



POLICY NO. 3/01 **Bushfire Smoke Management**

Rationale

Fire fighting authorities and land managers, have statutory obligations to prevent and control wildfires. Meeting these obligations will commonly require the use of controlled fire. One unavoidable and natural result of all vegetation fires is the production of smoke. Smoke produced by bushfires and controlled fires can adversely affect air quality and visibility creating public health and safety risks. Accordingly, fire and land managers also have statutory responsibilities to effectively manage smoke. Fire and land managers face a complex and difficult task in balancing their competing fire management and air quality management obligations and objectives. This policy and guideline aims to provide guidance to fire and land managers, both public and private, in optimising this balance.

The NSW Government launched an 'Action for Air' strategy in 1998 which among other things, places an emphasis on improved management of pollution sources such as outdoor burning. This Policy is consistent with Actions 6.2 and 6.3 of that strategy (i.e. '*develop smoke management guidelines*' for open burning and '*educate the community on open burning restrictions*').

The Australasian Fire Authorities Council (AFAC) has also developed a position on '*Managing Smoke during Prescribed Burning*'. This policy, while consistent with the AFAC policy position, extends its scope to bushfire management activities generally.

Background

Managers of public and private land in NSW have statutory obligations under the *Rural Fires Act* 1997 to prevent the occurrence of bushfires on, and minimise the danger of the spread of a bushfire on or from the land they manage. It is widely accepted that fuel management is an important and effective strategy employed by both private and public land managers in meeting these statutory obligations. In most of the fire adapted forest, heath and woodland areas in NSW that are not intensively grazed, the most practical and environmentally acceptable means of fuel reduction is by prescribed burning. In addition to fuel (hazard) reduction for life and property protection, controlled fire is used for a range of other purposes including pasture and crop management, ecological management, and habitat protection.

Smoke from bushfires can cause detrimental health and safety impacts on firefighters, and the community and can also adversely impact fire control strategies. Public health and safety risks include aggravation of respiratory conditions in some people, causing eye irritations, and increasing the risk of road and air accidents. In major urban areas such as Sydney, Wollongong, Canberra, Gosford/Wyong and Newcastle, smoke may combine with large amounts of vehicular and industrial emissions or fog and contribute to significant brown haze and/or smog events.

Bushfire smoke can also have significant economic and social impacts, for example diminishing the quality of tourist destinations, and temporarily reducing the quality of life for communities in affected areas.

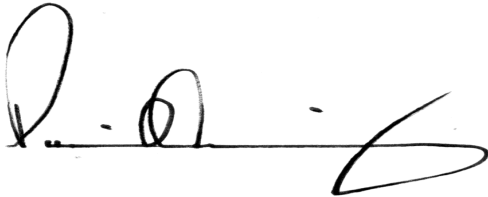
In NSW the highest smoke concentrations and most widespread and prolonged smoke incidents result from wildfires. This, combined with the fact that in NSW the area burnt by wildfire each year is much larger than the area burnt by controlled fires, highlights that the greatest smoke related risks are associated with wildfires. Notwithstanding this there are lesser risks associated with controlled fire that require management.

Effective smoke management involves understanding where smoke sensitive areas are located and having a sound knowledge of fire behaviour and meteorological processes. Fire fighting authorities and land managers can use this knowledge to develop and implement appropriate operational strategies and techniques to not only reduce the risk of bushfire damage, but also minimise bushfire smoke impacts.

Policy

1. Bush Fire Coordinating Committee member agencies and organisations will work cooperatively to improve knowledge and understanding of the impacts of bushfire smoke on firefighters, the environment and community.
2. Bush fire management plans will identify local smoke management issues and smoke sensitive areas/assets and detail strategies to minimise the risk of adverse impacts.
3. To the extent that firefighter and public safety from fire are not compromised, wildfire control and prescribed burning operations will be planned and conducted so as to minimise the risk of impacts of smoke on firefighters and smoke sensitive areas.
4. NSW fire fighting authorities and land managers will achieve optimal smoke management outcomes through the application of the Bush Fire Coordinating Committee adopted *Guidelines for Smoke Management*.

5. Bush fire risk management plan's monitoring requirements will include smoke management performance measures.
6. These *Smoke Management Policies* and the *Guidelines for Smoke Management* will be subject to regular review and continuous improvement.

A handwritten signature in black ink, appearing to read 'P. Koperberg', written over a horizontal line.

Phil Koperberg, AO, AFSM, BEM
Chairman
22 October 2001

Guidelines for Bushfire Smoke Management

These Guidelines and associated Operational Techniques have been developed by the NSW Bush Fire Coordinating Committee for use by bush fire management committees, land managers and fire fighting authorities to minimise the adverse affects of bushfire smoke in smoke sensitive areas and communities.

Planning

1. Smoke sensitive areas (e.g. residential areas, schools, scenic areas, retirement villages and hospitals etc) will be identified in bush fire risk management plans.
2. Bush fire risk management plans will identify strategies to minimise the risk of adverse smoke impacts in smoke sensitive areas.
3. Alternative fuel management and hazard/risk management strategies (e.g. slashing, selective shrub removal, construction of radiation barriers, chipping, mulching and composting etc) will be considered where a high risk of adverse smoke impacts is likely.
4. Appropriate prescriptions for fuel moisture content, wind speed and direction, atmospheric stability will be included within operational burn plans, so to reduce the risk of bushfire smoke impacts on smoke sensitive areas.

Liaison

5. Fire fighting authorities and land managers will liaise with the Environment Protection Authority (EPA) and other relevant authorities, when developing policies and programs (e.g. training packages, research projects, monitoring systems etc) with the aim achieving an optimal balance between bushfire management and air quality objectives.
6. NSW Rural Fire Service (State Operations) will provide a summary of planned burns/wildfires by LGA when requested by the EPA.
7. Fire fighting authorities will make every practical effort to contain and suppress bushfires burning on "No-Burn Days". In appropriate circumstances, aggressive mop-up techniques as outlined in the Operational Techniques below, will be implemented to reduce impacts of smouldering fuel on air quality.
8. Fire fighting authorities will only seek "No Burn" exemptions in exceptional circumstances.

Training and Education

9. Coverage of smoke management principles, policies and procedures will be incorporated within fire management training curriculum adopted by fire fighting authorities.
10. Bush Fire Coordinating Committee member agencies and organisations will provide advice regarding smoke management to the EPA for incorporation in appropriate air quality educational materials the EPA may develop and review.

Permits and Notices

11. In issuing consents, permits, notices, orders or other approvals to burn, consent/permit-issuing authorities will consider the risk of adverse smoke impacts on sensitive areas and will condition the permit/notice so as to be consistent with the strategies identified in the local Bush Fire Risk Management Plan.
12. When issuing consents, permits, notices, orders or other approvals to burn, consent/permit issuing authorities will make available appropriate educative materials relevant to the good management of bushfire smoke impacts and of smoke management guidelines.

Management of Bushfire Suppression Operations

13. Incident Action Planning will give due consideration to the smoke management aspects of public safety including:
 - Management of special areas at high risk of adverse health impacts from high level smoke exposure (e.g. aged care facilities, hospitals, schools etc)
 - Public safety management and service disruption in smoke affected transport corridors (e.g. airports, freeways, major roads, railways etc)
 - Safety and operational implications of smoke on other regional fire operations, particularly where aircraft are involved
14. Smoke management will be included in the list of topics that are to be routinely covered during fire debriefs.

Management of Prescribed Burning Operations

Timing

15. Wherever safe and practical to do, burns will be programmed so as to avoid periods where:
 - The co-occurrence of prolonged poor dispersion conditions and the risk of fog, brown haze or photo-chemical smog events is high;
 - The risk of bushfire smoke adversely impacting on significant community event is high (e.g. certain public holidays, weekends, school holiday periods and during special events within sensitive areas such as the holding of major sporting or community events); and
 - Smoke management prescriptions are not likely to be met.
16. The timing of weather system passages that provide for good smoke dispersal shall be used to advantage when conducting large scale burning operations. Fire control and safety requirements should not be compromised in accommodating smoke dispersal objectives.

Prescriptions

17. Burning prescriptions will detail wind direction parameters when burning in or near identified smoke sensitive areas
18. To avoid excessive smoke generation, burning prescriptions will detail desirable fuel moisture content parameters where these can be controlled (e.g. pile burning).

Operational Techniques

- Burning crews will be briefed on appropriate smoke impact mitigation strategies and tactics and the location of any smoke sensitive areas.
- In smoke sensitive areas, smoke risks and management strategies will be incorporated in neighbour notification advice.
- Where safe to do so, lighting techniques and patterns will be used that reduce the smouldering phase of combustion and minimise burning of material during times of the day where atmospheric dispersion is poor.
- When prescribed burning, fire fighting authorities will where possible, avoid the burning of noxious smoke producing debris (e.g. tyres, dumped rubbish etc).
- Rubbish piles and backyard clippings that have accumulated on the urban-bush land fringe should where practicable be removed before burning commences.
- Where practical and safe to do so (e.g. small scale burns along road edges or property boundaries, and pile burns) aggressive mop-up procedures (e.g. maximum use of water and the breaking up or dousing of large fuel particles such as logs and stags) will be applied so as to minimise the smouldering phase of combustion at times of poor atmospheric dispersion.
- The use of backing fires (i.e. fires burning downslope and/or against the prevailing wind direction) is encouraged as an operational technique to maximise combustion and minimise smoke emissions.
- When undertaking burning operations, burning crews should whenever possible, take advantage of weather conditions which optimise smoke dispersion without compromising other fire management objectives.