. Rather than let him continue operating while they did the paperwork in the background (without distracting the operator – or pissing off every single local who could hear). He was instead forced to sit still for several minutes until the paperwork had been filed and he was given the all clear to continue.

- The forestry was also far too focused on protecting their own assets above all else. They were not willing to make any sacrifices, and were constantly trying to stop the front where it was, rather than intentionally sacrificing a small percentage to save the majority. The aim was to save everything and as a result they essentially lost it all. Aircraft were being used bombing the fire front directly in an attempt to prevent losses where the same quantity of water could have achieved far greater benefits if used on open grassland or even native bushland further in front of the fire or along the flanks. The close spacing of the trees would prevent water from reaching to the lower levels and would not prevent a fire from travelling underneath the covered area before crowning again on the other side. Much of the bombing conducted had a minimal effect on the overall fire whereas using retardant runs in front of the fire would allow more time for multiple runs to create a larger, more effective barrier, particularly if back burning was then conducted on the fire side of the retardant.

RFS

Aerial Management:

- In my opinion, the RFS had too much focus on aerial support for fire control and poor management and even misuse of the available aerial support. I believe this is mostly for safety reasons, trying to reduce the direct contact of fire crews where possible, however by itself fire bombing is not guaranteed to control the fire and as a limited and time sensitive resource is better used where it will be most effective, which isn't always the main front. In many cases, controlling the fire on the flanks is more useful, especially in rugged, hard to access areas. As the flanks are not burning with the wind behind it, this has the potential to be far more effective than bombing the front directly and during wind changes; the new fire front is smaller than if left uncontrolled.

Resources:

- One issue the RFS had was poor allocation of available resources, with the number of units on the ground; there was often poor distribution within effective firefighting roles. For example over allocation of fire fighting units to property protection instead of fire control activities on the fire front.

- One instance at Yaven Vale had over 12 fire tankers at a single dwelling rather than actively engaged in either the fire front or flanks. This was then compounded after the front passed through this area as these trucks were then isolated behind the fire front and under orders from Firecom to stay in place due to potential danger until the front had passed completely. As a result, numerous houses further on were left completely unprotected while 12 tankers were stuck doing the job that 1 or 2 could be doing. This is further compounded after the initial front when road access is restricted as the available trucks are then not able to effectively move to new areas.

Chain of Command:

- The RFS also tries to maintain too much control over local units, rather than letting crews on ground make own decisions. The crews on the ground are the ones with the most accurate knowledge of their area, the potential dangers and the problems and opportunities available whereas Firecom only has verbal reports of the conditions (often delayed) and as the legally

responsible entity for any decisions it makes, will typically err on the side of caution. An example being the aforementioned tanker group at Yaven Vale. Once the immediate front had passed, the roads were essentially safe to travel except for falling trees (not an issue heading northbound), however Firecom would not let the tankers move until the front was essentially out.

- While I agree that firecom has its purpose in compiling and distributing information to the local captains and crews on site, I believe that local crews should have the ability to make their own decisions at their discretion without interference. Essentially, reduce the role of Firecom with regards to on ground control and more towards coordination.

NSW Police

- While not involved in firefighting, the police do have a role with regards to their response to the bushfires. One issue I have is the lack of local knowledge (common sense) with regards to vehicle travel. I understand the purpose of implementing road blocks around fires with regards to keeping unnecessary vehicles out of the area and out of the road of emergency personnel. However they need to exercise their own judgement and reason with regards to blocking vehicle travel, rather than a blanket ban on all vehicles.

- For one thing, nearly all traffic going back in to a fire-ground in a rural area is likely a local and well aware of the danger. If they are not, simply pulling them over and informing them of the danger before letting them make their own decision about whether to return seems sufficient involvement. And in my opinion, if the police are still there, the fire front isn't close enough to warrant anything more. Not letting them through after this is simply ridiculous.

- There was an instance at the Dunns road fire where a Ute (equipped with a fire fighting unit) was prevented from returning to the driver's home property (less than 1km away) by a highway patrol checkpoint. Despite being a local; well aware of the fire (likely more informed than the police as they were in contact with fire crews on site via radio), and carrying firefighting gear, they were not allowed to pass and the issue wasn't resolved until a local police unit arrived on site.

1.4 Any other matters

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Road Access

- A major issue with bush fire preparedness is with regards to council road reserves. Specifically that they are far too overgrown with trees. During a fire, these roads become danger zones rather than safe areas and remain dangerous long after the fires have passed due to the risks of falling trees and limbs.

- This is an issue that is well known, it has been noted in several inquiries into fires that I am aware of and recommendations have repeatedly been made to clear and maintain these corridors to reduce the dangers to crews travelling on them, and ensure road access is not cut off after a fire, thus allowing rapid and safe redeployment of fire crews in the follow up period. However as of yet, these recommendations have never been acted on due to the environmentalists who happily label every available shrub as a "significant roadside environment", never mind that it's all regrowth less than 20 years old.

- As a result of these issues, the road access for fire tankers is still heavily restricted during a fire. For example, during the Dunn's road fire, crews from the Oberne brigade attempting to travel from Yaven creek through to Lower Bago and Taradale were forced to detour via Tarcutta as the direct road through was blocked due to fallen trees. This resulted in a trip over 100km, 10 times the direct route.

- Another more serious example was the deaths that occurred involving the Horsley Park crew near the Sydney fires who were killed when a tree fell onto the road. Had these clearing recommendations been undertaken, this could have been prevented.

Pine and Forestry management

- The primary cause and issue with the Dunn's road fire however, is the behaviour and attitude of the pine plantation management. Has they been held to same standards as any other landholder, the fire would potentially never have been started, and would certainly have been more effectively controlled.

- They must be held accountable for maintaining and monitoring their property, including monitoring of land during bad conditions and during/after storms where lightning is a potential problem.

Control Measures:

- As a high fire risk environment (of their own creation), they must ensure they have fire effective management procedures in place to protect nearby landholders as well as their own plantations.

- This should include effective planting strategies, including reducing planting concentrations, including firebreaks around all boundaries, public roads, internal roads, power lines, any permanent infrastructure and at regular intervals so as to break up the continuous mass of plantations to reduce spread and allow containment.

- These breaks should be a minimum of 100m clear space, regularly maintained and free of weeds/large undergrowth including blackberries and must be either grazed or mown during summer to reduce fuel load.

- A hard boundary such as a gravel road or access tracks must be included and maintained within this perimeter as well and maintained for firefighting purposes, clearing undergrowth and lowering fuel loads and as a readily available point to back-burn from.

- Sufficient permanent fire trails suitable for Cat 1 fire tankers must also be created and maintained. This must include access to all ridgelines and must have multiple routes available to ensure access and safety for crews using them.

- Plantations must be actively maintain their land, including trimming trees, spraying weeds and removing build-up of deadfall under trees (in native forests this can be done through hazard reduction burning in cooler months, as pine trees are sensitive to fires, alternative measures may need be used to prevent cumulative build up including mechanical removal if necessary)

- All plantations must have a fire management plan prepared and reviewed by neighbouring landholders and the RFS prior to planting being allowed, in the same manner that a commercial development would require. This must include evidence that the above measures have been implemented and the strategies to be implemented in the event that a fire does occur.

These measures need to be implemented (as a legal requirement, not a recommendation) and must be enforced to ensure compliance.

These must be implemented on all new plantations and all existing plantations must be modified to meet the same requirements, NO EXCEPTIONS, fire doesn't discriminate between a new plantation and an old one.

The primary reason these measures are not already a legal requirement is due to the cost of implementation. If the pine industry is really as profitable as they claim, then cost should not be a justification as these measures provide as much benefit in protecting their own assets from fires as it does for those around them.

And if the industry is unwilling to implement these measures, give the land back to those who will.

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Story:

I am a local resident of the Lower Bago area, part of the Snowy Valleys local government area on the border of the former Tumut and Tumbarumba shires with state forest and private pine on both sides. I am a volunteer member of the local bush fire brigade and have had experience with fires for most of my life, predominantly through hazard reduction burning on our property as well as attending local fire brigade callouts for lightning strikes.

During the Christmas holidays I attended the Dunns road fire which started at Ellerslie approximately 20km north-west of Lower Bago in a pine forest plantation. I attended the fireground with the Lower Bago crews the first Saturday afternoon-Sunday morning after the fire started (28th-29th December). My brothers attended both during Sunday afternoon-Monday morning and during the day on Monday before the fire entered the Green Hills state forest. All of us were then involved on the Monday Night-Tuesday morning when the fire front burnt through the Lower Bago area including our property. We were also involved on the following Saturday (4th January) when the second front flared up in the pine plantation to the south west.

To my knowledge, the Dunn's road fire was started in a pine plantation in Ellerslie from a lightning strike. Due to its isolation, by the time it was discovered it was too big to easily contain. During this initial period there were significant aerial bombing aircraft on site however the fire was not able to be effectively controlled until bulldozers were on site and could form effective breaks. This was primarily due to the terrain that prevented truck crews from accessing the active front to clean up after bombing runs. With bulldozers forming breaks and with the backburn put in on Sunday night, the fire was mostly under control. However poor weather conditions on the Monday allowed the fire to burn back through the pine plantation and jump into the Yaven Valley. On Monday night the fire entered the Green Hills state forest and by the following day the fire had reached Cabramurra and was over 100km long.

After the fire burnt through our property, it was eventually being controlled along the Westbrook road (although it did cross it in several places), however the north western front coming down out of the pines was only able to be stopped after the front had exited the pine into the open grassland and in many cases only once reaching the Taradale road. While the main front was extinguished there were still hotspots and trees alight within the burnt area. Over the following days, bulldozers and graders were used putting in additional firebreaks, In particular a wide break both sides of the Westbrook road between the pine plantations to try and save the remaining plantation. During this period, several fires flared up and were extinguished.

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Once it entered the pine, all trucks withdrew for safety reasons and concentrated on preventing the spread outside the pine, however much of the area alongside the plantation was burnt as the weather conditions made fighting the fire difficult. A major problem was that the access road along the edge of the pine was so close to the trees that it could not be used safely and the fire front was well past the road before any attempt could be made to extinguish it. New fires were also constantly

being started due to spots coming out of the pine and often relighting areas where fires had only just been controlled. The fire was eventually extinguished but not until the pine had finished burning and weather conditions improved.

While the fire continued burning for over 50 days and eventually joined with the Green Valley and Ournie Creek Fires, my experience and knowledge is of the initial fire in our local area as well as the flare up the following Saturday.

Terms of Reference

1.1 Causes & Contributing Factors

The primary cause of both the ignition and the severity of the Dunn's Rd fire is due to the NSW state government Forestry and Private Pine plantations.

Location:

- The initial ignition point was in a private pine plantation that was planted in a lightning prone area. This was known by local residents who warned the forestry when it was proposed, however these warnings were ignored.
- The location of the site was also an issue for access due to the steep and rocky terrain, Cat 1 tankers were only able to access the lower reaches of the fire while the main ridge was only able to be accessed by Cat 7s and Cat 9s in addition to local slip on units.
- This was then further compounded by the lack of water supply in the area, as no water supply was able to get to the top of the ridge except in smaller trucks. As a result it was up to an hour round trip to come off the ridge and fill up from the Cat 1 units and get back to the fire front. The Cat 1's then needed to travel out to the main road and fill up from bulk water tankers.
- One of the reasons that water was so scarce in local dams and creeks is that the pine plantations are so water intensive they prevent much of the little runoff available in summer reaching dams and consume so much groundwater that many of the small creeks are diminished to the point they are unusable, if they don't disappear completely. Proof of this came two days after the fires had passed when the Kavanaghs creek began running again, having dried up during the preceding months. No other changes occurred, no rainfall local or otherwise, but within 2 days of the pine burning out in the creek headwaters, the creek began flowing again.

Planning Layout:

- Pine plantations were far too heavily planted with a minimum spacing to achieve a higher concentration of trees. This also included planting close to roads and boundaries with minimal or no safe clearance zones, to the extent that the permanent access roads within the plantation had to be cleared with a bulldozer before they could be used by fire trucks. This is more economical for the plantations but meant that the fire was of a much higher intensity than it should have been. The higher concentration of trees meant more fuel available and in a single continuous source. Pine trees are especially fuel intensive because they consist of large quantities of thin, fine material thus a high surface area. This resulted in a fire that burnt very hot and very fast and allowed rapid spread through the pine and into all adjacent properties.
- The location and interconnection between forestry the plantations was another factor in the fire spread. The Green Hills, Bago and Maragle state forests, as well as numerous private pine plantations all interconnect and so form a single continuous mass. This becomes even larger when considering the areas of national park or native vegetation blocks that back onto these plantations, all with heavy timber loads and minimal maintenance measures. Due

to the speed and intensity of fires in this type of environment, you couldn't control the fire once it entered these areas, and as a result the fire could spread unchecked.

- The lack of effective breaks or spacing between timbered areas meant there were no suitable areas to form an effective firebreak and this resulted in an unstoppable fire front that essentially continued until it ran out of fuel, by which time it was over 100km in length.
- All boundaries of pine plantations should be planted with a minimum of 100m clear ground that provides an effective break location and the ability to effectively control a firefront. This area should be grassed only (no trees, weeds or shrubs) and either grazed or mown to minimise its fuel load. Ideally this should also contain a hard boundary (such as a permanent road) along the outer area to provide access for firefighting vehicles and if necessary, a ready firebreak from which to backburn. This 100m break should exist at all boundaries, either side of all public roads and at a consistent internal spacing within plantations (such as every 10km) to break the solid mass and provide potential locations to halt a fire. Additional breaks of a minimum 50m should be provided at every internal road, along power lines and around all other permanent infrastructure within the plantation area.

Maintenance of plantations:

- Maintenance of the local pine plantations was also not undertaken as it should have been. The trimming/removal of the lower branches of the trees was not undertaken on most of the local plantations. This meant that there was a continuous fuel load from ground level to the upper canopy that allowed smaller fires on the ground to quickly spread into the canopy and ignite the entire tree, resulting in much greater fuel loads and intensity and thus much more severe fires.
- A clear example of this is the outside edges of the plantations at the intersection of the Taradale and Westbrook roads. The outside perimeter of trees is unburnt, as the fire only consisted of a small grass fire, however once it was underneath the trees, it quickly climbed the untrimmed branches and burnt the remainder of the plantation the full height of the trees. A better managed pine plantation in the same area that had the lower branches trimmed was still burnt, however to a much lower extent and in some cases, only the lower levels of the trees were burnt, Whether the trees are capable of surviving this lesser damage is yet to be seen.
- The maintenance of weeds within the pine plantations was also not being undertaken as should be required (and IS required for farmers in the same area). Of note is the maintenance of Blackberries within pine plantations. Formerly classified as a noxious weed this condition was removed for pine plantations as it was considered a "financial burden" for them to control. As a result, the plantations were heavily infested with blackberry bushes that created a huge fire risk and acted as a seed bank that increased the concentration of blackberries in the surrounding areas, increasing their fire risk as well.
- The build-up of weeds within the plantations (especially blackberry) not only added to the fuel loading, it had a significant impact on the spotting behaviour of the fire. Woody weeds like blackberry are an almost perfect carrier for embers, in a fire the runners from blackberry bushes can form embers several inches long that are both long lasting and light enough to easily be carried by the wind. This allows ember attack to spread into the nearby areas, creating multiple spot fires that can quickly burn out of control and allow repeated fires to occur compared to a single flame front that when extinguished is much less likely to reignite. During the second flare up on the Saturday, crews were able to put out spot fires that had

ignited across the creek from the plantation, however by the time they had refilled with water, other fires had started and often areas previously saved were lost to the second front. I believe a major cause of those spot fires was from blackberry bushes within the plantations that were not maintained or controlled.

Burning pattern of pine plantations:

- The manner in which pine forest burns was another key factor. Due to the high concentration of fine material, the resulting fires were able to rapidly escalate from a low containable grassfire to a 20m high flame front in the space of 10m and maintained this front until the fire exited the plantation. This is much greater than compared to native vegetation that does not consist of such uniform fuel loads.
- The rapid burning pattern of the trees results in a high intensity, fast moving fire front. This means the flames travel through trees very rapidly, increasing in size very quickly. However also means the fire burns out very quickly. This can allow large sections of fuel to be missed depending on localised conditions such as topography and moisture, including the effects from retardant runs. This then leaves unburnt fuel for future fire fronts. In the Dunn's road fire, this resulted in the fire burning through the plantation a second time and resulted in the spread during poor conditions on Monday that eventually reached the Green Hills state forest.
- Essentially, once the fire was in the pine plantations, you could not fight it and had to wait until it entered open grassland before it could be effectively fought and controlled. Due to the way the forestry was planted, this was not possible until the fire was over 100km in length.

1.2 Preparation and Planning

NSW Forestry & Private Pine

Upcoming sale of plantations:

- I believe a big influence on the lack of preparation for the fire season was due to the NSW governments plan to sell the forestry plantations. To make the plantations more appealing to buy, the associated costs within the plantation were reduced as much as possible. This included reducing the number of forestry employees and the closure of forestry equipment depots (including the former depot in Batlow). This resulted in a lack of forestry equipment and personnel, particularly in the local area where they were needed.
- The effect of this was twofold, There was less forestry personnel available to survey the area and keep track of current conditions, which in a lighting prone area like Ellerslie was a serious problem, and during the fire there were less personnel available (particularly more experienced personnel) to assist with firefighting activities and consultation. Secondly, there was no local forestry equipment available, this meant that heavy plant such as bulldozers, which are invaluable for fire fighting activities, were not on site and were required to be transported from other areas. This resulted in several hours delay, during which the fire was able to expand and grow.

Ongoing Maintenance:

- A significant issue with fire preparation by forestry was the minimal maintenance of plantations as mentioned previously. The planting concentration of pine trees, no thinning or trimming of low lying branches conducted, no clean-up of dead fuel loads underneath trees and no control of weeds (Blackberries) resulted in heavy fuel loads for the full height of the trees and was a cause of the ease and speed at which the fire escalated.
- Within the Ellerslie area, a particular issue was the additional fuel loads of unburnt residue within the plantation area from the previous land clearing conducted prior to planting. This residue was not burnt or removed during clearing as it should have been as this would have resulted in a delay for planting (at the expense of forestry). Because of this, there were large quantities of dry seasoned hardwood within the plantation that added to the fuel loading and would also burn for longer than initial burn through the pine. Whether this resulted in the second burn through the pine on the Monday is something I do not know. However, the decision to leave such a high fuel load present within the plantation was certainly a poor decision with regards to fire preparation and planning.

Road Access:

- Road and access paths within the plantations were another area that was not well prepared for the fire season. Many of the tracks around the plantations were not suitable for Cat 1 fire tankers; this meant that only Cat 7 and Cat 9 tankers were able to access the fire front which severely diminished the fire fighting capabilities of the crews on site. In many cases the

roads were not even suitable for these smaller vehicles and access was restricted until a bulldozer was on site and available to clear and re-grade the roads.

- These roads should have been maintained and if necessary repaired in the lead up to the fire season to ensure suitable access was available, both for access in the event of a fire, but also to allow monitoring of the site during poor weather conditions for forestry personnel.
- There should also have been better access to the upper ridgeline for Cat 1 tankers, the lack of access for heavier firefighting trucks had a significant impact on the firefighting capabilities of crews on site due to lack of water. As the Cat 1s could not access the upper ridge, refilling of the cat 7 and cat 9s required an hour long round trip, significantly reducing the local firefighting abilities.
- All access roads within the forestry should be accessible, particularly during summer. The fact that a bulldozer was required to clear the roads before they could be used showed a significant lack of preparedness on the forestry's behalf. For starters the trees should not have been planted so close to the roads, as this risks the roads becoming blocked and trapping crews on site as well as not allowing a buffer zone to protect crews that may be forced to use those roads during adverse conditions. The trees should also have had their lower branches trimmed as mentioned previously which would have improved the existing road access.
- The lack of maintenance of these plantations shows a lack of preparedness and may have been another factor influenced by the decision to sell the forestry plantations.

Additional Fuel Loadings:

- While the plantation trees by themselves have always been a significant fire hazard, they could be better managed through minimising additional fuel loadings that would reduce the likelihood of igniting the trees and resulting in a crowning fire front.
- Two of the key factors of fuel loadings are trimming the trees of their lower limbs and blackberry and other weed maintenance as mentioned previously. However a factor that hasn't been mentioned is the reduction of basic grass loading due to stock grazing. Grazing has been irrefutably proven as an effective means of hazard reduction with regards to bushfires. Our house is still standing because we heavily stock the paddocks surrounding it in the lead up to summer specifically for that reason. We had sections of fire that were extinguished in a dead straight line at the limit of our fences due to grazing. Other areas where the fire also extinguished itself are also present in the high country areas where brumby and deer had stripped the areas clean of fuel. Even when not conducted to that extent, any reduction in fuel load due to grazing results in a reduction in fire intensity when it does burn.
- There are two main reasons why grazing is conducted at a minimal level in forestry plantations (private only as state government plantations have legal issues involved). The first is due to poor fencing standards, I have yet to see a stock proof fence on forestry that wasn't erected by the landholder on the other side. This is once again due to the forestry's unwillingness to spend money it doesn't deem necessary. They don't own stock so to their view they don't need fencing. The second is that no sane individual wants to put stock into a pine plantation for fear they would never be able to get them out again. This comes back to the lack of maintenance of forestry plantations means that mustering stock out is almost impossible.

- As a result, the only grazing in forestry is due to feral populations of deer and kangaroos and as a result, the grass loads within plantations can be as out of control as the weeds and when dry provide a perfect location for embers to ignite and spread before igniting the trees themselves.
- The forestry should have effective fences and maintenance procedures to enable and encourage grazing within the plantations, and if they are not willing to do so, they must provide for the land to be mown to reduce fuel loads in the same manner as is required for council land along roads.

Limitations on landholders for land clearing:

- A significant issue with property owners preparing their properties for bush fires is the legal issues and restrictions on land clearing on their own land. Landholders need to have the ability to create an effective fire break at boundaries and dangerous locations without the concern about legal ramifications.
- The restrictions around land clearing need to be reduced when it comes to a matter of fire planning, particularly with regards to boundaries, and more importantly, needs to be **clearly and concisely** stated so that there can be no misinterpretations.
The typical legal ass-covering scripting needs to be removed and a simple and clear definition implemented and made widely known. Essentially, it needs to be written for the farmers who will be following it, not the lawyers who profit from misunderstanding it.
- Ideally a 50m break should be allowed as the minimum for all boundaries (either side of the property boundary) to create 100m wide break, this would provide the potential to halt a crowning fire and allows access for fire crews or aircraft to effectively suppress fire front either directly or through use of retardant. Areas of higher fire danger such as forestry plantations or national parks should be allowed a wider break up to a 100m (in addition to the 100m break that should be on their side).
- Internal fence lines and access tracks should also have a minimum 50m break for firefighting purposes before, during and after the fire front. Part of this is the need for clearance from trees to prevent falling hazards and trees potentially blocking roads.

1.3 Response to bushfires

Forestry response

Monitoring:

- A significant problem with the forestry was that they had no active monitoring of their plantations. As a result there was no early warning while the fire was small. By the time the fire was discovered it was too big to be easily controlled.
- Forestry also didn't take the initial fire seriously enough; there were minimal forestry crews on site and no large fire fighting units at all. Essentially it was left to the RFS to handle.

Response Time:

- There was also a significant delay in the response to the fire, even when it did become serious. An example is how long it took to get bulldozers (invaluable on a fire-front) on site. A local private operator was on site quickly after the fire was identified, and a second one was not far behind, meanwhile the forestry dozer took over 6 hrs before it arrived, primarily due to the travel requirements as there was no local plant available after the closure of the Batlow depot.
- Another issue was the lack of forestry operators available to operate the machinery that was on site. Before the fire entered the Green Hills state forest, there were 2 forestry bulldozers sitting at the perimeter doing absolutely nothing as there were no operators in the area to use them.

Bureaucracy & Red Tape:

- The forestry's approach with regards to red tape and paperwork also hindered progress on the fire front. Everything had to be organised and recorded for the purposes of insurance, costs and claims at a later date and prevented the forestry crews on site from actually doing the job they were there for.
- While much of this would have gone on in the background, there was one clear example heard over the radio during the second front on the following Saturday. A forestry bulldozer on firefighting activities (at an active fire front - within 1km) was creating a firebreak around a house when it was ordered by the forestry to cease operations because the paperwork hadn't been completed yet. Rather than let him continue operating while they did the paperwork in the background (without distracting the operator – or pissing off every single local who could hear). He was instead forced to sit still for several minutes until the paperwork had been filed and he was given the all clear to continue.
- The forestry was also far too focused on protecting their own assets above all else. They were not willing to make any sacrifices, and were constantly trying to stop the front where it was, rather than intentionally sacrificing a small percentage to save the majority. The aim was to save everything and as a result they essentially lost it all. Aircraft were being used bombing the fire front directly in an attempt to prevent losses where the same quantity of water could have achieved far greater benefits if used on open grassland or even native

bushland further in front of the fire or along the flanks. The close spacing of the trees would prevent water from reaching to the lower levels and would not prevent a fire from travelling underneath the covered area before crowning again on the other side. Much of the bombing conducted had a minimal effect on the overall fire whereas using retardant runs in front of the fire would allow more time for multiple runs to create a larger, more effective barrier, particularly if back burning was then conducted on the fire side of the retardant.

RFS

Aerial Management:

- In my opinion, the RFS had too much focus on aerial support for fire control and poor management and even misuse of the available aerial support. I believe this is mostly for safety reasons, trying to reduce the direct contact of fire crews where possible, however by itself fire bombing is not guaranteed to control the fire and as a limited and time sensitive resource is better used where it will be most effective, which isn't always the main front. In many cases, controlling the fire on the flanks is more useful, especially in rugged, hard to access areas. As the flanks are not burning with the wind behind it, this has the potential to be far more effective than bombing the front directly and during wind changes; the new fire front is smaller than if left uncontrolled.

Resources:

- One issue the RFS had was poor allocation of available resources, with the number of units on the ground; there was often poor distribution within effective firefighting roles. For example over allocation of fire fighting units to property protection instead of fire control activities on the fire front.
- One instance at Yaven Vale had over 12 fire tankers at a single dwelling rather than actively engaged in either the fire front or flanks. This was then compounded after the front passed through this area as these trucks were then isolated behind the fire front and under orders from Firecom to stay in place due to potential danger until the front had passed completely. As a result, numerous houses further on were left completely unprotected while 12 tankers were stuck doing the job that 1 or 2 could be doing. This is further compounded after the initial front when road access is restricted as the available trucks are then not able to effectively move to new areas.

Chain of Command:

- The RFS also tries to maintain too much control over local units, rather than letting crews on ground make own decisions. The crews on the ground are the ones with the most accurate knowledge of their area, the potential dangers and the problems and opportunities available whereas Firecom only has verbal reports of the conditions (often delayed) and as the legally responsible entity for any decisions it makes, will typically err on the side of caution. An example being the aforementioned tanker group at Yaven Vale. Once the immediate front had passed, the roads were essentially safe to travel except for falling trees (not an issue

heading northbound), however Firecom would not let the tankers move until the front was essentially out.

- While I agree that firecom has its purpose in compiling and distributing information to the local captains and crews on site, I believe that local crews should have the ability to make their own decisions at their discretion without interference. Essentially, reduce the role of Firecom with regards to on ground control and more towards coordination.

NSW Police

- While not involved in firefighting, the police do have a role with regards to their response to the bushfires. One issue I have is the lack of local knowledge (common sense) with regards to vehicle travel. I understand the purpose of implementing road blocks around fires with regards to keeping unnecessary vehicles out of the area and out of the road of emergency personnel. However they need to exercise their own judgement and reason with regards to blocking vehicle travel, rather than a blanket ban on all vehicles.
- For one thing, nearly all traffic going back in to a fire-ground in a rural area is likely a local and well aware of the danger. If they are not, simply pulling them over and informing them of the danger before letting them make their own decision about whether to return seems sufficient involvement. And in my opinion, if the police are still there, the fire front isn't close enough to warrant anything more. Not letting them through after this is simply ridiculous.
- There was an instance at the Dunns road fire where a Ute (equipped with a fire fighting unit) was prevented from returning to the driver's home property (less than 1km away) by a highway patrol checkpoint. Despite being a local; well aware of the fire (likely more informed than the police as they were in contact with fire crews on site via radio), and carrying firefighting gear, they were not allowed to pass and the issue wasn't resolved until a local police unit arrived on site.

1.4 Any other matters

Road Access

- A major issue with bush fire preparedness is with regards to council road reserves. Specifically that they are far too overgrown with trees. During a fire, these roads become danger zones rather than safe areas and remain dangerous long after the fires have passed due to the risks of falling trees and limbs.
- This is an issue that is well known, it has been noted in several inquiries into fires that I am aware of and recommendations have repeatedly been made to clear and maintain these corridors to reduce the dangers to crews travelling on them, and ensure road access is not cut off after a fire, thus allowing rapid and safe redeployment of fire crews in the follow up period. However as of yet, these recommendations have never been acted on due to the environmentalists who happily label every available shrub as a “significant roadside environment”, never mind that it’s all regrowth less than 20 years old.
- As a result of these issues, the road access for fire tankers is still heavily restricted during a fire. For example, during the Dunn’s road fire, crews from the Oberne brigade attempting to travel from Yaven creek through to Lower Bago and Taradale were forced to detour via Tarcutta as the direct road through was blocked due to fallen trees. This resulted in a trip over 100km, 10 times the direct route.
- Another more serious example was the deaths that occurred involving the Horsley Park crew near the Sydney fires who were killed when a tree fell onto the road. Had these clearing recommendations been undertaken, this could have been prevented.

Pine and Forestry management

- The primary cause and issue with the Dunn’s road fire however, is the behaviour and attitude of the pine plantation management. Has they been held to same standards as any other landholder, the fire would potentially never have been started, and would certainly have been more effectively controlled.
- They must be held accountable for maintaining and monitoring their property, including monitoring of land during bad conditions and during/after storms where lightning is a potential problem.

Control Measures:

- As a high fire risk environment (of their own creation), they must ensure they have fire effective management procedures in place to protect nearby landholders as well as their own plantations.
- This should include effective planting strategies, including reducing planting concentrations, including firebreaks around all boundaries, public roads, internal roads, power lines, any permanent infrastructure and at regular intervals so as to break up the continuous mass of plantations to reduce spread and allow containment.
- These breaks should be a minimum of 100m clear space, regularly maintained and free of weeds/large undergrowth including blackberries and must be either grazed or mown during summer to reduce fuel load.

- A hard boundary such as a gravel road or access tracks must be included and maintained within this perimeter as well and maintained for firefighting purposes, clearing undergrowth and lowering fuel loads and as a readily available point to back-burn from.
- Sufficient permanent fire trails suitable for Cat 1 fire tankers must also be created and maintained. This must include access to all ridgelines and must have multiple routes available to ensure access and safety for crews using them.
- Plantations must be actively maintain their land, including trimming trees, spraying weeds and removing build-up of deadfall under trees (in native forests this can be done through hazard reduction burning in cooler months, as pine trees are sensitive to fires, alternative measures may need be used to prevent cumulative build up including mechanical removal if necessary)
- All plantations must have a fire management plan prepared and reviewed by neighbouring landholders and the RFS prior to planting being allowed, in the same manner that a commercial development would require. This must include evidence that the above measures have been implemented and the strategies to be implemented in the event that a fire does occur.

These measures need to be implemented (as a **legal requirement**, not a recommendation) and must be enforced to ensure compliance.

These must be implemented on all new plantations and all existing plantations must be modified to meet the same requirements, **NO EXCEPTIONS**, fire doesn't discriminate between a new plantation and an old one.

The primary reason these measures are not already a legal requirement is due to the cost of implementation. If the pine industry is really as profitable as they claim, then cost should not be a justification as these measures provide as much benefit in protecting their own assets from fires as it does for those around them.

And if the industry is unwilling to implement these measures, give the land back to those who will.