

An IBG paper on:

Planned Burning in NSW

April 2025

Summary

Planned burning (PB) for risk management in NSW is a major component of bushfire mitigation activity, and yet lacks strategic policy guidance. PB should be considered in conjunction with all the other interconnected bushfire mitigation and suppression activities, however the necessary integration is incomplete. The PB program should be reviewed, with the first steps being analysis of past effectiveness (regionally across the state) and the development (from the evidence) of risk-based guiding principles and objectives within a NSW Bushfire Management and Suppression Strategy. The over-riding objective is to achieve the greatest possible risk reduction within available resources, but PB can only be effective when supporting, and supported by, other components of a comprehensive bushfire management program. Risk management should be honestly explained to the public and outcomes need to be measured against objectives and publicly reported.

Principles for a PB program

1. PB should be part of an integrated and coordinated multi-tenure program to manage bushfire risk and increase community resilience.
2. PB should be risk-based to maximise risk reduction within available resources and opportunities, i.e. optimised according to risk assessment and evidence.
3. PB should be focused mainly on the bushland interface (to reduce bushfire impacts on human assets) and specific strategic zones (to provide or reinforce a bushfire advantage). (NB. this excludes 'ecological' burning which may be done by land management agencies outside BFRMP adopted programs).
4. The PB program and the completed works should be transparent and rigorously measured and reported.
5. The efficacy of PB should be analysed and reported on an ongoing basis, both after wildfire events and in the absence thereof.

Suggestions for an evidence-based and more effective PB program

1. **Integrated risk management:** Re-think the entire bushfire mitigation and suppression paradigm, applying first principles and a risk-based approach, to devise integrated and evidence-based policy and strategy (under a NSW Bushfire Management and Suppression Strategy) with an appropriate role and objectives for PB in workloads and budgets.
2. **Targets:** A more rational approach than the current system would see districts assessed centrally and statewide on the basis of their evidence-based risk exposure (see Suggestion 1 above), then given guidance on the extent of *achievable* PB and other works to include in

their local Bush Fire Risk Management Plans (BFRMPs). A rational system could then generate more rigorous and understandable measures of risk reduction (noting the inappropriateness of the term 'targets').

3. **Costs and resources:** Apply a more rational approach to risk reduction planning, as above under Targets, to better manage costs and available resources.
4. **Climate change:** Apply a more rational approach to risk reduction planning, as per Targets, to manage changes in the risk environment due to climate change.
5. **Risk assessment methodology:** Convene an expert panel of bushfire researchers and practitioners to resolve how the most rigorous risk management system can be developed.
6. **Public perceptions and the facts:** Public messaging from government about PB needs to be codified and consistent, and be based on the facts around the purpose, extent, benefits, limitations and risks of PB.
7. **A learning culture: Monitoring, reporting & analysis:** PBs should be part of a comprehensive learning culture. They should be assessed and reported on the basis of not just area *planned* to burn, but the areas *actually* burnt at a range of severities. Then ongoing analysis should be undertaken of subsequent usefulness. PB problems and successes should be subject to routine AARs to inform future operations.
8. **Transparency:** Information on mitigation/PB works planned, achieved and effectiveness should be publicly and readily available via maps and other means both locally (per LGA) and statewide.

Preamble

About prescribed/planned burning

The NSW Rural Fire Service (RFS) and the Australasian Fire Authorities Council (AFAC) define 'prescribed burning' as:

The controlled application of fire under specified environmental conditions to a predetermined area and at the time, intensity, and rate of spread required to attain planned resource management objectives.¹

IBG prefers the term 'planned burning'. Planned burning (PB) is most often applied to reduce bushland fuels, for the purpose of moderating the behaviour of any subsequent fire, reducing impacts and making suppression easier, i.e. to manage bushfire risk. PB can also be applied for ecological, agricultural or silvicultural objectives.

PB is a complex issue on many levels. Understanding of the benefits, costs, impacts and risks of PB varies widely across the community and within the bushfire industry. The extent and efficacy of PB is contested for a range of reasons. Discussion of PB can be highly political and motivated by a range of motivations, not all directly related to fire management.

This paper attempts to formulate suggestions on how PB in NSW can be made more understandable, manageable and effective. It has been prepared with the recognition that IBG does not have a complete understanding of the current PB system.

Strategic context

Bushfire management in NSW is largely a collection of activities rather than a coherent program underpinned by evidence, analysis, strategy and policy. At the detail level, many useful administrative and operational policies and guidelines are in place. The Bush Fire Coordinating Committee's Policy Register² shows particular strength in 'nuts and bolts' areas such as risk planning and operational matters (e.g. fire trails). However these sit within a vacuum of higher level policy. NSW does not have an over-arching bushfire mitigation and suppression strategy to guide objectives, priorities and operations. Such a strategy should be founded on analysis of statewide risks and what mitigation activities are effective. It would then place PB into a comprehensive program for risk management encompassing all connected activities. PB can only be effective when supporting, and supported by, other bushfire management activities.

In relation to PB, the absence of strategy is particularly striking. There is no available policy on bushfire mitigation or PB, however a range of subsidiary 'practice' documents exist. PB needs to be prioritised and implemented within a broader, evidence-based strategy for bushfire management and mitigation. Without clear objectives (as opposed to targets), and evidence of effectiveness, improvements to the current program are difficult to formulate. It is disturbing that a detailed analysis of the effectiveness of PB carried out on the years preceding the 2019-2020 wildfires has not been done, to inform future priorities and programs. Those very extensive fires produced a 'grand experiment' that has still not been adequately examined and utilised (notwithstanding the limited scoping study done by University of Wollongong³, which was aimed at developing methodology and

¹ NSW RFS Glossary: <https://www.rfs.nsw.gov.au/about-us/nsw-rfs-glossary>, AFAC Bushfire Glossary (2012)

² BFCC Policy Register: https://www.rfs.nsw.gov.au/__data/assets/pdf_file/0004/9526/Bush-Fire-Coordinating-Committee-BFCC-Policy-Register.PDF

³ 'Analysis and characterisation of bushfire-meets-prescribed burn events from the 2019-20 fire season', University of Wollongong et. al, 2022: <https://www.naturalhazards.com.au/research/research-projects/analysis-and-characterisation-bushfire-meets-prescribed-burn-black>

looked at a small number of fires in relation to PB effects on fire severity, and not whether PBs specifically aided suppression or asset protection).

PB also suffers from a lack of transparency and reporting. The system, processes and outcomes are largely opaque to the public, and reporting is limited with no assessment of risk reduction. Outcomes need to be measured against objectives and publicly reported.

Planned burning in NSW – current situation

In NSW PB is practice rather than formal policy. The PB program is a major component of bushfire management, across all land tenures but especially on public lands. While the media often report on PB and refer to ‘targets’⁴, this term is somewhat misleading, as are the implications of not achieving the ‘targets’. The RFS has helpfully provided information to IBG on how PB programs are planned, implemented and reported on, however IBG is not in a position to repeat all this information.

Below is a summary of PB in NSW based on publicly available information:

- PB in NSW is managed on a multi-agency basis, guided by the policies of the NSW Bush Fire Coordinating Committee (BFCC).
- The legal responsibility to undertake hazard reduction rests with the landowner or land manager under Section 63 of the Rural Fires Act. The RFS provides coordination and support, particularly where prescribed burning is required.
- The RFS can also use its regulatory powers under Section 63(2) to ensure compliance with Bush Fire Risk Management Plan (BFRMP) actions.
- Under BFCC policy⁵, Bush Fire Management Committees (BFMCs) are responsible for planning and prioritising annual hazard reduction activities, including both mechanical works and prescribed burns, in line with their local Bush Fire Risk Management Plan (BFRMP). These activities are generally undertaken by the relevant land managers or agencies.
- No specific hazard reduction target is set by the State, the RFS, or the BFCC. Rather, what is often referred to as a “target” is in fact the cumulative total of the activities identified by individual BFMCs as part of their annual works program.
- However the National Parks and Wildlife Service (NPWS) operate under an annual target of approximately 135,000 hectares, set by its Minister.
- Hazard reduction works including PBs are recorded by number of activities, hectares treated and properties protected.

The RFS has also provided data on hazard reduction (mechanical and burning) completed across NSW for years from 2020-21 to 2024-25. The situation is complex, but these data show that in recent years the hectare ‘targets’ have not been reached, with achievement rates varying between about 20% and about 50% - although the carrying-forward of an unknown quantum of previous years’ shortfall confuses the picture. The ‘properties protected’ targets (noting that the methodology for this metric is opaque) are more fully reached, at around 80-90% achieved. The discrepancy is interesting, and may reflect a dominance of broad area landscape PBs, not adjacent to properties, in the hectare totals.

It should be noted that the methodology and language around ‘targets’ is misleading. It is conceded that the hectare numbers are not really ‘targets’, but nevertheless are frequently referred to as such by official sources quoted in public media. The hectare ‘targets’ are not properly based on risk. The ‘properties’ methodology is not only dubious but numerically misleading in that it gives a false

⁴ E.g. ‘RFS falls short of target for hazard reduction burns ahead of bushfire season’, ABC News online 21 Sept 2024: <https://www.abc.net.au/news/2024-09-21/bushfire-preparation-hazard-reduction-target-rural-fire-service/104364368>

⁵ [BFCC Policy No. 01/2023 – Bush Fire Risk Management](#)

impression of the mitigation achieved and the residual risk. The term ‘protected’ represents an absolute when the reality is more nuanced (in time, space and probability).

Variation in year-to-year levels of ‘success’ may be due largely to variations in weather and the number of PB-suitable days, however the availability of resources and the complexity of many PBs may be other factors. Anecdotally, it has been difficult to harness volunteers on weekdays, which represent a majority (i.e. 5/7) of suitable burn days. It would be useful to understand the impact of these various factors on completion data, but is not known if this analysis has been done.

Another important factor is the level of ‘ambition’ across the range of BFMCS in terms of the scope of PB put into each BFRMP. It would be helpful to rationalise this factor if a more rigorous PB system is to be created.

Role of IBG

As a group which advocates for improved bushfire management in NSW, IBG has not previously promoted a detailed position on PB. Rather IBG has expressed basic and well-established principles:

- PB is ‘not a panacea’, but a useful technique as one part of a comprehensive program to manage the risk, suppression and impacts of bushfires;
- PB should be evidence-based;
- The benefit of PB in reducing fire behaviour diminishes over time and with higher intensities of any subsequent wildfire;
- PB should be focused where it is most useful, generally on the bushland interface adjoining human assets at risk;
- Hectare targets for PB are undesirable because they are inherently arbitrary/political, are not risk-based and do not equate to actual risk reduction, and may encourage larger burns of limited value in areas that are remote from assets (‘burning for the sake of burning’).

Suggested principles

1. PB should be part of an integrated and coordinated multi-tenure program to manage bushfire risk and increase community resilience.
2. PB should be risk-based to maximise risk reduction within available resources and opportunities, i.e. optimised according to risk assessment and evidence.
3. PB should be focused mainly on the bushland interface (to reduce bushfire impacts on human assets) and specific strategic zones (to provide or reinforce a bushfire advantage). (NB. this excludes ‘ecological’ burning which may be done by land management agencies outside BFRMP adopted programs).
4. The PB program and the completed works should be transparent and rigorously measured and reported.
5. The efficacy of PB should be analysed and reported on an ongoing basis, both after wildfire events and in the absence thereof.

Issues that need to be addressed & suggestions for a better system

1. Integrated risk management

Bushfire management needs to be holistic and multi-pronged, integrating mitigation, preparation, response, analysis, reporting and other components. Managing the ignition, behaviour and spread of wildfire is only one side of the coin. The other side is managing how fire impacts on assets. Currently, the IBG view is that mitigation and preparation programs over-emphasise fuel management compared to equally important aspects such as property preparation. PB can be an important tool

for managing both fire and the impact of fire, along with other fuel management methods such as slashing, grazing, APZs etc. Hardening of assets is just as critical yet does not get equal attention. This seems to be partly due to the public and political focus given to the more tangible PB compared to other less prominent programs.

PB needs to be integrated with other programs. For instance, PB can assist bushfire suppression (for a limited number of years) but incident management plans need to actually make sure this happens (IBG is anecdotally aware of many instances in Black Summer when recently burnt areas were not used effectively). PB adjacent to assets will be more effective when those assets have been well prepared. Perimeter access and APZs around housing, where they do not exist, may be more useful than PB. It can be argued that the current prioritisation of PB may reward poor asset management.

Suggestion 1: Re-think the entire bushfire mitigation and suppression paradigm, applying first principles and a risk-based approach, to devise integrated and evidence-based policy and strategy (under a NSW Bushfire Management and Suppression Strategy) with an appropriate role and objectives for PB in workloads and budgets.

2. Targets

PB ‘targets’ for NSW are currently created by adding together all the PBs proposed in all the annual works programs of district-based BFRMPs. Although the methodology is somewhat consistent across the state, in that each district applies the same risk planning approach (especially under the new model), there seems to be no direct guidance on the level of PB ‘ambition’ that districts should aim for in terms of what is reasonable and achievable in different districts. Then an unknown proportion of unachieved PB’s are added to the next year’s ‘target’. Under this model the accumulated ‘target’ each year seems to have little rational basis, while also becoming an inappropriate yardstick to measure ‘success’.

The inconsistency of ambition also creates a risk that districts could ‘bid up’ or maximise their claim to compete for shared resources such as funding, aircraft and out-of-area support. Further inconsistency can arise from the variation in local capacity to achieve PB and other programs. While no doubt BFRMPs are cognisant of what is achievable each year, approaches will vary.

Suggestion 2: A more rational approach would see districts assessed centrally and statewide on the basis of their evidence-based risk exposure (see Suggestion 1 above), then given guidance on the extent of *achievable* PB and other works to include in their BFRMPs. A rational system could then generate more rigorous and understandable measures of risk reduction (noting the inappropriateness of the term ‘targets’).

3. Costs and resources

PB is expensive to implement, especially close to assets where burns are often complex and hard to arrange, even if small in area. Once ‘targets’ are applied, there is an incentive to rely on broad area burns to achieve the hectares, even when smaller burns close to assets are generally more effective (per hectare) for risk reduction. The state’s mitigation program, including PB, must be achieved within available funding and it seems unlikely that mitigation funding will increase in the near future, given the increase in bushfire funding over recent years, the current economic situation and other government priorities. Research has suggested that the costs of PB rise exponentially with the increase in risk reduction, i.e. to double the benefits of PB, the extent of PB and funding needs to quadruple⁶. Other resources can also be limiting, especially availability of the large numbers of volunteers needed for complex PBs. It is not clear that these constraints are applied to local BFRMP

⁶ e.g. Bradstock et al ‘Bushfire risk at the urban interface estimated from historical weather records: consequences for the use of prescribed fire in the Sydney region of south-eastern Australia’ Journ. Env. Management, March 1998

planning. This can lead to inflated and unachievable ‘targets’. There seems to have been some improvement in these constraints, with the use of mitigation teams and more PBs happening midweek.

PB is a skilled activity, and the number of capable burn leaders is low. Conversely, PB is important for developing many skills which are vital for (generally less controllable) wildfire operations such as burn assessment, ignition techniques, tanker operation, wet-lining, mopping-up, crew management etc..

Suggestion 3: Apply a more rational approach to risk reduction planning, as above under *Targets*.

4. Climate change

Bushfires are forecast to increase in scale and intensity in NSW due to climate change⁷, which is not yet slowing down. The implications for bush fire mitigation are significant. Some research suggests diminishing effectiveness of PB⁸, while on the other hand suitable weather and opportunities for PB may expand around winter. If bushfire impacts on the bushland interface are to increase, there may be a need to expand mitigation activities in that zone, even if this compromises environmental values. In the broader landscape, the ecological impacts of more wildfire could be serious, including loss of species/communities and ecological shifts to more fire-prone vegetation types.

Suggestion 4: The escalating climate scenario calls for a review of mitigation objectives and programs; a major review initially and then ongoing re-assessment (see *Monitoring, reporting & analysis* below).

5. Risk assessment methodology

This paper emphasises a risk-based approach to bushfire mitigation including PB. Pre-supposed is a rigorous and effective system for risk assessment. A ‘residual risk’ approach is useful, but the new Melbourne University methodology being rolled out within district BFRM plans is not yet convincing as a risk analysis method. IBG believes a lot more work needs to be done in this area in order to develop an evidence-based mitigation system that focuses available resources where the greatest risk reduction can be achieved. It is acknowledged that no such system can be perfect, because the location and timing of wildfires is not predictable, and there will be political and public relations factors.

Suggestion 5: Convene an expert panel of bushfire researchers and practitioners to resolve how the most rigorous risk management system can be developed.

6. Public perceptions and the facts

While the RFS and other agencies make frequent public statements about PB not being a ‘silver bullet’ for preventing bushfire impacts, the media also continue to report on missed targets as if this is a bad problem for increased risk⁹. This dichotomy is created by mixed messaging from government agencies and reflects confusion and conflicted views about PB in the community. The frequent use of the term ‘targets’ can be counter-productive and the public generally do not understand that PB is not risk-free, i.e. if PB programs are to be expanded then not only is this difficult to achieve, with rapidly increasing costs, but it also means more problems will occur in the form of escaped PBs and (potentially) impacts on assets.

⁷ E.g. Adapt NSW: <https://www.climatechange.environment.nsw.gov.au/bushfires>

⁸ ‘The 2019–2020 Australian forest fires are a harbinger of decreased prescribed burning effectiveness under rising extreme conditions’, Clarke et. al. 2022: <https://www.nature.com/articles/s41598-022-15262-y>

⁹ E.g. see Footnote 4 above

Suggestion 6: Public messaging from government about PB needs to be codified and consistent, and to be based on the facts around the purpose, extent, benefits, limitations and risks of PB.

7. A learning culture: Monitoring, reporting & analysis

PBs are monitored and reported in binary terms, i.e. whether they were achieved or not, plus area of the burn (not necessarily the area actually burnt). There seems to be little attention to other important aspects and nuances, which include the severity and effectiveness of the PB across the burn area and whether it turned out to have been useful long-term (i.e. did a wildfire meet the PB, how long after the PB, and how effective was it in mitigating the wildfire, aiding suppression and/or protecting assets?).

The 2019-2020 season remains the most useful ‘laboratory’ for examining these issues, and although some pilot research has been done¹⁰, a bigger analysis has sadly languished. This highlights a critical question about the overall effectiveness of the PB program, which remains mired in anecdote. The proportion of PBs met by wildfire in the time that they are to some extent effective remains unknown, but on probabilities is likely to be low. The 2019-2020 season may have achieved a maximum due to the total area burnt by wildfire. As they say about advertising: “I know some of it works, but I don’t know which bits”.

Historical analysis is still possible and could help inform statewide risk assessments and improve focus for the PB program. It could also help agencies to give evidence-based information to the public (see *Public perceptions* above).

PBs are generally well planned and well resourced but they do go wrong occasionally and it is essential that timely and independently facilitated AARs are carried out, especially for critical incidents but also successful burns. When a significant loss of containment occurs it is vital that lessons are learned and acted upon.

Suggestion 7: PBs should be part of a comprehensive learning culture. They should be assessed and reported on the basis of not just area *planned* to burn, but the areas *actually* burnt at a range of severities. Then ongoing analysis should be undertaken of subsequent usefulness. PB problems and successes should be subject to routine AARs to inform future operations.

8. Transparency

Public understanding, support and action will be enhanced by full honesty and transparency about the mitigation/PB program. There is no good reason not to be open, yet PB information is limited and/or difficult to find. Local reporting should occur in every LGA. This could include basic public maps of what PB and other activities are planned and what has been achieved and when. A ‘traffic light’ system could be applied to indicate the risk reduction status of each LGA: good, becoming good, and poor.

Suggestion 8: Information on mitigation/PB works planned, achieved and effectiveness should be publicly and readily available via maps and other means both locally (per LGA) and statewide.

¹⁰ See Footnote 3 above