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CO-ORDINATING FIRE MANAGEMENT FOR THE GREAT MOUNT ISA AREA

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ABSTRACT

Southern Gulf Catchments (SGC) contracted Dr. Leasie Felderhof of Firescape Science to develop a detailed proposal for addressing fire management issues in the Greater Mount Isa (GMI) region. Decades of research into fire ecology shows fire is instrumental in shaping the environment and active fire management is required for conserving species, cultural heritage and ecological communities. SGC is responding to concerns that altered fire regimes since European settlement has resulted in vegetation modification and species loss. The extent of concern has led to issues of inappropriate fire regimes being nominated for the listing as a threatening process under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999*. Some flora and fauna are killed by fire, but for others it is a catalyst for regeneration. Responses depend on species characteristics and the region's fire history. Further, Aboriginal occupancy of Australia before settlement is well recognised. Indigenous people have special interests relating to land management – and fire is integral to cultural heritage and tradition. Across tenure, cultural heritage is given recognition, protection and conservation under the *Aboriginal Cultural Heritage Act 2003*. In short, the influence of fire on the landscape means land managers committed to sustainable land management need to address fire management issues. This is the basis of SGC promoting best-practice fire management in the GMI area. Dr. Felderhof has developed a project framework with modules for fire planning, implementation, knowledge gathering, acquiring new knowledge and extension and will be consulting with SGC and stakeholders, community members and potential partners to finalise this framework which will be used to seek funding. Dr. Felderhof believes the elements to produce a successful project include: on-ground activity, community engagement and support, cross sectoral involvement, engagement with Traditional Owners, valuing community experience and knowledge, bridging the gap between science and practice and employing local residents.

BACKGROUND

The project aims to compile a detailed, well-considered proposal that can be used as a means to seek further funding from potential partners, as a guide for on-ground practices and activities in order to protect the community from bushfires and to develop expertise in using fire as a tool for sustainable land management.

Prior to 2003, there was virtually no documented information to guide ecologically sustainable fire management in north-west Queensland. Ergon Energy's request for research came after a wildfire caused a power outage to high voltage transmission line in the Carpentaria Mineral Province. Ergon Energy called for research into landscape ecology to be completed in order to formulate a fire management plan to demonstrate best practice environmental management. Previous fire research in northern Australia had focussed on wetter (mesic) savanna areas and the arid zone - very little fire-related research had been conducted in semi-arid areas anywhere in Australia. To address this information gap, Ergon Energy, the Tropical Savannas Management CRC and James Cook University funded a PhD study to provide baseline information on landscape fire patterns, the regenerative responses of dominant plant species, the likely responses of fauna to fire, key species to use as indicators of an appropriate fire regime and landscape fire

monitoring using remote sensing. The study identified a number of approaches leading to improved fire management in the bioregion.

Appropriate fire management to promote best practice fire management and support biodiversity function was identified as an Aspirational Target within the SGC Regional NRM Plan. To achieve this, targeted research into the relationship between fire regimes and biodiversity function, incorporation of traditional knowledge and extension to land managers is required.

PROJECT ACTIVITIES AND METHODS

1. Background paper – scope similar work from other regions, summarise key success factors and obtain examples to develop a project modules.
2. Meet with stakeholders – organise face to face meetings with different interest groups in the Mount Isa area to discuss the preliminary concept, gauge interest and invite participation.
3. Interactive workshop – present findings from background paper and stakeholder meetings at a 2 day workshop to develop linkages, refine project modules, initiate indicative funding opportunities and logistics .
4. Prepare detailed project briefs – develop implementation details for each project component. The briefs will contain 'how to' information and include the project context, key steps to take, who to involve, methods to use and issues to consider.
5. Obtain funding – contact project stakeholders and other potential sponsors and seek commitment to fund project modules and implementation.
6. Project presentation – attend meeting of SGC in Mount Isa to present and explain final proposal.

MODULE FRAMEWORK

The project framework and modules presented was drawn from "*Developing a Community-Driven Knowledge System for Biodiversity Management in the Australian Tropical Savannas Region"* currently being prepared by Dr. Gabriel Crowley (TS CRC). This report reflects Dr. Crowley's research into the information and delivery requirements of land managers within the tropical savanna area. The goal of her project was to develop a biodiversity knowledge system aimed at achieving maximum uptake by land managers. The results suggest the best methods for working with each sector to convey information and encourage uptake, and have been used to guide development of this project (Crowley, *in press).*

Project framework for the Greater Mount Isa area fire project

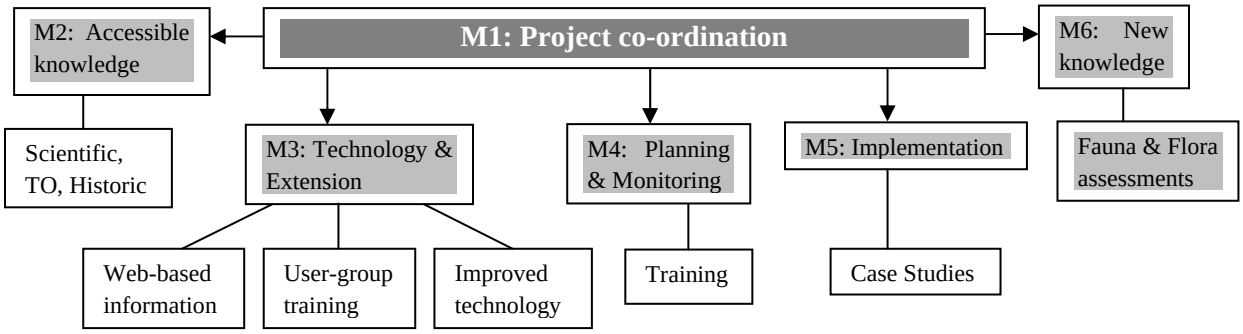

Figure 1: Project framework for the Greater Mount Isa area fire project. The underlying 'modules' are interlinked with one another, but are able to stand alone for project delivery.

Module 1: Project co-ordination

Full time central co-ordination will be required to ensure timely delivery of project modules, that positive networks, information sharing and synergies develop between the people involved, and that SGC's protocols and processes are followed. The co-ordinator would take overall responsibility for project

delivery, with a steering committee representing project partners and community interests. A technical advisory panel would meet from time to time ensuring relevant expertise was brought to the table.

Module 2: Accessible knowledge

Scientific knowledge - Limited fire research has been carried out in the Mount Isa area with the most directly relevant work undertaken as part of Dr. Felderhof's PhD research conducted between 2003 and 2007. Research findings need to be presented in a format suitable for a more general audience and fire information related to the broader savanna area and the arid zone needs to be made available to the public.

Indigenous ecological knowledge - It is well recognised that Aboriginal people were very skilled and active fire managers before the arrival of Europeans (Horton, 1982). People were inextricably linked with their environment, tracking resources, managing them with fire and sustainably harvesting bush foods relative to abundance. Engagement of relevant Traditional Owners of the area to incorporate their knowledge and participation will commence.

Historic knowledge - Information and observations from long-term land managers is invaluable. Such information is easily lost as properties are passed from one generation to the next or sold. Recording fire-related information from pastoralists in the Mount Isa area on why they burn, when they burn, how they burn, changes they have noticed over time would assist our general understanding of fire ecology in the local area, as well as contribute to continuity of management over time.

Module 3: Technology and extension

Web based delivery - Present information through a tool such as Land Manager established by the TS-CRC.

User-group training - Available web-based materials and mapping tools are immediately available however not all managers are familiar with this information, what it means or how it can be used. An extension component is recommended to enable people to access and interpret existing resources.

New application of satellite-derived data - information on active fires and recent fire scars is available on the National Australian Fire Information site, developed from fire studies in Western Australia, the Northern Territory and Cape York Peninsula. Significant ground-truthing was required to verify that hot-spots were indeed fires and dark areas have indeed been burnt. For the Mount Isa area, ground-truthing was undertaken as part of the Dr Felderhof's PhD research found that many small clusters of hot spots were not being recorded by the semi-automated fire scar mapping procedure. However, when satellite imagery was interrogated further, small fire scars were invariably present, raising the issue that mapping techniques used needed to be adapted slightly for different regions or environments. Ground-based verification of fires would assist to refine the accuracy of the fire scar maps, which in turn will engender credibility for using satellite imagery as a fire management tool.

Module 4: Planning and monitoring

Other major fire projects have reached the point where adequate baseline information is available, but findings need to be applied on the ground. Since different land managers have different objectives, and land types differ, there can be no universal prescription. Multiple uses, and linking science with management, can be addressed by promoting fire-planning at the property scale. Preparing fire plans encourages landholders to view their property within the wider landscape, helps them to balance decisions against a range of possible outcomes, as well as consider the impacts beyond the immediate fire. Fire plans are the primary mechanism for applying 'best practice' information, but can also be used to pass on land management information between different generations and to build knowledge through experience by documenting objectives, conditions and outcomes.

Module 5: Implementation

This module recognises the need for training and ensures funding is allocated, but the specific approach (who to train) cannot be determined until the project commences. Funds are also required for Personal

Protective Equipment which is required to participate in the training. Different levels of fire training are available and it is recommended a range of skills be present within each community.

Module 6: New knowledge
Information on the ecological needs of species and ecosystems is scant. Therefore determining the impact of past fires on fire-sensitive communities and species is a priority to ensure management practices are put in place that conserves these species. The fire history of an area can be determined by using satellite imagery to map fire occurrence over time. This allows ground-based records of vegetation to be interpreted with respect to the recent fire history. It is recommended that ground surveys of fire sensitive communities (especially riparian areas) be undertaken and their 'health' assessed according to the fire regime operating in the area. A vegetation assessment is also required at each fauna monitoring site, so that changes to fauna might be interpreted according to the status or condition of the vegetation community.

DISCUSSION
After decades of research into fire ecology, it is now understood that fire is instrumental in shaping the Australian environment (Bradstock *et al.* 2002) and active fire management is required for conserving species and ecological communities. Scientific views have changed from fire as a force to be feared and prevented, to recognition that fire is a natural ecological process and is required for maintaining biological diversity (Russell-Smith 2002). In short, the substantial influence of fire on the landscape means any land manager or organisation committed to sustainable land management needs to address fire management issues. This has spawned a number of fire-related projects, from multi-agency, cross-tenure, co-ordinated efforts at the landscape scale, to others with a tighter focus or research question. As an example, agencies charged with conservation management (e.g. the Queensland Parks and Wildlife Service, QPWS) apply fire to maintain ecosystem function for species conservation, as well as to reduce fuel for protection of life and property (Melzer & Clarke 2003). Agencies that promote 'maintaining the natural resource base' (e.g. DNR&W and DPI) have allocated considerable research budgets to investigating issues related to sustainable land management. The use of fire for sustainable land management is recognised by the *Fire and Rescue Service Act 1990*, administered by the Queensland Fire and Rescue Service (QFRS), but significantly more emphasis is placed on fire safety, fire prevention, and reducing fire hazard. Thus, there is much to draw upon in order to develop and externally fund this project.

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