

This article is downloaded from



**CRO** CSU Research Output  
*Showcasing CSU Research*

<http://researchoutput.csu.edu.au>

**It is the paper published as:**

**Author:** P. Laidlaw, D. H. R. Spennemann and C. Allan

**Title:** Protecting cultural assets from bushfires: a question of comprehensive planning

**Journal:** Disasters

**ISSN:** 0361-3666

**Year:** 2008

**Volume:** 32

**Issue:** 1

**Pages:** 66-81

**Abstract:** Cultural heritage sites form an unrenovable asset that is threatened by natural disasters. Given the high bushfire risk, mandatory Bush Fire Risk Management Plans have been drawn up throughout New South Wales, Australia. We compared their mandatory provisions for the protection of heritage assets with an 'Ideal Heritage Disaster Plan', containing a series of non negotiable elements. The examined plans fell well short of the ideal. Preparedness Plans generally lacked a discussion of suppression techniques ( for historic heritage), prevention, prescribed drills and communication procedures. None of the Response Plans or Recovery Plans contained any of the required core elements, such as rapid suppression techniques and stabilisation procedures. Where aspects were covered, they were addressed in an inadequate level of detail. The overall quality of the cultural heritage components of the plans is judged to be poor. Suggestions are made on how to improve the situation if heritage assets are to have a future following bushfire events.

**URLs:** <http://dx.doi.org/10.1111/j.1467-7717.2007.01027.x>

[http://researchoutput.csu.edu.au/R/-?func=dbin-jump-full&object\\_id=12645&local\\_base=GEN01-CSU01](http://researchoutput.csu.edu.au/R/-?func=dbin-jump-full&object_id=12645&local_base=GEN01-CSU01)

**Author Address:**

dspennemann@csu.edu.au

callan@csu.edu.au

**CRO Number:** 12645

# Protecting Cultural and Environmental Assets from Bush Fires: How Comprehensive are the Current Bush Fire Risk Management Plans in NSW

---

Prue Laidlaw, Dirk HR Spennemann, and Catherine Allan

PAPER SUBMITTED FOR PUBLICATION IN:

## *Disasters*

**Corresponding author:**

Associate Professor Dirk HR Spennemann  
Institute of Land, Water and Society  
Charles Sturt University  
P.O. Box 789  
Albury, NSW 2640  
Australia  
E-mail: dspennemann@csu.edu.au  
Phone: +61-2-6051 9947  
Facsimile +61-2-6051 9897

# Protecting Cultural and Environmental Assets from Bush Fires: How Comprehensive are the Current Bush Fire Risk Management Plans in NSW?

*Prue Laidlaw, † Dirk HR Spennemann¶ and Catherine Allan‡*

† School of Environmental and Information Sciences, Charles Sturt University, P.O. Box 789, Albury, NSW 2640, Australia. E-mail: plaidlaw@postoffice.csu.edu.au

¶ School of Environmental and Information Sciences, and Institute of Land, Water and Society, Charles Sturt University, P.O. Box 789, Albury, NSW 2640, Australia. E-mail: dspennemann@csu.edu.au

‡ School of Environmental and Information Sciences, and Institute of Land, Water and Society, Charles Sturt University, P.O. Box 789, Albury, NSW 2640, Australia. E-mail: callan@csu.edu.au

## Introduction

Fire is one of the most destructive forces of nature, and the likelihood of a fire event in Australia is not a question of ‘if’ but ‘when?’ Southeastern Australia is the greatest bushfire prone area in the world (EMA 2003). It is both during and after a bushfire event that cultural heritage, Indigenous and historic, is at its most vulnerable, as the direct impacts of fire and the fire suppression activities have the potential to greatly reduce the historic character and fabric of the resource (Look & Spennemann 2000).

Cultural heritage is the name we give to ‘valuable features of our environment which we seek to conserve from the ravages of development and decay’ (Davison 1991, p.1). Cultural heritage assets are the manifestations of people’s interaction with their environment. Cultural heritage assets define our culture in space and time: they are part of the context that makes us human (Aplin 2002; Howard 2003). As the remains of material cultural pre-date written records, cultural heritage assets are often the only remnants of people, historical processes, or traditional events (Hutt, Blanco & Varmer 1999). Once destroyed, cultural heritage assets cannot be regenerated, duplicated or reintroduced (cf. Pearson & Sullivan 1995).

The all-consuming nature of fire poses a severe, destructive hazard to cultural heritage. A fire does not distinguish between different types of cultural assets, their associated values and their constituent materials, but rather has the ability to obliterate all in its path as long as there is combustible material and oxygen to fuel it. While the effects of bush fires on cultural heritage resources are highly variable, they are almost always deleterious. If cultural heritage assets are able to survive the impact of the fire itself, they then face a new hazard: will they survive the fire management decisions made during and after the fire event (Spennemann 1999; 2005; Spennemann & Graham 2006)?

## Framework

The management of fire events in the Australian state of New South Wales is legally mandated under the *Rural Fires Act 1997* (NSW) which establishes the NSW Rural Fire Service. The Rural Fire Service is a statewide organization heavily reliant on the commitment of volunteers making up the vast majority of the force. The varied backgrounds of the force have a bearing on the attitudes that the firefighters bring to bear when faced with the protection of properties during a disaster event. The need to understand the attitudes and knowledge of the Rural Fire Service volunteers with regard to the protection of cultural resources in disaster situations has been examined elsewhere (Graham & Spennemann 2006a). While the role of the individual in the decision making process during a disaster response phase is acknowledged, the overall planning framework sets the tone and parameters of the response.

Part 3 of the *Rural Fires Act* provides for the establishment of the NSW Bush Fire Coordinating Committee who is empowered to make provisions for the prevention, mitigation and suppression of rural fires. The Act requires the Bush Fire Coordinating Committee to establish a Bush Fire Management Committee in each local government area containing a rural fire district. One role of each Bush Fire Management Committee is to prepare for its geographic area of responsibility a Bush Fire Risk Management Plan, lasting five years (Farrier, Lyster & Pearson 1999).

The Bush Fire Coordinating Committee developed a uniform framework for the completion of Fire Management Plans, and adopted it for use in 1998. The framework (henceforth known as the Model Plan) provides a template with which the Bush Fire Management Committee can explain the level of bushfire risk which exists across the area, and the strategies which will be employed to manage this risk (New South Wales Bush Fire Coordinating Committee 1998b). The Fire Management Plan is also intended to provide a summary of the factors that contribute to the bushfire risk in the area including bushfire issues, community assets, and environmental/ecological assets. Environmental/Ecological Assets include places of Aboriginal significance, historic heritage sites, threatened species, areas of important native vegetation, dedicated catchment areas, and national parks, state forests and bushland reserves. While the Model Plan guides Bush Fire Management Committees through the steps of completing a Fire Management Plan and provides a suggested structure, a Bush Fire Management Committee may modify and/or expand on this format, provided that any alternative formats still address, at the minimum, all the issues outlined in the Model Plan (New South Wales Bush Fire Coordinating Committee 1998a).

It is widely acknowledged that paper-based plans are only the final outcomes of a planning process. Any planning process which aims at being effective, should be ongoing and reflective with

continual revisions that reflect the learning that has come from plan implementation (Allan & Curtis 2005). In the ideal world a Bush Fire Management Committee would continually evaluate experiences gained by other Bush Fire Management Committees in disaster situations and incorporate salient points into the local plans. In reality, however, the diverse composition of the Bush Fire Management Committees, hampered by the lack of paid staff and the personal discontinuities almost guarantees that reflection and plan revision only occur when an existing plan has reached the end of its scheduled life.

And as has been shown elsewhere (Laidlaw *et al* b), even the initial plan development is hampered by wholesale uncritical adoption of passages from other plans, indicating that the Bush Fire Management Committees are limited in their capacity to deliver a critical examination of the issues either due to time constraints or attitudinal barriers.

Thus, the printed, final Fire Management Plans provide the basis upon which all decisions in a real fire situation are to be based. This is even more relevant as the Rural Fire Service is volunteer based, and, in case of major fires, fire brigades from other areas are drawn on, who are completely unfamiliar with the local conditions and priorities.

This paper examines the cultural heritage related sections of all available NSW Bush Fire Risk Management Plans (n=111), and considers how effective these plans are in the protection of cultural heritage assets during a bush fire event. Two aspects are addressed: the composition and breadth of cultural heritage related components in the plans; and the comprehensiveness of disaster management planning measures used in the plans. This paper is derived from a larger study into the current state, level and nature of planning for the protection of cultural heritage assets in the face of the ever-present bushfire threat (Spennemann 2005; Graham & Spennemann 2006a-c; Spennemann & Graham 2006; Laidlaw 2004; Laidlaw *et al* in press a-b).

## **Plan Composition and Component Breadth**

To determine the relative importance of cultural heritage protection in the current Fire Management Plans, content relating to the Environmental/Ecological Assets subheadings of *Historic Heritage*, *Places of Aboriginal Significance*, and *Threatened Species* was analysed. The subheading of *Threatened Species* has been used as a general point of reference to indicate the level of protection that is afforded to assets that are not unlike cultural heritage assets in both their finite, rare and scarce nature, and also enjoy various legal frameworks in place for their safeguarding.

In the first instance, analysis was in the form of a presence/absence study of the subheadings associated with the components of the Environmental/Ecological Assets section of the Model Plan. For the purpose of this analysis, a component was considered ‘present’ if mentioned or addressed, regardless of the level of detail within the text. For example, although a Fire Management Plan may inform the user that there are no historic heritage sites within the area, the component of *Historic Heritage* is still classed as ‘present’, as the requirements of the Model Plan composition have been met through the presence of text pertaining to that category.

## **Plan Composition**

The Model Plan requires that Fire Management Plans contain and set out components under the umbrella category of Environmental/Ecological Assets. These include *Historic Heritage*, *Places of Aboriginal Significance*, and *Threatened Species*. Generally, the presence of Model Plan components relating to Environmental/Ecological Assets within the Fire Management Plans were equally weighted.

Analysis of the presence of Environmental/Ecological Assets shows no significant change in this aspect of plan content over the five years of plan implementation. It could be expected that the content of the Fire Management Plans might have increased over this period as, after a bush fire event, the Fire Management Plans would have been reviewed and improved. It appears that this plan review process has not happened, perhaps because there has been no bushfire event worth mentioning in the preceding five year period. Conversely, it may indicate that the cultural heritage asset components of the Fire Management Plans were considered to be perfect, and hence would not need improvement through reflection and experience.

Although 85% of Fire Management Plans contained all of the three required components, this still falls short of the 100% that could be expected as the components are a fundamental *requirement* of the Model Plan the Bush Fire Management Committees have been directed to use. None of the incomplete plans provide any indication whether the elements are lacking by intent or omission.

The way the components relating to Environmental/Ecological Assets are represented implies that they are of equal importance within the Fire Management Plans. However, while many plans contain the required components, not all addressed them in the same level of detail.

## Plan Component Breadth

To further examine the relative importance given to cultural heritage management within the current Fire Management Plans, the breadth of each of the three components of Environmental/Ecological Assets; *Places of Aboriginal Significance*, *Historic Heritage* and *Threatened Species* was analysed. This involved tallying the number of lines of text relating to each subheading. For the purpose of this analysis, all full, half and quarter length lines were tallied, resulting in whole number totals. Greater precision could not be attempted because of the varying font sizes and styles, and differing page margins within the Fire Management Plans.

The three components of Environmental/Ecological Assets, as outlined in the Model Plan, are *Places of Aboriginal Significance*, *Historic Heritage* and *Threatened Species*.

*Threatened Species* is the dominant component in terms of content per Fire Management Plan. It accounts for an average total of 76% of content of the Fire Management Plans. The average number of lines per Fire Management Plan for the *Threatened Species* component is 53. There is, however, tremendous divergence amongst the Fire Management Plans in regard to the number of lines devoted to this component. The minimum number of lines was recorded in one Fire Management Plan as zero, while the maximum number of lines recorded in one Fire Management Plan was 170.

The *Places of Aboriginal Significance* component of Environmental/Ecological Assets represents the second highest proportion of content within the Fire Management Plans, with an average total of 18%. The average number of lines per Fire Management Plan for the *Places of Aboriginal Significance* component is 12.5. The minimum number of lines was recorded in two Fire Management Plans as zero, while the maximum number was recorded in one Fire Management Plan as 40 lines. Further, it is interesting to note that of the 111 total Fire Management Plans, 47% had fewer than ten lines for this component.

Despite being ubiquitous in the environment and despite being one of the required components of Environmental/Ecological Assets, *Historic Heritage* is effectively disregarded within many Fire Management Plans, only accounting for an average total of 6% of lines. The average number of lines for this component is 4.5. The minimum number of lines was recorded in eight Fire Management Plans as zero, which is an excessively large proportion of Fire Management Plans that do not include the content. The maximum number of lines was recorded in one Fire Management Plan as 26, which is considerably less than for the *Places of Aboriginal Significance* component, and less than for the *Threatened Species* component. In all, 90% of the Fire Management Plans had fewer than ten lines for the *Historic Heritage* component.

Ideally the *Places of Aboriginal Significance* and *Historic Heritage* components, when combined, should be equal to the breadth size of the *Threatened Species* component. Thus the ratio of breadth size would be 25:25:50 for the components of *Historic Heritage*, *Places of Aboriginal Significance* and *Threatened Species*, respectively (as indicated by the square in Figure 1).

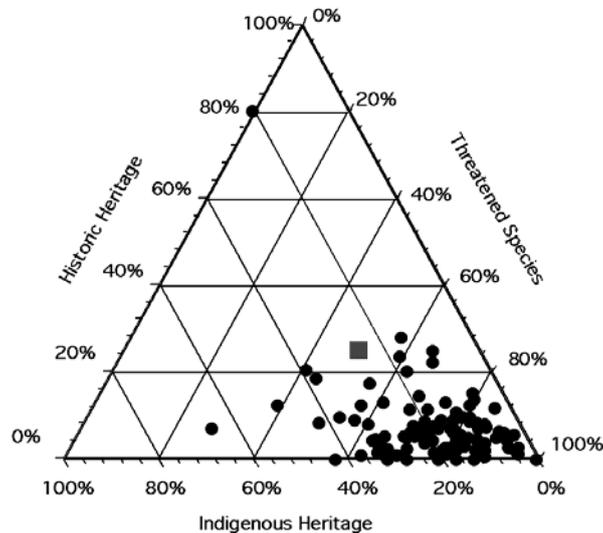


Figure 1: Ternary scattergram representing the percentage of plans containing the three components of Environmental/Ecological Assets. The square represents the ideal position for the Bush Fire Risk Management Plans to be clustered, if the combined components of Historic Heritage and Places of Aboriginal Significance were equal to that of the Threatened Species component.

There is no significant direct correlation between Fire Management Plans exhibiting sizeable breadth measurements for the component of *Threatened Species* and the breadth of either *Historic Heritage* (Pearson's  $r = 0.139$ ,  $n = 111$ ) or *Places of Aboriginal Significance* components (Pearson's  $r = 0.329$ ,  $n = 111$ ).

The combined total of both *Places of Aboriginal Significance* and *Historic Heritage* is just 24% of the entire text devoted to Environmental/Ecological Assets. This is a poorly balanced summary of assets which are of key cultural heritage importance to the community. Moreover, the severe lack of planning for cultural heritage assets does not show a decisive commitment to its protection.

It is clear that the quantity of information regarding heritage assets is less than desirable in all Fire Management Plans; the next issue considered is the comprehensiveness of the little that is there.

## Comprehensiveness of Disaster Management Planning Measures

Unlike the natural environment, where disaster impact can often be rehabilitated in the recovery phase through replanting/revegetation and habitat restoration, the impact on cultural heritage items is irreversible. Even the items that can be repaired/restored or that can be reconstructed, if they were

too far or totally destroyed, the authenticity of the heritage item is irreversibly impaired. To adequately protect heritage requires comprehensive disaster management planning measures.

Adequate disaster management occurs in three steps: preparing; responding; and recovering. Each aspect is equally important, and therefore must not be neglected. Comprehensive disaster management planning is a concept which aims to ensure that all aspects are systematically addressed (Gordon 2002; Nelson 1991).

In order to fairly evaluate the NSW bush fire management plans under discussion, it was necessary to provide a framework that can be applied to single plan or a group of plans and that is applicable in other Australian states or, indeed, other countries. The framework developed by the authors is an *Ideal Heritage Disaster Plan*. The plan, which contains a series of non-negotiable elements, can be used as a benchmark in the analysis of the current Fire Management Plans. The *Ideal Heritage Disaster Plan*, based on Nelson (1991), and Spennemann (2004), details the *core* elements necessary for the protection of cultural heritage assets during bushfire events. Following current best practice the *Ideal Heritage Disaster Plan* consists of three separate subplans; a Preparedness Plan; a Response Plan; and a Recovery Plan.

The Preparedness Plan should spell out priorities and responsibilities, and detail specific actions to be taken during emergency situations when clear-headed and reflective thinking is likely to be impaired. The plan should include such information as lists of heritage assets, their location and descriptions, preventative measures such as hazard reduction and asset specific prescriptions, appropriate fire suppression techniques, provisions for testing the effectiveness of the plan, and communication procedures. It is specifically acknowledged that for a range of good reasons the locational data for a range of Indigenous are not publicly available and thus cannot be included in the fire management plans. Such locational data and the associated buffer zones, however, are contained on GIS layers that will become available to fire management staff in the event of a disaster. The plan should make reference to that fact and make it clear that during the disaster response adequate reference is made to these GIS layers.

The components of a Response Plan should expound that the preservation of human life and safety must always come first. In the event of a disaster, planning, again is the most important and effective activity. Planning beforehand will allow a timely response to the disaster's likely effects. The plan should include rapid suppression techniques, incorporation of a heritage adviser into immediate decision-making, stabilisation procedures and provisions for damage inventories.

The Recovery Plan must emphasise the need for patience, and stress that recovery from a disaster does not take place overnight. The initial stabilisation that may have taken place during the response phase must be reviewed to ensure that the actions taken are appropriate and not causing inadvertent damage to the assets. The plan should include provisions for a detailed survey, information on current conservation plans, and provide for the continual involvement of a heritage adviser.

To determine the presence of each of the core elements of the *Ideal Heritage Disaster Plan* in each Fire Management Plan, content analysis, as described by Babbie (2001) and Neuman (2003), was used. This entailed categorising the content of each Fire Management Plan that related to core elements, and analysing the content both quantitatively and qualitatively. The Preparedness Plan core elements of *location*, *description*, *prevention*, *suppression techniques* and *risk analysis* were further arranged into an analysis of content relating to Indigenous heritage assets and historic heritage assets, as the separation between the cultural heritage asset types was deemed to be important in this study. An additional category of analysis - combined - was applied to the Preparedness Plan core element of *risk analysis*, because a number of Fire Management Plans refer to cultural heritage assets as a collective, rather than specifying whether they be historic or Indigenous in nature. This technique only highlights the relative emphasis given to each core element within the Fire Management Plans, and no conclusions can be drawn regarding the quality or detail of the content: this will be addressed later in this paper.

## **Preparedness Plan**

Fire Management Plans vary widely in respect to inclusion or otherwise of each of the core elements of the Preparedness Plan. Of the seven core elements, *location* and *description* dominate by far, followed by *risk analysis*. The core element of *suppression techniques* is selectively represented (Indigenous heritage assets only), and *prevention* activities are almost unequivocally disregarded or overlooked. The related core elements of *prescribed drill* and *communication procedures*, are completely absent within the Fire Management Plans. Not one of the 111 Fire Management Plans examined contain *all* of the core elements of the *Ideal Heritage Disaster Plan*.

The differences between the Indigenous and historic heritage assets display no statistical difference for the core elements of *location* (10%), *description* (12%) and *prevention* (5%). However, the core element of *suppression techniques* (49%) shows a substantial statistical difference (critical at the 99% confidence interval), while *risk analysis* (27%) displays a critical difference (at the 95% confidence interval) between Indigenous heritage assets and historic heritage assets.

## Response Plan

The four core elements of the Response Plan are *rapid suppression techniques*, incorporation of a heritage adviser into immediate decision-making, stabilisation procedures and provisions for damage inventories. Not one of the 111 Fire Management Plans contained any of the four core elements.

## Recovery Plan

The four core elements of the Recovery Plan include provisions for a detailed survey, information on current conservation plans, and provisions for the continual involvement of a heritage adviser. Again, none of the 111 Fire Management Plans contained any of the four core elements of the Recovery Plan.

The core elements of the *Ideal Heritage Disaster Plan* are cornerstones to a comprehensive disaster management planning effort; to deal with disaster situations adequately each core element should ideally be represented in every plan. Overall results for the presence of the 19 core elements of the three phases of the *Ideal Heritage Disaster Plan* demonstrate that of the 111 Fire Management Plans, 86% addressed at least one requirement. Although this seems a relatively high percentage, the results are skewed as the Fire Management Plans only contain references to the preparedness phase of comprehensive disaster management planning, completely neglecting both the response and recovery phases (Figure 2).

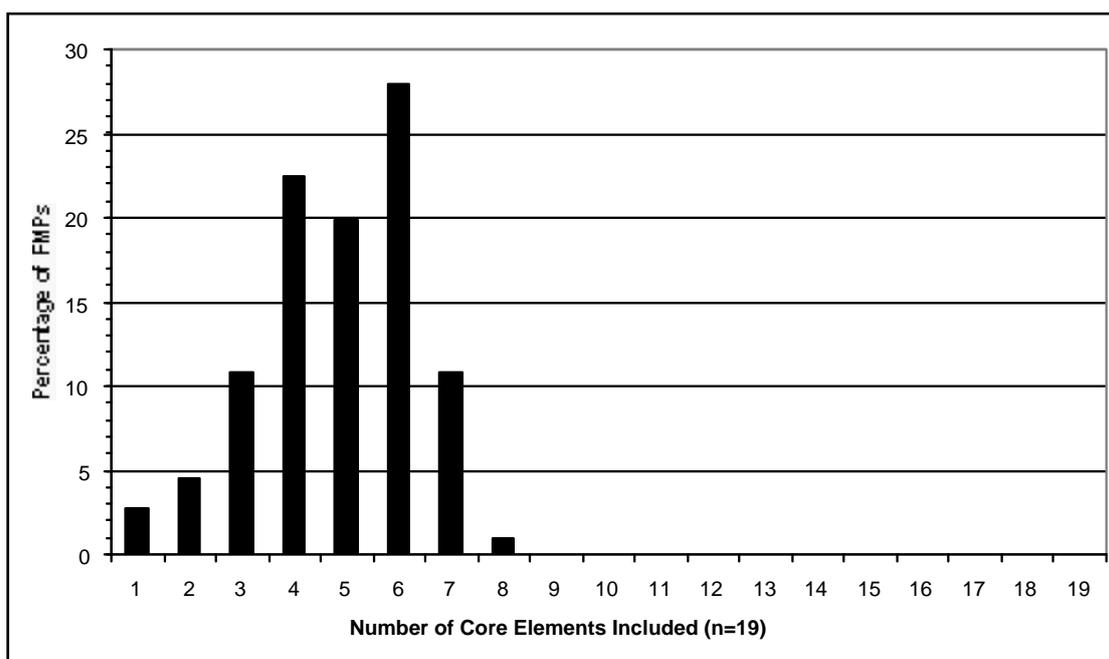


Figure 2: Frequency percent of Bush Fire Risk Management Plans containing 'Ideal Heritage Disaster Plan' core elements (n = 19).

## Level of Detail

Finally, to be effective in its application, comprehensive disaster management planning relies upon adequate detail provided by each phase of the planning process.

To assess detail, a *Level of Detail Threshold Measure* was devised for each of the core elements of the *Ideal Heritage Disaster Plan*. Two examples of text were selected: one that was considered to encompass the minimum level of detail to be still deemed as high, so that anything less was either of medium or low level of detail, and a second, similar, threshold for the minimum level of what was deemed as medium content, whereby anything less could only be described as a low level of detail. By comparing document text against the two samples, a threshold could be determined. The sample definitions were selected through a review of all 111 current Fire Management Plans, and based on the content that best represented the measure to be analysed. As the sample definitions are based on the total 111 Fire Management Plans, they provide a relative measure *within* the plan population, rather than an absolute measure against an ideal and predetermined benchmark.

Given that the core elements of *prescribed drill* and *communication procedures* were not represented in any of the 111 Fire Management Plans, there was no need to develop thresholds for them.

## Preparedness Plan

The level of detail within and between the plans is highly variable. However, all core elements relating to Indigenous heritage assets are consistently presented with a greater level of detail compared to those of historic heritage assets. This finding is not unlike the previous results discussing presence of the core elements. Even though it is encouraging that for each core element more than 50% of the Fire Management Plans have a medium or high level of detail, the overall performance is worrying.

Some of this may be attributed to the use of information relating to Indigenous heritage assets within the plans. Of the 111 Fire Management Plans, 56 contain a matrix entitled '*Impact of Fire Types and Suppression Activities on Aboriginal Sites*' originally sourced from English (2000). This matrix contains a medium level of detail for the core elements of *description* and *prevention*, and a high level of detail for the core elements of *suppression techniques* and *risk analysis*. Undoubtedly, the use of this matrix within the plans increases the level of detail involved within each of the four corresponding core elements. However, it also raises questions about indiscriminate and uncritical

adoption of plan content ('boilerplating'). The absence of a similar document in relation to historic heritage assets meant that these were less well represented.

An additional discrepancy is evident within the core element of *suppression techniques*. In direct comparison with the 56 Fire Management Plans containing the core element in relation to Indigenous heritage assets, only four Fire Management Plans contained the same core element for historic heritage assets. The ramifications of this disparity are immense. The variety of historic heritage assets is as diverse as those of Indigenous heritage assets. They too unconditionally require appropriate bushfire suppression techniques to be clearly defined within the Fire Management Plans. Of the 85 Fire Management Plans that contain historic heritage asset locations, 57.6% exhibit either a medium or high level of detail. The presence and level of detail for the core element of *suppression techniques* is an indispensable requirement in the protection of historic heritage assets during a bushfire situation.

A common problem within the Fire Management Plans is in regard to the paucity of information relating to cultural heritage asset locations. Statements suggests that the lack of information is directly associated with the degree of survey work and environmental assessments carried out in the associated region:

*There are no registered sites in the Albury/Hume District. However, this is a reflection of low recording effort rather than absence of sites – extract from Albury-Hume FMP*

Thirty Fire Management Plans inform the user that additional information is required regarding cultural heritage assets in general. A variety of comments advise that additional schedules of heritage assets will be prepared at a later date, or that information from other sources will be forthcoming:

*There are significant data gaps that make risk assessment of environmental assets difficult. The Bush Fire Management Committee will encourage further research and new findings will be incorporated into any updates of the plan – extract from Cambelltown FMP*

These and similar statements imply that the information needed for the core elements is incomplete, subsequently rendering the Fire Management Plans insufficient for application in disaster situations.

Statements proposing that firefighters will be made aware of cultural heritage asset locations, particularly Indigenous heritage assets, are in direct contrast to the paucity of information evident

within the Fire Management Plans in relation to cultural heritage asset locations. Twelve Fire Management Plans stress that cultural heritage assets must be managed to actively prevent potential bushfire damage, thus indicating the importance of the assets:

*These sites must be managed to prevent any future fires or fire suppression operations from impacting or possibly destroying places of significance –*  
extract from Gloucester FMP

If firefighters are to be mindful of cultural heritage assets, Fire Management Plans must adequately provide the required information rather than highlighting the insufficiency of information compiled.

The adage that prevention is better than cure does not seem to apply within the Fire Management Plans. The severe lack of the core element of *prevention*, exacerbated by the situation that even of those with the element, not one Fire Management Plan provided a high level of detail, makes for necessarily *ad hoc*, rather than planned, responses to a bushfire event. The reactive nature of the Fire Management Plans all but negates the presence and level of detail involved in the additional related core elements, required in the preparedness phase of comprehensive disaster management planning.

The incontestable lack of content for the core elements of *prescribed drill* and *communication procedures* does not make for a comprehensive disaster management plan. This suggests that there is no drill or ‘dry run’ in relation to Environmental/Ecological Assets. Without the enactment of a complete run-through of Fire Management Plan requisites, any deficiencies within the planning process will not be revealed until during a bushfire situation – and then often too late to be rectified until the next disaster event. It is unknown whether any modifications have been made to the current Fire Management Plans since the last bushfire event.

The complete lack of content relating to the core element of *communication procedures* in relation to cultural heritage assets may suggest that communication with heritage practitioners during a bushfire event is deemed not to be necessary. It further suggests that the protection of cultural heritage assets is not a high priority during a disaster situation, and that cooperative firefighting efforts are not at the forefront of importance. However, it is not known whether appropriate ‘call-up lists’ are contained in additional locations or planning instruments, such as the associated Bush Fire Operations Plan. Regardless of this being the case, the *Ideal Heritage Disaster Plan* stipulates that all information should be contained within the one plan, and contain no references to additional plans or locations for required information.

Of the 111 total Fire Management Plans, seven advised the user to seek information regarding the location of historic heritage assets from sources other than RFS documents, while one Fire Management Plan referred the user to an additional internal document. Of the references to external information, sources included the National Parks and Wildlife Service, local historic societies, and local councils and their associated planning instruments:

*Heritage assets can be identified within the District by referring to Crookwell Historic archives through the local Historic Society. The most comprehensive source is the Draft Heritage Study, which identifies assets of local, national, regional and state significance – extract from Crookwell FMP*

The link reference to an internal RFS document for information was to the related Bush Fire Operations Plan. Regardless of the source of the additional information, for comprehensive disaster management planning to be carried out effectively, all required information must be included within the Fire Management Plan; for disaster situations do not wait for the acquisition of planning requirement information.

There is no correlation between Fire Management Plans that contain preparedness plan core elements, and the level of detail involved within the elements (Pearson's  $r = 0.2315$ ,  $n = 111$ ). Figure 3 shows the random scatter of Preparedness Plan core elements and the measure of detail of the element. Clearly, the information contained within the Fire Management Plans relating to the preparedness phase of disaster management planning is highly varied. There is no evident link between Fire Management Plan districts closer to metropolitan areas, and the presence and detail of preparedness plan elements included within the Fire Management Plans. This may reflect the greater likelihood of the availability and completeness of information obtainable from those areas.

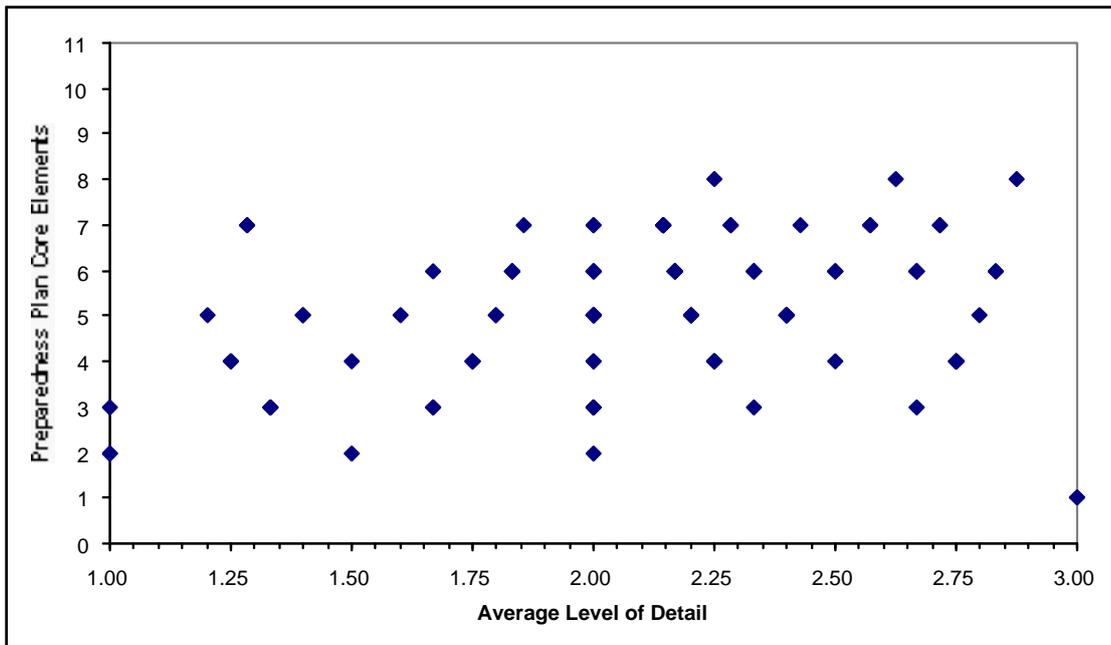


Figure 3: Scattergram representing the presence of Preparedness Plan core elements compared to the average level of detail of the elements within the current 111 Bush Fire Risk Management Plans. Average level of detail: 1 = Low, 2 = Medium and 3 = High.

The *Ideal Heritage Disaster Plan* is reliant upon the comprehensiveness of the information incorporated into the planning process. The skewed presence within the Fire Management Plans of the information relating to the preparedness phase of the *Ideal Heritage Disaster Plan*, completely disregarding both the response and recovery phases, does not make for comprehensive disaster management. Further, the detail included within the Fire Management Plans should ideally be of a high level, which is clearly not the case. For Fire Management Plans to be effective in a disaster situation, the information involved must be comprehensive.

## Implications

The potentially destructive forces of fire can be reduced through the implementation of effective bushfire planning procedures (Little 2001). The RFS is charged with the responsibility of managing fires and controlling the threat of fire to human interests, such as cultural heritage assets. This involves developing plans and implementing a variety of prevention, suppression and mitigation activities (Thomas 1999). The current composition and breadth of Fire Management Plans, and the level of detail contained within the plans begs the question as to whether the Fire Management Plans can be effectively implemented during a bushfire situation.

In theory, the Fire Management Plans should form the linchpin of cultural heritage protection during Rural Fire Service bushfire fighting actions. In practice however, they fall far short of their potential. On the basis of this systematic content analysis study of a total 111 current Fire Management Plans, the overall quality of the cultural heritage components of the plans is judged to

be poor. A very few Fire Management Plans were good, and a few had some good sections. In many plans, however, important elements were missing. Although bushfires are an inevitable natural hazard in Australia, this does not provide justification for placing cultural heritage assets at risk by developing inadequate Fire Management Plans.

There is a need for emergency agencies to integrate cultural heritage asset protection into their training programs. Some of the key obstacles to achieving desired improvements in cultural heritage protection are attitudinal in nature, firmly established in perceptions prevalent among those in the disaster management field (Stovel 1998). Not one of the total 111 Fire Management Plans incorporated a drill or training session into the stipulations of their plans. Simply documenting the responsibilities, procedures and resources is not sufficient to ensure the smooth implementation of a plan. A plan is not complete unless it has been tested under controlled circumstances, and thoroughly reviewed for errors, omissions, or lack of knowledge on the part of the participants (Gordon 2002). Suffice to say, if a 'dry run' of each Fire Management Plan were carried out, many of the problems inherent in the plans would become apparent, and ultimately corrected before the next, inevitable bushfire situation.

Preparedness, response and recovery procedures form the necessary foundation for effective disaster management planning, and yet not one of the total 111 Fire Management Plans contained a reference to either the response or recovery phases. The response phase of heritage disaster planning involves such important elements as stabilisation procedures and provisions for damage inventories, while the recovery phase includes important components such as provisions for a detailed survey and information on current conservation plans for cultural heritage assets. All of these elements are equally as important, and therefore should not be neglected. Each disaster planning aspect should be incorporated in *every* Fire Management Plan.

If Fire Management Plans are the only means of information relating to cultural heritage protection provided to firefighters, then the information must be comprehensive and able to be effectively implemented.

### **Where to from here?**

This paper has shown that the current Fire Management Plans are not effective in their comprehensive disaster management planning measures. The current Fire Management Plans are scheduled for renewal, with new documents to be drawn up from 2005 onwards. This gives an opportunity to address number of issues.

It is essential that a dialogue be established between fire management authorities and cultural heritage managers, to facilitate future protection of cultural heritage assets (Spennemann & Look 1998). However, there are currently no designated heritage practitioners on either the Bush Fire Management Committees or on the overarching Bush Fire Coordinating Committee. The positive presence of heritage practitioners upon Committees could solve many of the heritage related problems found within the Fire Management Plans. Stovel (1998) acknowledged this issue by confirming the need to strengthen interest among disaster management personnel in cultural heritage.

A systematic process needs to be implemented to evaluate the quality, detail and depth of Fire Management Plan content prior to finalisation. Attention needs to be given to the type of and extent of information contained within the Fire Management Plans if the plans are to be effectively implemented in a bushfire situation.

Training programs need to incorporate comprehensive disaster planning measures, and the effects of fire and fire suppression techniques on cultural heritage assets, both Indigenous and historic. The training needs to include such elements as identification of cultural heritage assets, and appropriate preventative measures for their protection.

The more that can be done now to prepare for the next and unfortunately inevitable disaster event, the greater the likelihood of saving Australia's cultural heritage assets. The future of our cultural heritage assets is reliant upon effective planning procedures. For once destroyed, the direct, tangible links to our past are completely severed, obliterated forever (Riddett 2002). With the known, extreme risk of bushfire events in southeastern Australia (EMA 2003), now is the time to examine and assess the extent of fire planning and the protection of cultural heritage in NSW.

## References

- Albury Hume Bush Fire Risk Management Plan 2000. Prepared by the Albury and Hume Bush Fire Management Committees.; pursuant to section 52 of the *Rural Fires Act, 1997* (NSW). Albury and Hume Bush Fire Management Committees. Unpublished Report, copy held at Rural Fire Service Head Office, Sydney.
- Allan, C & Curtis, A 2005, 'Nipped in the Bud: why regional scale adaptive management is not blooming', *Environmental Management*, vol.36, no.3, pp. 414-425
- Aplin, G 2002, *Heritage: Identification, conservation, and management*, Oxford University Press, South Melbourne, VIC.
- Babbie, E 2001, *The practice of social research*, 9th edn, Wadsworth Thomson Learning, Belmont, California.

- Cambelltown Bush Fire Risk Management Plan 2001. Prepared by the Cambelltown Bush Fire Management Committee.; pursuant to section 52 of the *Rural Fires Act, 1997* (NSW). Cambelltown Bush Fire Management Committee. Unpublished Report, copy held at Rural Fire Service Head Office, Sydney.
- Crookwell Bush Fire Risk Management Plan 2003. Prepared by the Crookwell Bush Fire Management Committee.; pursuant to section 52 of the *Rural Fires Act, 1997* (NSW). Crookwell Bush Fire Management Committee. Unpublished Report, copy held at Rural Fire Service Head Office, Sydney.
- Davison, G 1991, 'The meaning of heritage', in *A heritage handbook*, G Davison & C McConville (eds), Allen & Unwin, St Leonards, NSW.
- Emergency Management Australia 2003, *Hazards, disasters and your community. A booklet for students and the community.*, 6th edn, Emergency Management Australia, Canberra, ACT.
- English, A 2000, 'This continent of smoke: Analysing the relationship between fire management and Aboriginal heritage in New South Wales', in *Red trucks: Green futures - Proceedings of a conference on ecologically sustainable bush fire management*, Nature Conservation Council of NSW Inc. (ed), Nature Conservation Council of NSW Inc., Sydney, NSW.
- Farrier, D, Lyster, R & Pearson, L 1999, *The environmental law handbook: Planning and land use in New South Wales*, 3rd edn, Redfern Legal Centre Publishing, Redfern, NSW.
- Gordon, J 2002, *Comprehensive emergency management for local governments: demystifying emergency planning*, Rothstein, Connecticut, USA.
- Gloucester Bush Fire Risk Management Plan 2003. Prepared by the Gloucester Bush Fire Management Committee.; pursuant to section 52 of the *Rural Fires Act, 1997* (NSW). Gloucester Bush Fire Management Committee. Unpublished Report, copy held at Rural Fire Service Head Office, Sydney.
- Graham, Kristy & Spennemann, Dirk H.R. (2006a) Disaster management and cultural heritage: An investigation of perceptions held by New South Wales Rural Fire Service Brigade Captains. *The Australasian Journal of Disaster and Trauma Studies*. Volume 2006-1 <http://www.massey.ac.nz/~trauma/issues/2006-1/graham.htm>
- Graham, Kristy & Spennemann, Dirk H.R. (2006b) State Emergency Service Local Controllers attitudes towards disaster planning for cultural heritage resources. *Disaster Prevention and Management*. accepted.
- Graham, Kristy & Spennemann, Dirk H.R. (2006c) Heritage managers and their Attitudes towards Disaster Management for cultural heritage resources in New South Wales, Australia. *International Journal of Emergency Management*. accepted
- Howard, P 2003, *Heritage: Management, interpretation, identity*, Continuum, London.
- Hutt, S, Blanco, C & Varmer, O 1999, *Heritage resources law: Protecting the archaeological and cultural environment*, Wiley, New York.
- Laidlaw, P 2004 'Fire Management Planning and Cultural Heritage in NSW: A survey of current management plans'. Bachelor of Environmental Science (Management - Cultural Heritage) (Honours) Thesis, Charles Sturt University, Albury, NSW.
- Laidlaw, P, Spennemann, DHR & Allan, C (in press a) No time to de(con)struct: The Accessibility of Bush Fire Risk Management Plans in New South Wales, Australia *Australian Journal of Emergency Management* under review
- Laidlaw, Prue, Allan, Catherine, and Spennemann, Dirk HR (in press b) The Practice of Boilerplating in the Planning Process in Australia: an examination of bushfire management plans in NSW. *Journal of Knowledge Management* (under review)

- Little, SJ 2001, 'New planning initiatives for bushfire protection in New South Wales', in *Bushfires: managing the risk - Proceedings of a conference on ecologically sustainable bush fire management*, Nature Conservation Council of NSW Inc. (ed), Nature Conservation Council of NSW Inc., Sydney, NSW.
- Look, DW & Spennemann, DHR 2000 'Disaster management for cultural properties', *CRM*, vol. 23, no. 6, pp. 3-5.
- Nelson, CL 1991, *Protecting the past from natural disasters*, The Preservation Press, National Trust for Historic Preservation, Washington, D.C.
- Neuman, WL 2003, *Social research methods: Qualitative and quantitative approaches*, 5th edn, Allyn & Bacon, Boston, U.S.A.
- New South Wales Bush Fire Coordinating Committee 1998a, *Bush Fire Risk Management Plan - Guidelines*, New South Wales Bushfire Coordinating Committee, Sydney, NSW.
- New South Wales Bush Fire Coordinating Committee 1998b, *Bush Fire Risk Management Plan - Model Plan*, New South Wales Bushfire Coordinating Committee, Sydney, NSW.
- Pearson, M & Sullivan, S 1995, *Looking after heritage places: the basics of heritage planning for managers, landowners and administrators*. Melbourne University Press.
- Riddett, R 2002 'Risk preparedness and cultural heritage', *Historic Environment*, vol. 16, no. 1, pp. 6-11.
- Spennemann, D.H.R. (1999). Cultural heritage conservation during emergency management: luxury or necessity? *International Journal of Public Administration* 22(1), 745-804.
- Spennemann, DHR (2004) PKM397 Heritage Site Management, Module 4: Disaster Management Plans. Charles Sturt University, Wagga Wagga.
- Spennemann, Dirk H.R. (2005) Risk Assessments in Heritage Planning in Victoria and New South Wales. A Survey of the status quo. *Australasian Journal of Environmental Management* vol. 12 n° 2, pp. 89-96.
- Spennemann, DHR & Graham, Kristy (2006) The importance of heritage preservation in natural disaster situations. *International Journal of Risk Assessment and Management*. accepted.
- Spennemann, D & Look, D 1998, 'From conflict to dialogue, from dialogue to cooperation, from cooperation to preservation', in *Disaster management programs for historic sites*, D Spennemann & D Look (eds), Association for Preservation Technology, U.S National Parks Service & The Johnstone Centre, Charles Sturt University, Albury, n.p.
- Stovel, H 1998, *Risk preparedness: A management manual for world cultural heritage*, International Centre for the Study of the Preservation and Restoration of Cultural Property, Rome, Italy.
- Sullivan, S 1983, 'Making a discovery: The finding and reporting of Aboriginal sites', in *Australian field archaeology: A guide to techniques*, G Connah (ed), Australian Institute of Aboriginal Studies, Canberra, ACT, pp. 1-9.
- Thomas, L 1999, 'Bushfire Risk Management Planning', *Managing our bushland: Proceedings of a conference about the protection and management of urban bushland*, Urban Bushland Council WA Inc., West Perth, WA.