

Reducing fire risk to people and homes adjoining eucalypt forests – another approach

Background –

This paper aims at providing another method of fire hazard reduction in eucalypt forest and woodland to assist in protecting people, buildings and other important infrastructure during Australia's increasingly volatile summers. There have been 674 civilian fatalities recorded in Australian bushfire between 1901-2011 and of these around 78% have occurred within 30m of a forest. The method described below seeks primarily to reduce the hazard in a zone where the forest meets homes, whilst maintaining the key environmental assets present.

The method described is not new or complex, in fact it draws upon past knowledge from historic European records, traditional indigenous land management and (I trust) common sense ideas.

Simply the open canopy method (OCM) recommends returning the forest edge hazard (FEH) zone to an open woodland with a relatively short native ground layer which can be more simply managed regularly using cool burn or mechanical brush slashing methods and hence less volatile to fire. The identification and protection of large old trees or future emergent trees (in largely regrowth forest) and valuable fire sensitive species would be a priority.

There are many excellent scientific papers on these matters with topical summaries provided at <https://vnpa.org.au/fire-management-in-victoria/> under the heading of “what role does science play in improving fire management” for those seeking further information.

Current fuel management controls –

- Private land

The native vegetation planning controls pertaining to fire hazard management in Victoria and NSW are broadly similar and are simply summarized as the 10/30 and 10/50 rules – refer to links below.

In Victoria the 10/50 rule means that landholders within bushfire management overlay areas may remove any vegetation on their property, including trees, within 10 m of a house and any vegetation except for trees within 50 m for bushfire protection. The 10/30 rule is statewide except for 21 metropolitan municipalities. *Note these rules apply to clearing around dwellings built prior to or approved by 10 September 2011.*

In NSW if you live in an area closer to the bush the 10/50 vegetation clearing scheme clear trees on their property within 10 m of a home or farm shed, and clear the underlying vegetation such as shrubs (but not trees) within 50 m of a home without seeking approval. *Note a tree is defined as any native plant with a girth > 30cm at 1.3m height on the trunk.*

Obviously, there is more specific detail and caveats regarding these rules but (hopefully) for the purposes of this paper the information above is sufficient.

Burning to control native vegetation fuels may occur on private land at the discretion of the local fire authority outside of fire danger declared periods and with permits from the local fire authority during fire declared period.

Victoria https://www.planning.vic.gov.au/policy-and-strategy/bushfire-protection/vegetation-management-for-bushfire-protection#A_10_30_and_10_50_rules-101863-1

NSW <https://www.rfs.nsw.gov.au/plan-and-prepare/1050-vegetation-clearing>

- Public land

Hazard reduction burning (HRB) which is mostly carried out in autumn, is currently the main approach used by state government authorities to control fire hazard on public lands (e.g. National Parks and reserves, state forests etc.). This paper only seeks to address FEH zones adjoining habitation and does not provide comment on the general efficacy of this approach.

Reliance on the HRB method is problematic in the FEH zone because –

- it does **not** have a significant impact on tree (overstorey) canopies near homes, but rather reduces ground and lower stratum vegetation
- the fires are often volatile and may threaten the asset or cause significant disruption
- fuel levels often return to hazardous levels within 2+ years
- the window for suitable burning conditions has narrowed significantly in most years now
- is resource hungry

The threat –

The main threat to life, houses and other infrastructure is caused by crown fires, where given severe fire weather conditions, they become uncontrollable, unpredictable and often lead to significant ember showers. **Crown fires occur in the tree canopy where most canopy fuels are consumed and this factor alone renders HRB less suitable for protection.**

An alternative –

Given that crown fires burn in the canopy any hazard control method in the FEH zone must address tree crown structure (fuel availability) and connectivity (access to new canopy and undergrowth fuel).

The OCM recommended means identifying a FEH zone adjoining or near the assets to be protected and removing most of the canopy trees, leaving only the best/largest trees to greatly reduce canopy density and connectivity, using ecological thinning methods (similar to the forestry practice called thinning from below). The scattered or open woodland canopy assists in reducing the incredible radiant heat prevailing in catastrophic crown fires within the vicinity of houses and enables better suppression potential during major fire events.

The advantages of the OCM of fuel management include –

- reduces overall fire intensity adjoining key assets
- maintains key environmental values e.g. large old trees, fire sensitive species, maintains intact (albeit) lower native vegetation in the FEH
- once completed, enables a range of options to maintain the ground layer in the FEH e.g. cultural/cool season burning, brush mowing/slashing etc.
- increases sense of well-being of landholders and bush communities
- although the initial tree removal is labour intensive the ongoing maintenance is relatively inexpensive and can be undertaken annually
- provides opportunities for local indigenous skills development and employment
- can be potentially be applied across Australia wherever eucalypt forests occur
- less smoke and stress overall produced from burning operations
- the tree removal and subsequent undergrowth management can be undertaken throughout most of the year

Notes –

1. *The width of the zone treated (30m-500m+), the number and type of trees retained and the management of the understorey will be informed by science, local experience and the environs.*
2. *There are several examples of excellent FEH management being undertaken by indigenous peoples e.g. Quandamooka Jarlo (Fire) Project which can be considered and built upon*
3. *Large old trees (especially eucalypts) suppress the regeneration of young eucalypts and their loss, mainly through historic removal or ring-barking, along with the cessation of indigenous burning are the key reasons why we have dense regrowth forests. This makes large old tree protection and management to increase their numbers an important management goal for not only habitat but also fire fuel management purposes*
4. *OCM does not remove the risk of ember attack on the adjoining property(s) as many of the embers originate outside the FEH zone.*

Further investigation –

Issues related to the OCM for FEH need further investigation and trialling including –

- developing best practice FEH widths across various forest types and geographies
- the ideal OCM tree retention numbers recommended in various forest types and topographies
- how to better integrate the private-public (government) land interface when determining the best and most practical FEH zones and undertaking OCM actions
- consider its applicability in other high bushfire risk areas e.g. key forest roads, fire break trails etc.
- best tree retention and removal methods
- best management of different groundlayer vegetation

- setting up broadscale trials and monitoring
- potential use of local (including indigenous) expertise to undertake the works (employment opportunities) e.g. tree thinning

An example where OCM is applied –

The heavily timbered hills around Albury which border urban development have an FMZ of 40 m established where only scattered larger trees remain and the ground layer is slashed annually to maintain low fuel levels. The FMZ is maintained by the Albury City Council.

Discussion –

This paper does not deal with the problematic issues of jurisdictional control of land management e.g. between states and their agencies and land tenures, or possible changes to legislation to adequately implement OCM because that would require significant political and community support, which does not exist presently. There are obviously a lot of details and assumptions behind the use and value of OCM relating to its efficacy and fit for purpose in different situations.

This paper is the start of the conversation and its acceptance as a legitimate fire hazard management method will require the input of others to achieve wide spread community support. Depending on feedback I may make a submission of a later version of this paper to the various commissions and enquiries occurring in response to this summers' devastating fires.

Key points

- 78% of deaths from bushfire between 1901-2011 occurred within 30 m of a forest edge
- OCM involves developing a lower fuel environment zone at forest edges adjoining building assets by establishing an open woodland through judicious tree and shrub removal
- Once OCM zone is established the lower level vegetation is maintained through regular cool burning and or mechanical slashing
- The width of FEH treated using OCM and the number of large trees retained will be determined locally by forest type and topography