

IMPLEMENTATION OF A STRATEGIC BURNING PROGRAM

THE PROCESS

The implementation of a strategic burning program is not a single step process. Rather it is based on risk assessment and planning principles similar to those outlined in the National Emergency Risk Assessment Guidelines (National Emergency Management Committee, 2010). As discussed previously in this report, burning priorities are identified through a bushfire risk assessment that considers a range of bushfire mitigation options. This report has demonstrated how strategic fuel reduction burning can significantly reduce impacts to communities, but doesn't entirely eliminate risk. Therefore burning will be one of a combination of mitigation options that are considered to strategically reduce bushfire risk.

Figure 55 illustrates where burning occurs in the risk assessment and mitigation process; thereby highlighting that burning cannot occur without the appropriate planning, preparation and resources. It is important to note that a considerable amount of this work can be completed outside of the burning season; which maximises the use of suitable conditions.

THE EFFECTS OF SEASON AND WEATHER ON BURNING OPPORTUNITIES

Daily and seasonal weather patterns have a very strong influence on the success of a fuel reduction burning program. The annual planned burning programs in Tasmania show considerable variability in the area burnt each year, largely due to the effects of weather (Table 1). Planned burning is conducted within a set of weather parameters to manage the burn within the appropriate boundaries and with the resources that are available. The aim is to achieve a set of objectives inclusive of crew and public safety, fire size and intensity (Marsden-Smedley, 2009).

With training and experience, practitioners develop an understanding of seasonal weather patterns that affect fuel moisture. The potential success or failure of a burn is monitored by checking the state of the fuels on site, and by using a variety of weather and atmospheric observations and forecasts to determine whether the conditions will be suitable for burning.

Planned burning weather windows were mapped for Tasmania based on the nearest relevant weather station. Figure 56 provides a very general indication of the average number of days each year where weather conditions may fall within the guidelines for prescribed burning, not taking into account the effects of weather on smoke dispersion and excluding days during the peak of summer. This map provides a very general guide and doesn't take into account differences in elevation and aspect that can result in considerable differences in on-site weather conditions when compared to the conditions measured at a weather station.

This map was presented to a workshop in May 2014, where experienced fire practitioners from SFMC, Parks and Wildlife Service, Tasmania Fire Service and Forestry Tasmania agreed that this map provided a good indication of how the availability of burning windows can vary considerably across the state. There are no hard boundaries (as are drawn on this map) between regions. However, there was a general consensus that there are considerably fewer days available for burning each year in western, central and highland areas of Tasmania compared to the coastal areas in the southeast, east, northeast and central north.

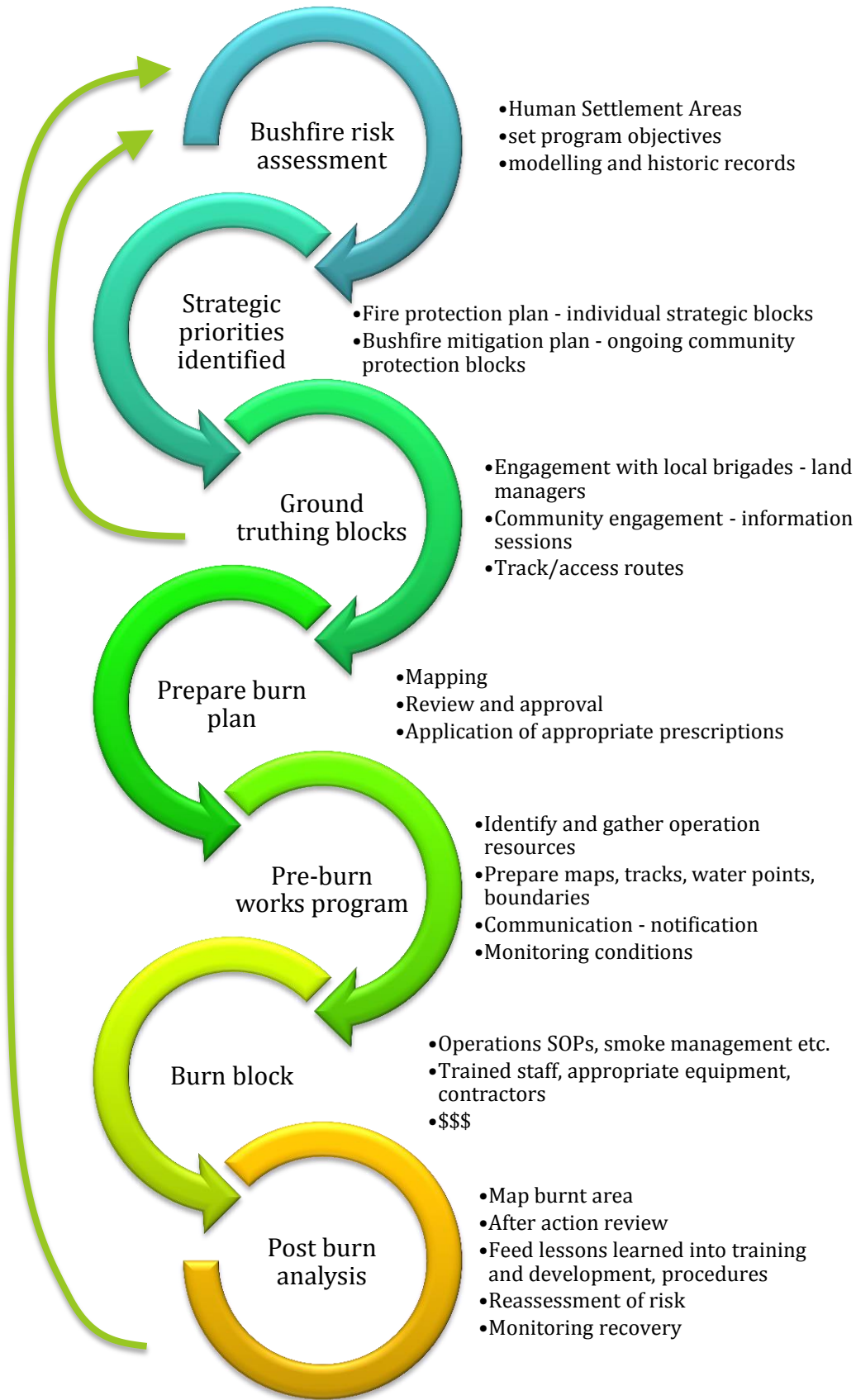


Figure 55: Steps for implementation of a strategic burning program.

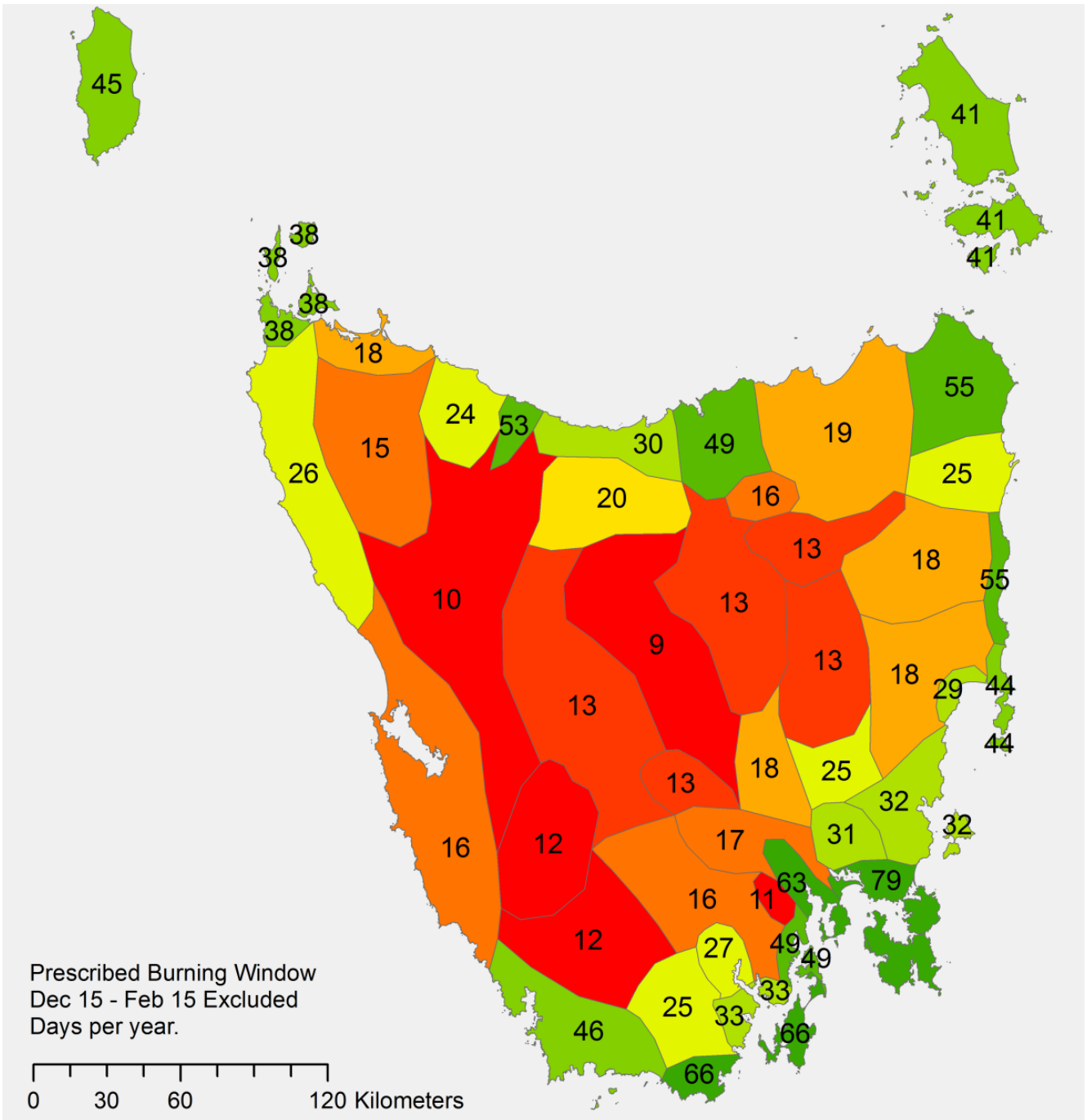


Figure 56: Average number of days per year when weather observations fell within the full range of prescribed burning weather guidelines described in (Marsden-Smedley, 2009). Days during peak fire danger, between December 15 and February 15, have been excluded.

There are periods in the burning season where weather conditions can be favourable across a large area, but resources are not available to conduct all of the burns on a single day. In these situations, burning is prioritised to those areas with narrower burning windows so burns are completed before opportunities are lost as seasonal weather conditions change. Figure 56 can also provide some context to understand the amount of effort required during the burning season to complete a burning program before the opportunities for burning are lost. Employees in the Tasmanian fire and land management agencies can be required to leave their normal duties, and seasonal and contract fire crews are called upon so that there are sufficient resources to complete the burning program while the conditions are suitable.

IMPLEMENTATION ISSUES

For a program of this scale a comprehensive communication strategy, issues analysis and stakeholder analysis will be required. Some of the key issues that will need to be addressed may include, but will not be limited to:

- Community acceptance of an expanded planned burning program
- Explaining the limitations of different mitigation activities; some areas will always be prone to high bushfire risk even after all mitigation options have been implemented
- Access to private lands to undertake risk mitigation activities
- Smoke and public health impacts
- The effects of an expanded fuel reduction burning program on other burning programs that are regulated by smoke restrictions
- The visual impacts of smoke and charring in the landscape, including their effects on tourism
- Balancing risk mitigation actions with environmental impacts
- Workforce capacity to implement a program of this scale.

There is a potential that the Tasmanian public will find a high level of fuel reduction burning unacceptable. This could be for a number of different reasons, including high levels of smoke, escapes from planned burns onto non-target areas or resentment with regards to providing access to private property for burning.

On the other hand, it is evident to fire managers that following the devastating Tasmanian fires of January 2013, the public acceptance of smoke nuisance from fuel reduction burning is much higher than it was prior to these fires. This was illustrated by the Mt Direction fuel reduction burn of May 2013 which created significant smoke over Hobart's Eastern Shore suburbs for several nights; however, no complaints from the public were received by the EPA. Never-the-less, it is conceivable that with frequent burning around towns and settlements every autumn and spring this social acceptance declines over time, particularly if Tasmania experiences several quiet bushfire seasons. It will be essential that communication, public education and stakeholder engagement are planned and implemented to ensure that the Tasmanian public understand the benefits of fuel reduction burning, the limitations and the timing behind the strategies.

Through the Forest Practices Authority and the Environmental Protection Authority, a coordinated smoke management strategy is in place to manage the amount of smoke in the atmosphere. This system is currently only used by the forest industry and the PWS. While 'smoke trading' does occur (i.e. the participants work together to limit the total amount of smoke produced in an airshed each day) it is not prioritised on a burn objective basis. Regardless, it is certain that the burning required by a targeted risk reduction program will result in communities being affected at times, even when the best information is used to manage the timing of burns in relation to forecast smoke dispersion. A good notifications process will provide current information and expected developments to the community, allowing them to prepare for the event. There are also concerns regarding the impacts of smoke on some agricultural activities, particularly apiculture and viticulture. It will be essential to work closely with relevant groups as burns are implemented in areas, and to be as flexible as possible with program implementation.

Tasmania's capacity to implement an increased fuel reduction burning program is a significant issue that is not unique to Tasmania. The implementation of the Victorian, West Australian and South Australian programs has been hampered by not having sufficient resources available on the days when successful burning is achievable. Also, it has taken time to build up the appropriate skills and experience to implement the burns, particularly those that are complex. Within Tasmania, filling these positions with the right skills and experience can mean losing that expertise from the other fire management agencies, where it will still be required.

Certainly there are opportunities to engage contractors to undertake much of the work, particularly in fire trail maintenance and preparatory works. There is also an exciting opportunity to offer training and employment programs, though much of the work is very seasonal in nature. Volunteer brigades will also certainly be part of the implementation however it is acknowledged that many also have to keep their own work and business commitments. In both South Australia and Victoria it took three years to build up their plans and workforce to get their burning programs working on an ongoing basis.

LEGISLATIVE AND POLICY CONSIDERATIONS

As demonstrated in the results, the most effective risk mitigation program is achieved when action is taken on both private and public lands. Most private landowners do not have the skills, training and equipment to undertake fuel reduction burning on their own land. Therefore this raises issues of liability and treatment of risk on private tenure for a greater community good if government is going to take a role in burning on private land.

Table 8 provides a summary of legislation that is relevant, and some of the issues that will need to be managed in the implementation of a burning program. Whilst this list looks intimidating, many of these are the issues that are already accounted for by public land managers and established procedures are in place. Most can be managed through a careful planning process undertaken by experienced practitioners.

Table 8: Relevant legislation and policies for implementation of a strategic burning program

Act	Comments and Possible Issues
<i>Emergency Management Act 2006</i>	The Act of precedence for all emergency risk mitigation and has power to override other legislation to enable mitigation. In effect, supports section 49 of the <i>Fire Service Act 1979</i> . The planning framework for the Fire Protection Plans sits under the Tasmanian Emergency Management Plan, authorised under this Act. The fire protection plans, developed through the FMACs, are a key document to prioritise bushfire risk treatment programs and the identification of strategic management areas.
<i>Fire Service Act 1979</i>	Section 49 details the treatment of fire hazards, including vegetation, on private property. There are some provisions that may need amendment to enable fuel reduction burning on private property by third parties. Section 121 details the liability provisions within the Act.
<i>Environmental Management and Pollution Control Act 1994</i>	<i>Environment Protection Policy (Air Quality) 2004</i> , section 17 specifies requirements for planned burning. Clarification of policy is required to avoid possible prosecution for smoke nuisance.
<i>Water Management Act 1999 / State Policy on Water Quality Management 1997</i>	Requirement (section 34 of policy) to comply with Forest Practices Code.
<i>Threatened Species Protection Act 1995</i>	There are situations where a permit is required to ‘take’ by burning any threatened species known to occur in burning blocks. This will be identified during the planning
<i>Aboriginal Relics Act 1975</i>	Burning will not directly destroy most common Aboriginal sites, but may expose them to other kinds of disturbance. Also the use of machinery in preparatory works has the potential to destroy Aboriginal sites. The planning process must identify when and

Act	Comments and Possible Issues
	where permits may be required.
<i>State Coastal Policy 1996</i>	Section 1.1.11: 'Fire management, for whatever purpose, shall be carried out in a manner which will maintain ecological processes, geomorphologic processes and genetic diversity of the natural resources located within the coastal zone.' Clarification to enable fuel reduction burning may be required.
<i>Local Government Act 1993</i>	Section 200: Nuisance and abatement are instruments that are currently being used. They could be reviewed in their application, especially on the basis of bushfire risk; however, are largely used at a very localised scale.
<i>Forest Practices Act 1985</i>	Regulation 5(g): The FPA has recognised in writing the environmental impact assessment process used by PWS. Clarification of FPA policy will be required.
<i>National Parks and Reserves Management Act 2002</i>	A standard objective for all classes of reserved land is to protect against, and rehabilitate following, the adverse impacts of fire. Managing authority may do what is necessary to prevent bushfires.
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Referrals to Commonwealth Government are possible; however this would be identified through the planning process.
Forest Practices Code 2000	Set standards for activities on lands managed for commercial forestry, including conducting of burns.
Tasmanian Electricity Code 2005	The outcomes of the fire protection plans may impact the clearances required in different areas based on bushfire risk.

IMPLEMENTATION COSTS

The cost of fuel reduction burning cannot easily be measured as an absolute dollar value. While the forest industry and Parks and Wildlife Service run annualised burning programs, there is no exclusive workforce for program delivery. Rather, staff preparing for a planned burn will simultaneously be engaged in other land management responsibilities, for example supervising harvesting operations or facilities maintenance. This is in part due to the fact that a large part of any burning program is embedded into normal day to day works.

Forestry Tasmania (FT) has contracted out some of their expertise to provide fire management services. Based on records kept for the last ten years, individual burns under that program have been costed. Similarly, Hobart City Council (HCC) investigated the cost of contractors delivering their fire management program. Included in these costs were the following:

- the time and administrative resources required to plan the management of the burn through to its completion;
- managing and paying for machinery and labour to construct or maintain fire boundaries;
- monitoring weather and fuel conditions in the weeks and days leading up to the burn;
- administrative and logistical management of the burn on the day, including the notification of all relevant stakeholders about when and where the burn will occur;
- labour and machinery required to light the burn, including days where those resources were deployed to the site, but conditions weren't suitable to carry out the burn;
- labour and machinery required to suppress and monitor the burn until it is considered safe;

- recovery costs including monitoring the recovery of the burn site, reporting to stakeholders, cost-recovery, and post-fire review.

The costs were highly variable between each individual burn, in both resourcing requirements and a per hectare dollar value. For example several thousand hectares of remote area button-grass can be burnt with 4 people and 1 helicopter, for less than \$50 per hectare. Whereas a 5 hectare burn directly on the urban interface, requiring many fire crews for a minimum of 2 days was estimated at over \$1000 per hectare. From this information the relative difference in cost between burning in close to communities versus burning in more remote areas has been expressed in Figure 57 below. It was beyond the scope of this project to undertake a full cost-benefit analysis.

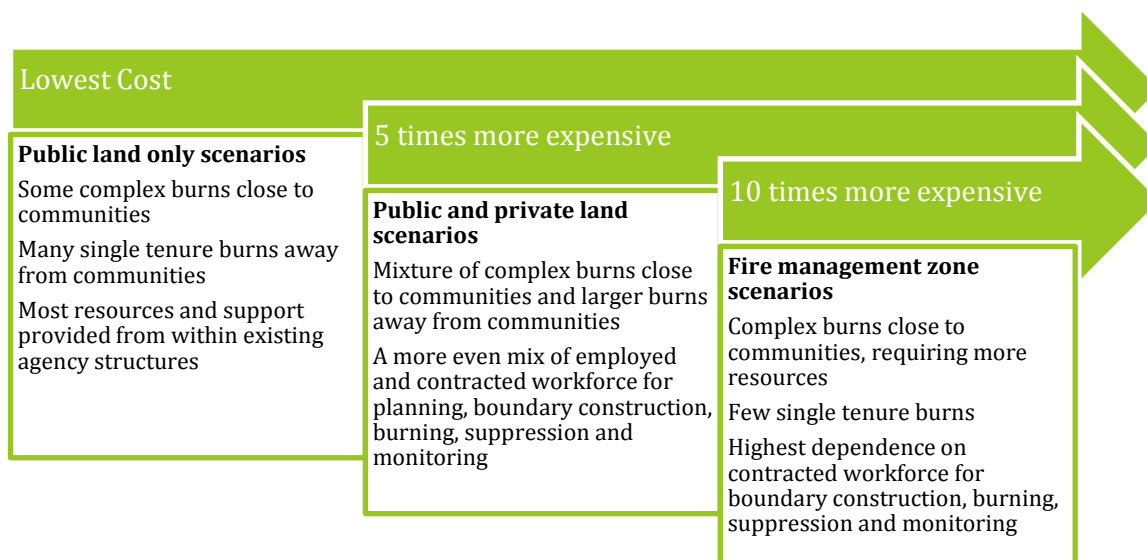


Figure 57: Conceptual diagram of how the resourcing requirements and cost of burning can change based on the complexity of the burn and their proximity to communities. Estimated cost per hectare for each of the fuel reduction burning scenarios was based on fuel reduction burning data and expert opinion on potential resource requirements.

Given the extremely variable costs of burning, we cannot reliably estimate the actual costs associated with implementing each of the different fuel management scenarios. It is possible to estimate cost for a burn on a site by site basis, once the necessary field inspections have occurred. We have however broadly indicated how much more expensive one landscape burning program might cost in comparison to another.