

Queensland Parks and Wildlife Service Fire Management System – balancing ecological requirements and hazard reduction in burning practices

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Abstract

Queensland Parks and Wildlife Service (QPWS) has the responsibility for both protecting environmental values and managing fire on the protected area estate in Queensland. This estate includes national parks, forest reserves, and state forests. This paper describes the QPWS Fire Management System, and in particular the planning and reporting process designed to balance the sometimes conflicting requirements of hazard reduction, asset protection, grazing management, weed management, site rehabilitation, habitat maintenance and individual species needs.

The QPWS Fire Management System includes a number of components. Fire planning involves the determination of appropriate fire strategies for individual areas, the development of a Planned Burn Programme, and a procedure for wildfire response, which includes how wildfires may be used to advantage in meeting fire management objectives. Fire reporting and recording involves the monitoring of active fires, the reporting of the results of planned burns or wildfires, and the maintenance of fire history.

Keywords: fire management planning; fire reporting

Introduction

Queensland Parks and Wildlife Service (QPWS) has the responsibility for both protecting environmental values and managing fire on the protected area estate in Queensland. This estate of approximately 12 million hectares includes national parks, forest reserves, and state forests (EPA Estate Register, 21 April 2006). Fire management is one of the major management tools used by land and forest managers throughout Australia for the protection of life and property, to fulfil the ecological requirements of the flora, fauna and other natural assets, to maintain and promote sustainable production values and to maintain cultural resources and practices. The QPWS Fire Management System (FMS) has been developed and adopted State wide for all QPWS fire management operations to ensure they are conducted in a professional, ecologically sound, accountable and co-ordinated manner. It complements other Agency tools that govern fire management on QPWS estate, including legislation, Government and Departmental policies, procedural guides, environmental management principles, and Australian Inter-Agency Incident Management System.

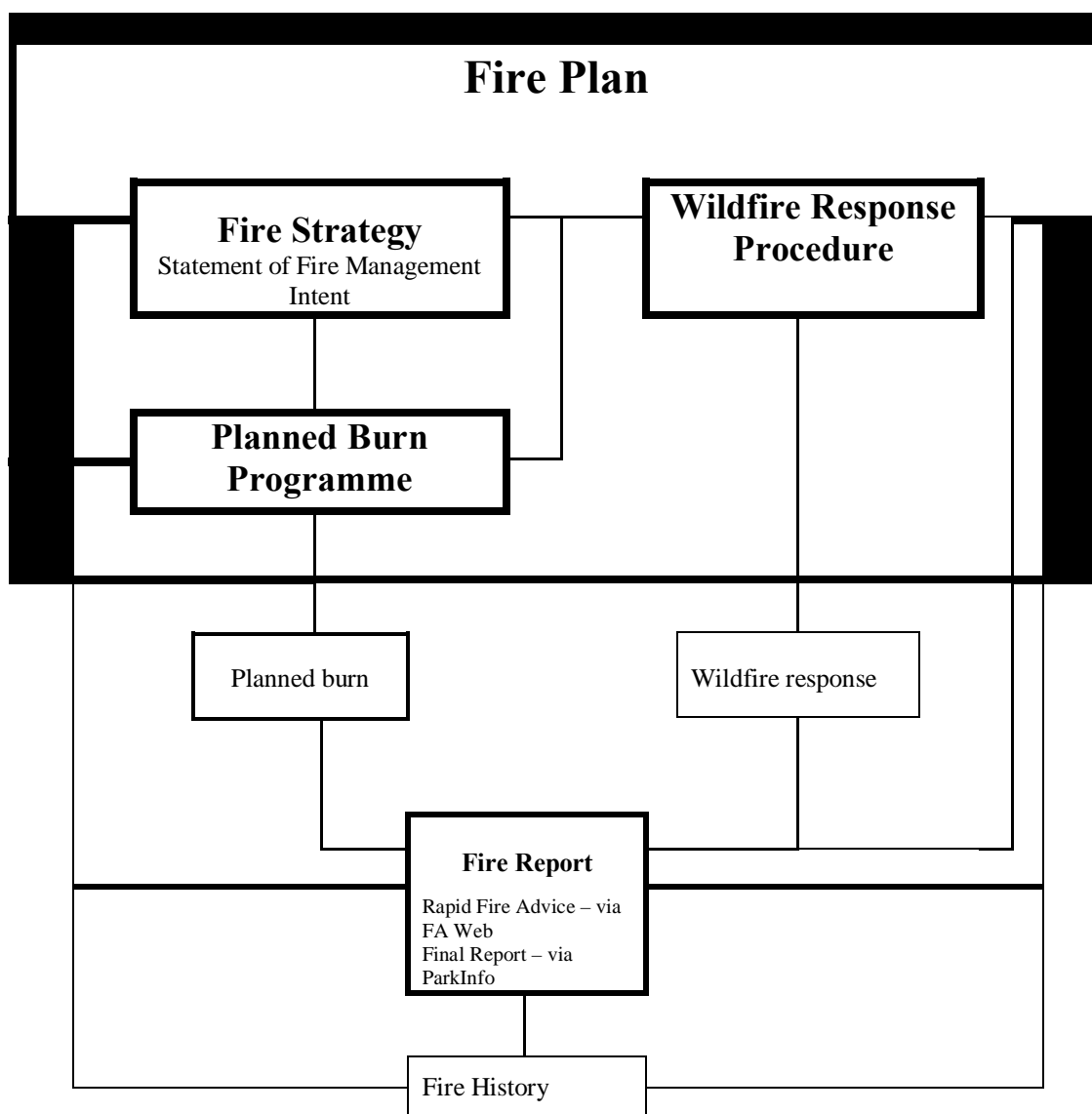
The Fire Management System evolved from procedures operating in Central Region since 1995 (Clarke 1998). It was developed to apply in all protected areas State wide in 2000, and with the incorporation of state forest and forest reserve management into QPWS responsibilities, was broadened into the current version in 2003 to include the fire management of these tenures (Melzer and Clarke, 2003). While still a relatively new system, the standard of implementation varies across the State, but will continue to improve in quality and consistency, as will the System itself through constant review and revision. A review is scheduled for completion this year, 2006.

Fire Management System Components

Fire management System comprises two volumes. Volume 2, still in preparation, covers operational guidelines, including such elements as fire behaviour, weather, fuel assessment, preparedness, equipment, personal protective equipment, and training.

Volume 1 covers fire planning and reporting, the elements of which are given in Figure 1. This paper will focus on these planning and reporting elements and discuss how they are applied in practice to achieve fire management outcomes.

Figure 1 The Fire Management System - components and linkages related to planning and reporting (source: Melzer and Clarke 2003).



Fire Planning

As illustrated in Figure 1, the Fire Plan is not a separate document as such, but is the title used for the collection of all completed planning components. The Fire Plan consists of the Fire Strategy, the current Planned Burn Programme and the Wildfire Response Procedure.

Fire Strategy

The Fire Strategy provides the overall framework and direction for fire management in a reserve and is therefore the foundation from which the Planned Burn Programme is developed. The Strategy examines the values of the reserve, i.e. what are we managing the area for (significant species and habitat conservation, cultural values, production values, recreation), the issues for fire management such as adjacent land use and community interests, conflicting fire management objectives, recommended fire regimes, and practical operational considerations (eg. fireline location and standard). The core of the Strategy is a zoning map identifying the principal objective of fire management for each area, and fire associations within each zone, the latter being vegetation types or defined areas within a zone that require a particular fire management regime. Up to seven zones are identified, being:

- Protection - a fuel-reduced area for high level protection of life, property, high value infrastructure, or fire exclusion areas, generally immediately adjacent to infrastructure or urban interface;
- Wildfire Mitigation – fuels maintained in a mosaic of low to moderate levels in strategic areas to improve wildfire suppression capability, while ensuring fire intervals are not less than is ecologically acceptable;
- Conservation – maintaining the natural role of fire as an ecological process in vegetation associations and maintain/promote habitat diversity, generally highly variable mosaic burning in fire adapted associations, with indirect fuel management outcomes;
- Sustainable Production – maintaining or facilitating sustainable production such as timber harvesting, grazing or foliage harvesting, generally protecting commercial plant species while complementing fuel management or biodiversity objectives within adjacent zones;
- Rehabilitation – to combat a threatening process not possible by routine fire management, generally fire exclusion or specific fire regimes for weed control or re-establishment of native species;
- Reference – to allow regimes for research purposes, generally fire exclusion or specific fire regimes to determine long term effects of fire regimes or fire exclusion;
- Exclusion – where active management is desirable for prevention of fire in a fire-sensitive association.

In practical application, fire regimes are a function of both the fire association requirements and zone requirements (or principle objective). Regimes are given as a range within the specified parameters, and not a specified schedule or burn interval. Variability is also designed in terms of season and intensity, and is applied in a mosaic manner, particularly within Conservation and Mitigation zones, which provides the best means of meeting the range of requirements of the many species that occur in an area. The determination of the most appropriate zoning for the area and the fire regime for a site is a difficult and key task of the Strategy author and approving body, but will not be examined further here.

A Fire Strategy need only be as complex as the fire management needs dictate, therefore Fire Strategies will vary in complexity. They may also be prepared as multi-tenure / multi-agency fire management plans or in association with a community bushfire protection plan. Stakeholder consultation and native title notification are also integral to the development of a Fire Strategy.

Statement of Fire Management Intent

While strategies are in preparation, all reserves are covered by a Statement of Fire Management Intent (SFMI), which is a relatively simple document also identifying values, fire related issues, zoning and recommended fire regimes. It is prepared on the basis of existing local knowledge with minimal external consultation. Statements of Fire Management Intent will be progressively replaced by more comprehensive Fire Strategies on a priority basis.

Assessment and approval of the Fire Strategies, and modifications to Statements of Fire Management Intent are the responsibility of District or Regional Fire Referral Groups. A Fire Referral Group comprises local operational staff, natural resource management staff, District management, and Regional specialists. Other Agency staff and external stakeholders may also be included when relevant.

Planned Burn Programme

Burn proposals are prepared by local operational staff in consultation with District and/or Regional technical support staff, to implement the objectives of the Fire Strategy or SFMI. Burn proposals are prepared on the QPWS ParkInfo system (see Reporting below) allowing GIS recording of all burn proposals. As planned burning can have a wide range of objectives, a focus within the planned burn proposal is to include clear objectives for the burn consistent with the Fire Strategy, and to include appropriate measurable post-burn assessments to determine the degree to which the burn objectives have been achieved. This is intended to facilitate corrective action or to improve future burn techniques as necessary.

Each year, burn proposals are assembled into a Planned Burn Programme for approval. The Programme is intended to cover a multiple year period in order to allow flexibility to respond to unseasonal weather or favourable opportunities, and to promote the development of a longer term perspective with respect to fire management and ecological processes. In assessing the Planned Burn Programme, the Fire Referral Group also reviews uncompleted burn

proposals from the burn programme approved in the previous year to ensure they are still relevant and appropriate. The Chairperson of the Fire Referral Group collates burn proposal details for annual reporting purposes.

Wildfire Response Procedure

A Wildfire Response Procedure is prepared for a reserve or collection of reserves, and collates key operating procedures, and contact details for staff, other agencies, neighbours, and resources. It contains a Fire Action Map for use during wildfire incident management planning and operations, which is a base reserve map with topographic, vegetation and infrastructure features, detailing additional key information such as firelines, water points, locked gates, helipads, and fire exclusion areas.

The Wildfire Response Procedure also contains a Suppression Priority Map for the reserve. This map combines details of fire history, fire management zoning, and the current Planned Burn Programme, to predetermine for a wildfire what may be the priorities for suppression based on ecological and sustainable production considerations **after** the requirements for the protection of life and property have been satisfied. A Suppression Priority Map is reviewed annually in line with recent burns and period since last burn, and shows the following categories:

- Acceptable – can allow wildfire to burn, because it can be managed to meet current planned burn objectives or longer term ecological outcomes;
- Not desirable – will not meet planned burn objectives and may impact on longer term objectives and ecological outcomes, but consequences are manageable or acceptable;
- Unacceptable – suppress wildfire if at all possible.

In practice, a Suppression Priority Map provides the Incident Management Team with a quick reference guide to the environmental issues relating to a wildfire. For example, if a wildfire within a “acceptable” area is of low to moderate intensity and of no threat to life and property, consider taking advantage of the opportunity and monitor the fire within acceptable boundaries rather than active and possibly expensive suppression action. Where predicted weather is serious and fire threats are high, immediate active suppression is always the priority.

Fire Reporting

Fire reporting within QPWS occurs at two levels, Fire Advice Web and ParkInfo Fire Reports.

Fire Advice Web

Fire Advice Web (FA Web) is a web based rapid reporting system designed to provide real time updates of current fires. Basic fire details such as current active location, area burnt, and resourcing are recorded by local offices or Incident Management Teams, generally on an hourly to daily basis depending on incident severity. It is used by management and fire co-ordination staff to monitor current fire activity, to review preparedness, prioritise resources, and for overall situation reporting. It also provides immediate statistical summaries of current, annual or historic fire activity relevant to QPWS. Being a rapid and simple reporting tool, FA Web is not designed to provide comprehensive detail on individual fires. The latter is provided in the fire reports through the ParkInfo system.

ParkInfo Fire Reports

On completion of the planned burn or wildfire, a comprehensive fire report is prepared giving amongst other things details of fire behaviour, effects and management outcomes, costs, and details of origin and cause. This is completed within a GIS based system called ParkInfo, which also incorporates other reserve management activity such as pest management. Fire coverage is mapped using GPS data capture, shape files derived from satellite imagery or manual digitising, and upon collation of all reports into District and State databases, provides for easily accessible fire histories for each reserve. Wayne Kington will be discussing this system in further detail at this Conference, see Paper 41, ParkInfo: a GIS for Land Management.

Conclusions

The QPWS Fire Management System provides the framework for fire management on QPWS estate. It currently ensures that fire management, as far as possible, is conducted in a professional, ecologically sound, accountable manner, while meeting the needs and expectations of neighbours, users of the estate, and the broader community. The system will continue to evolve to incorporate improvements in science, methodology and accepted practice for fire management.

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