A national framework to report on the benefits of Indigenous cultural fire management

Final Report

Edited by Kirsten Maclean, Cathy Robinson and Oliver Costello

A Report to the Australian Government Department of the Environment and Energy

Contents

Figures

Tables

Acknowledgments

Executive summary

Indigenous cultural fire management or cultural burning reflects practices, relationships and knowledge of fire that is an integral part of Indigenous governance systems. It has been crucial to the successful management of Australian landscapes for millennia, and it enables diverse, ongoing management efforts and Indigenous enterprises that now exist across the continent. There are a range of reasons why there is a need to monitor and evaluate the outcomes from Indigenous cultural burning activities and partnerships. For Indigenous groups the ability to report on outcomes from local and regional activities and partnerships helps explain the importance of cultural burning activities and partnerships to local Traditional Owners, funders and other key stakeholders. Government programs also need this information to show how and why we need to maintain long-term public support for Indigenous cultural fire management programs to secure their critical role in safeguarding Australia's natural and cultural environment. Reporting on outcomes from cultural fire management also helps Indigenous and other investors assess whether these programs are achieving agreed outcomes, are culturally appropriate and that local Indigenous community, government and other investment resources are used and managed as intended.

This research is the result of a collaboration between the Australian Government's National Landcare Program, the CSIRO, and was guided by a Project Advisory Group comprised of self-selected Indigenous and non-indigenous fire management experts from New South Wales, Tasmania and Victoria.

The mixed methods used to undertake this work highlight the diversity of current Indigenous cultural fire management enterprises, partnerships, projects and activities in South-east Australia. It brings attention to the reality that Indigenous fire managers have the potential to deliver cultural fire management services to **outcomes 1-5 of the Regional Land Partnerships Program Logic**. Services might include: planning for and as appropriate working in partnership with non-indigenous managers to use appropriate fire regimes (related knowledge, skills and expertise) to reduce the incidence of wildfire and thereby protect the ecological character of RAMSAR sites; and to protect, improve the condition of and support recovery/regeneration of threatened species, natural heritage Outstanding Universal Value of World Heritage properties on WH properties or neighbouring properties, EPBC Act listed Threatened Ecological Communities and soil, biodiversity and vegetation. These services would likely deliver a suite of benefits (cultural, social, health and wellbeing, economic, political-self-determination and ecological) to local landscapes, fire managers and the wider regional community (see Table 1).

The project team sought input from the Advisory Group and the MERIT team to co-develop a framework that adapts the current 'Fire management Activity sheet' of MERIT, and can capture Indigenous cultural fire management activities (as distinct from non-indigenous fire management activities). This Framework includes output targets that are designed to ensure the many benefits of this important work and that may be used in future to track changes including the ongoing development of Indigenous enterprises to deliver services to the Regional Land Partnerships Program.

Suggested draft protocols to guide ***non-indigenous*** managers in their efforts to ensure Indigenous people gain maximum benefits from cultural fire management partnerships and activities were also

developed based on perspectives offered from Indigenous and non-Indigenous fire managers engaged in this project. These protocols focus on the need to design governance arrangements that support Indigenous leadership; the importance of fostering supportive, place-based partnerships; the need to recognise and protect, Indigenous Cultural and Intellectual Property; the need to offer training and support for non-indigenous people and organisations so they are able to support cultural fire management; and ensuring benefits to local Indigenous communities. Many of these suggested draft protocols resonate with those advocated by Indigenous fire managers at a national workshop held in northern Australia (see Robinson et al, 2016).

The insights and outcomes of this research have implications for Australia's National Landcare program efforts to ensure changes to how funding is secured and justified can recognise and support the activities and partnerships that are required to support Indigenous cultural fire management compared with landscape burning directed by non-Indigenous ecological or risk-based frameworks. Accordingly suggested amendments to the national MERIT reporting system pays attention to reporting on benefits accrued from knowledge sharing, Indigenous engagement and training that occur pre-burn as well as during cultural burn activities. These suggestions are focused on reporting for a national government program rather than to guide and evaluate local partner efforts and experiences. Even so draft protocols to guide non-Indigenous fire managers in their efforts to support Indigenous cultural burning activities are outlined in an effort to provide continued support for the many and growing local Indigenous fire management activities and enterprises that now exist across Australia.

1 Introduction and Project Scope

This report builds on the efforts of a range of Indigenous fire related activities and partnerships across Australia that support Indigenous groups and enterprises to maintain, learn, build and apply cultural fire knowledge and practices. This includes those activities facilitated through the Northern Australian Indigenous Land and Sea Management Alliance (NAILSMA), the Victorian Federation of Traditional Owners, Firesticks Alliance Indigenous Corporation (Firesticks Alliance), and fire partnerships and activities coordinated through a range of Indigenous-led initiatives. There is also a range of national and state government programs that support Indigenous cultural fire management activities and partnerships (e.g. National Landcare Program and related NRM regional programs; PM&C 'Working on Country', Indigenous Protected Area and associated programs; State Parks and Wildlife agency programs; State fire management agency programs). In part this reflects the growing recognition that Indigenous cultural burning is a critical feature of Indigenous land management systems and a practical expression of Indigenous knowledge and identity[1]. Indigenous cultural fire management is also a key management activity needed to manage Australia's biodiversity, including threatened species and ecological communities. Indigenous fire management partnerships and activities have now spread across the country and offer an important opportunity for Indigenous livelihoods, biodiversity conservation and on-country economic enterprises (e.g. Robinson et al. 2016). As such governments at all levels have an obligation to support Indigenous people to gain maximum benefits from landscape burning activities and initiatives.

Through the National Landcare Program (NLP) Regional Stream there has been considerable investment to support, catalyse and grow Indigenous fire management partnerships and activities across the nation. This includes funding to support Indigenous groups to be trained and supported to undertake a range of on-ground fire management activities (for example see NLP, 2018b). The NLP has also offered years of support for Indigenous groups to learn from each other to guide their own Indigenous cultural fire management activities and approaches (e.g. National Indigenous Fire workshop, see Firesticks Alliance, 2018a, c). The intent of NLP support is to enable Indigenous groups to use fire as a land management tool to rejuvenate and regenerate native ecosystems as well being a potential mechanism to deliver economic, cultural and social gains for Indigenous fire management enterprises and delivery of fire-based environmental services.

The support offered by the NLP for Indigenous fire activities and partnerships is part of a range of programs that resource a variety of Indigenous cultural fire partnerships and activities. In some cases fire management entails Indigenous-led approaches that have enabled Indigenous groups to apply Indigenous fire knowledge and burning contemporary landscapes through a range of conservation, carbon offset and natural resource management agreements. There are some innovative examples where Indigenous groups and crews undertake burns using Indigenous landscape burning techniques, with environmental, cultural and sometimes commercial gains for both landowners and the Indigenous people[2]. This can include potential savings in weed control,

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[1] Important to note is that Indigenous engage in a suite of non-fire related activities that enable them to care for their traditional country. Although these activities are equally important Indigenous land management systems, they are not the focus of this research. Many of these activities are also outlined in the references drawn on here that outline the co-benefits derived from Indigenous natural resource management work (e.g. Hunt et al, 2009; Barber and Jackson, 2017).

[2] For example partnerships between: Dja Dja Wurung Clans Aboriginal Corporation (see Dja Dja Wurrung, 2016) and Forest Fire Management Victoria (see Forest Fire Management Victoria, 2015); truwana Rangers and Tasmania Fire Service (see Chapter 7); Banbai Enterprise Development Aboriginal Corporation and the Tablelands Local Land Services, NSW (see chapter 5); the Tasmanian Aboriginal Centre, Mr. von Bibra owner of

stronger growth in native pastures, carbon abatement and reduction in fire fuel loads. In other cases non-Indigenous groups and land managers engage Indigenous experts and Indigenous fire knowledge to inform their landscape burning programs.

A number of government programs are now developing ways to establish national monitoring and evaluation (M&E) frameworks to assess the benefits and collate the evidence needed for continued government support for Indigenous cultural fire management activities compared with broader fire management activities that may be undertaken by non-indigenous managers or in partnership between Indigenous and non-indigenous fire managers but that do not explicitly deliver all the benefits of Indigenous cultural fire management. This is a challenging endeavour. 'Cool burning' activities that only achieve minimum acceptable benefits for Indigenous communities could potentially be included with Indigenous cultural burning programs and activities that are explicitly designed by Indigenous people for Indigenous benefit. To avoid this, reporting frameworks that include measures on the benefits of Indigenous cultural fire management activities are required. Such frameworks can provide a way for Indigenous groups and government and non-government partners to report on the value of cultural fire management activities and partnerships.

Scope of the research

This research was commissioned by the National Landcare Program (NLP) to develop a monitoring and evaluation framework to measure the economic, social and environmental benefits that are derived from Indigenous fire management activities. Key purposes of the framework are:

- To be used within the Federal Government's Monitoring, Evaluation, Reporting and Improvement Tool (MERIT); and

- To provide quantifiable measures for Indigenous groups to seek commercial or other recognition for the range of benefits achieved from landscape burning activities and partnerships

As part of this effort perspectives offered by Indigenous and non-Indigenous fire experts and partners were collated and analysed. The report concludes with suggested draft protocols to guide non-indigenous managers in their efforts to ensure Indigenous people gain maximum benefits from this growing national initiative.

Report outline

This report presents the outcomes of this important research in a set of Chapters.

Chapter 2 provides an overview of the research approach that guided this work and the set of methods used.

Chapter 3 presents the 'results' of the qualitative and quantitative data analysis relating to the benefits reported as being derived from Indigenous cultural fire management.

Chapter 4 introduces and provides an overview of how we have understood the diversity, extent and impact of Indigenous fire management activities and partnerships in southern Australia. Most

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Beaufront in central Tasmania, the Tasmanian Land Conservancy, Greening Australia, the Tasmania Fire Service and University of Tasmania (see ABC, 2018; UTAS, 2018).

of which have been supported by Indigenous groups and either directly or indirectly (partial funding from NRM bodies and affiliates) from the National Landcare program.

Chapters 5-10 celebrate this diversity by providing a series of case studies. The authors highlight the context, purpose, partnerships, activities and future aspirations of their cultural fire management work.

Chapter 11 ties each of these examples of Indigenous cultural fire management work together by considering and articulating by use of examples the important role of regional and/or national networks to Indigenous cultural fire management work.

The derived framework is presented in Chapter 12 including draft measures that could be used in MERIT to capture the benefits of Indigenous cultural fire management. Important to note is that these suggestions are derived from this research project that takes a focus on the co-benefits derived from cultural fire management work of some Indigenous groups based in parts of southern Australia, as well as insights gleaned from previous work conducted with some Indigenous groups from northern Australia (e.g. see Robinson et al, 2016b).

Chapter 13 draws on perspectives offered in this and previous work to *suggest draft protocols* for non-Indigenous managers to support partnerships that can deliver maximum benefits for Indigenous people engaged in this important initiative.

The Report concludes with a discussion about the implications of this research for the National MERI frameworks in Chapter 14.

2 Research approach and methodology

In this Chapter, the participatory action-research approach is described and the role and formation of the Project Advisory Group is summarised. This is followed by a review of methods used to provide national and local/regional examples of Indigenous fire management activities, resources, partners and outcomes supported under the National Landcare Program.

A participatory action research approach

A *participatory action research approach* was used to guide the methodological design, data collection and reporting stages of the project. A participatory action research approach ensures the research team uses collaborative approaches to work with the 'community of practice' (Indigenous fire managers, government advisors/managers) to have input into research focus, methodological design and in some instances even be involved in the research conduct and write up (see Zurba et al, in press). See Fig. 1 for visual representation of the participatory action research approach followed in this research.

The Project Team worked with a majority Indigenous Project Advisory Group to co-design the qualitative case studies, the quantitative survey, and to inform processes used to guide co-authorship decisions for the final report. The result of this effort was to provide local, regional and national examples that highlight the extent, diversity and multiple benefits of Indigenous landscape burning activities.

The Project Advisory Group

The Project Team (CSIRO) was keen to ensure the project was guided by individuals and groups (Indigenous and non-indigenous) who are actively working to progress Indigenous fire management programs, projects and activities in southern Australia. A Project Advisory Group was convened and met 7 times during the 18 month project to guide and have input to all stages of the project including: the research design, research conduct, reporting and, importantly, the co-development of the Reporting Framework (a revision of the MERIT Fire Management Activity sheet) via formal teleconferences (x3), telephone discussions and emails. This Advisory Group was self-selected. In June 2017, an email introducing the research was sent to individuals who were participants at a 'Cool burning' workshop held in Coffs Harbour, June 2016 and the project was also introduced to the Victorian Indigenous Land Managers Network of the Victorian Catchment Management Authorities, in the same month. A follow up email was sent to individuals who had shown interest in the project, requesting their presence at a telephone conference to discuss the project and receive nominations to be members of the Advisory Group. Some of these individuals also shared the invitation to others in their networks who might have been interested to be involved.

This Advisory Group comprised of (in no particular order):

Oliver Costello (Firesticks Alliance), Jessica Wegener (NSW Aboriginal Land Council, Firesticks Alliance), Claude McDermott (NSW Aboriginal Affairs), Chelsea Marshall (Gumma IPA), Neville

Atkinson (GBCMA, Victoria), Rhys Collins (PPWPCMA, Victoria), Geoff Simpson (NSW Office of Environment and Heritage), Jacqueline Goethe (University of Technology, Sydney, NSW), Clyde Mansell (Aboriginal Land Council Tasmania), Richard Ingram (private consultant, and former CEO of Cradle Coast NRM, TAS), Mitch Jeffery (National Landcare Program) and Peter Wilcock (National Landcare Program) with support/occasional input from Milton Lewis (former NSW Central Tablelands Local Land Services), Gaye Sutherland (GBCMA, Victoria), Edwina Chen (Aboriginal Land Council, NSW), and Will Philippiadias (former PM&C).
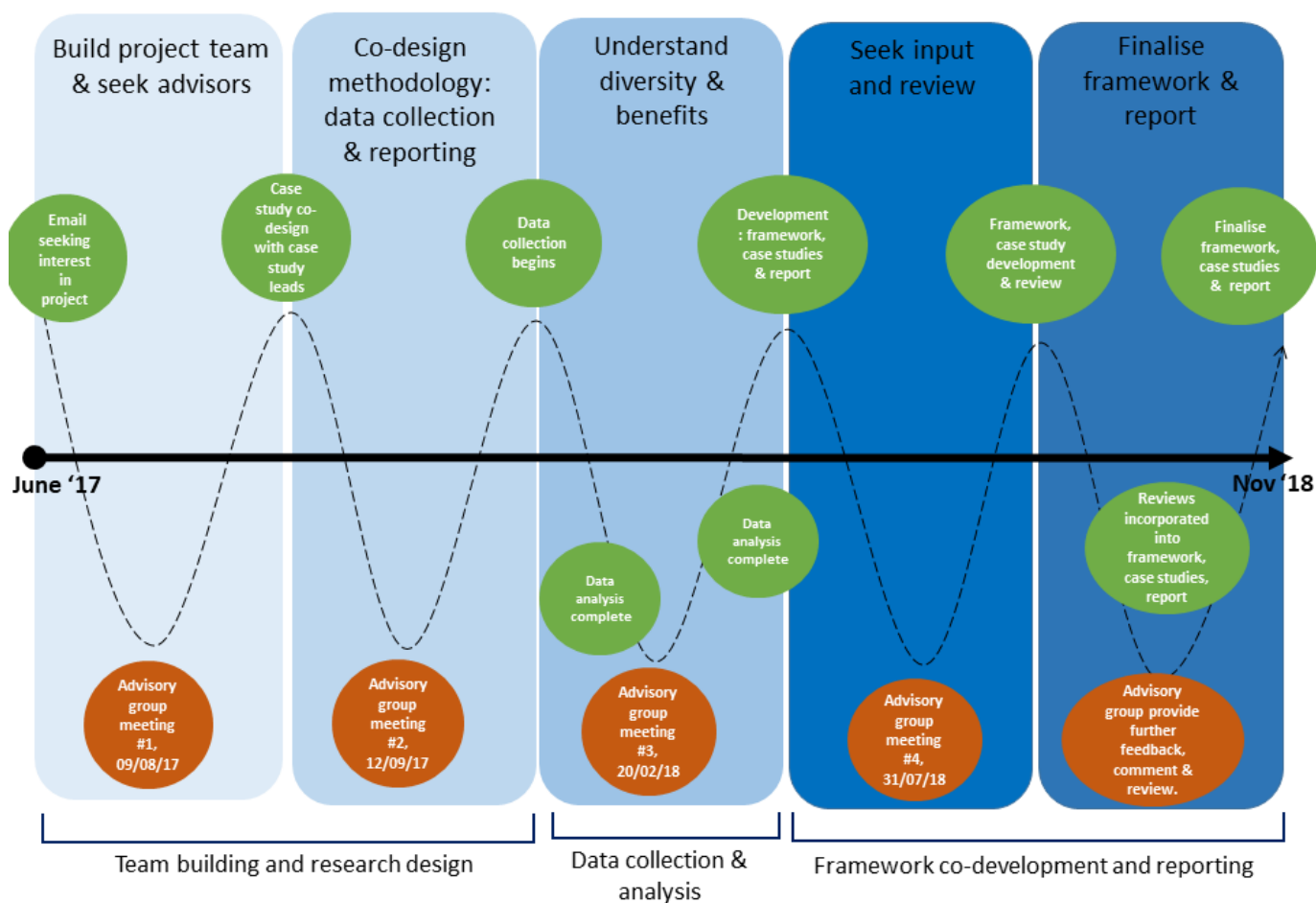
Figure 1: A diagram of the Participatory Action research approach

Guidance from the MERI Team

The Project Team regularly sought feedback from the MERI Team of the National Landcare Program to ensure the development of the draft reporting framework would be suitable and appropriate for inclusion in MERIT. In particular, the team was asked to use the Regional Land Partnerships logic (see NLP, 2018c) and this research to inform the Fire Management Activity Sheet of MERIT (see DoE, 2015).

Research methods used to understand the diversity and benefits of Indigenous cultural fire management projects and partnerships

A key focus of the team's efforts to adapt and refine the MERIT 'Fire Management Activity sheet' was to ensure that the diversity and range of benefits delivered through Indigenous cultural fire management activities and partnerships could be appropriately reported. A snapshot review of the relevant literature that has considered the range of environmental, economic, social, cultural, health and wellbeing, and political-self-determination benefits of Indigenous natural resource management was conducted to derive benefit categories (see Chapter 3).

Qualitative interviews and case studies of Indigenous fire enterprises, projects, partnerships to understand diversity and benefits.

The Project Advisory Group provided guidance on number and location of focus areas for the research team to investigate. Case study leads were identified as part of this effort and provided guidance on who should be contacted to interview (from each case study location), the nature of available secondary data available that was relevant to each case study, the design of the small group meeting(s), and how the project budget could be used and who could be invited to participate.

Oliver Costello (Firesticks Alliance) guided design of the research in the Northern Rivers region of NSW. He co-facilitated two small group meetings. The first meeting was held at the Minyumai IPA with the Minyumai IPA Rangers and representatives from the Casino-Boolangal Local Aboriginal Land Council (n=8). The second meeting was held with Banbai Enterprise Development Aboriginal Corporation (n=4), during a Firesticks workshop at Jubullum, NSW. Nine people were interviewed for the study including managers and practitioners from the region, a scientist based in a city centre and two managers from the Bunya Mountains in south east Queensland.

Neville Atkinson (GBCMA), with assistance from Gaye Sutherland (GBCMA), provided initial suggestion regarding who to interview in Victoria. Ten managers and practitioners working in Victoria were interviewed for the study.

Graeme Gardner (ALCT) and Clyde Mansell (ALCT) provided advice on who to interview for the Tasmanian work, 8 interviews and a focus group (n=4) were conducted as part of this effort.

The focus of interviews, focus groups and small group meeting was to

- explore extent and diversity of Indigenous cultural fire management in regions of southern Australia;
- better understand the many benefits that come from Indigenous fire management activities and partnerships in southern Australia and draft a set of benefit measures; and
- identify a draft set of protocols to inform how non-indigenous partners can better support Indigenous fire managers in their work.

The majority of projects and partnerships considered were supported by the National Landcare Program. However, it is important to note that this does not reflect the breadth and depth of Indigenous fire activities across the nation that are supported by other government and non-government entities. It does, however, highlight how much Indigenous cultural fire management

has spread and matured across Australia for a range of conservation, asset protection and/or cultural purposes.

A set of case studies was developed with interested project participants. The case studies are presented in Chapters 5-11

Review of Projects in MERIT data base (2015-2017)

A review of Indigenous fire management activities, resources, partners and outcomes reported under the Australia government MERIT reporting system was undertaken to examine the diversity of projects that exist across the nation, and summarise the types of benefits that are reported by project proponents. The MERIT database was reviewed for projects that were reported in the period from October 2015-August 2017. was searched for key words within the project description of 'fire' and 'burn' and 'Indigenous', or 'Aboriginal', or 'knowledge', or 'on-country' or 'traditional' or 'IPA'. Further refinement of these occurred based on if the projects had 'finished' activities recorded in the MERIT database, reducing the final project selection to 38. Further searches identified more projects that did not include those key words in the project description but did include "Fire Management", "Indigenous Knowledge Transfer", or "Indigenous Employment and Business" as an Activity Type in the Activities table. The total number of projects identified by this means is 162. Project reports were available for 102 of these projects. The Project Team analysed these reports to gain insights into where managers reported on the benefits of Indigenous cultural fire management activities, and how they did so. A summary of this work is reported in Chapter 3.

On-line survey

An on-line survey was developed by Dr. Kerstin Zander (CDU) with input from Kirsten Maclean and Oliver Costello. It was sent to Indigenous and non-Indigenous fire managers and partners to get a wider set of experiences about local fire management activities, partnerships and benefits. The Survey included 33 questions covering themes to do with fire management projects, payment for fire services, the benefits of these projects (e.g. to Indigenous people and their country, weed reduction, biodiversity conservation, for asset protection and so on) and reporting frameworks. Potential participants were identified via the review of Indigenous cultural fire management related projects in MERIT and via the Firesticks Alliance network. All information collect through the survey was anonymous and is reported in an aggregate form to ensure continued anonymity. It is reported in Chapter 3 (see Appendix A for full survey report).

Participant observation at forums and workshops

CSIRO members of the Project Team also attended and gained valuable insights from discussions at:

- The *south east Australia Aboriginal Fire Forum*, held in Canberra, May 2018;
- '*Cultural Fire Gatherings – Making our way together*', Jubullum Local Aboriginal Land Council, Jubullum, NSW June 2018; and
- The *National Indigenous Fire Workshop*, held in Nowra, July 2018.

Derivation of the Reporting Framework

The reporting framework (a revision of the MERIT Fire Management Activity sheet) was developed from a review of:

- the primary data presented in Chapter 3;

- the Regional Partnerships Program Logic (in particular desired long term outcomes 1-5, see NLP, 2018c);

- the existing MERIT Fire Management Activity Sheet (ps 22-23 on the MERIT schema July 2015, se DoE, 2015); and

- the relevant primary activities (other than fire management) outlined in the MERIT Activity Family Tree (including community participation and engagement; conservation actions for threatened species; conservation grazing management; heritage conservation; management practice change; research; weed treatment) (see DoE, 2015).

The reporting framework was co-developed from input and feedback from the Project Advisory Group who met via teleconference four times to discuss the framework, and provided feedback/input via email over the period of August-October 2018. Feedback and input was also sought from the Aboriginal Network of the Victorian CMAs during a presentation and via follow-up email in September 2018. The Project team also sought feedback and input from the MERIT team to ensure the framework was appropriate to their needs and uses.

The framework is presented in Chapter 12.

The research outcomes and draft framework were presented to the Victorian CMA Aboriginal Network meeting, September 2018. Feedback to co-develop the Framework was also sought at this meeting.

3 Benefits of Indigenous cultural fire management

This chapter presents the qualitative and quantitative data and results from this research study. First it presents a snap-shot literature review of how the benefit categories and attributes were derived. Next the qualitative data is evaluated against the derived benefit categories and attributes to draw insights from how Indigenous and non-indigenous fire experts and practitioners discussed the many benefits of Indigenous cultural fire management. The chapter ends by presenting the analysis of the benefits reported in the MERIT Project Data and the analysis of the benefits reported in the online survey data.

Benefits of Indigenous cultural land management

As increased investment from the government (e.g. via National Programs such as the National Landcare Program), philanthropic and corporate sectors (e.g. via carbon offset schemes) into Indigenous and local cultural and natural resource management programs and initiatives has occurred, so too has the call for the demonstration of measurable and attributable impacts of the same programs and initiatives, including a need to understand and measure the many benefits that are derived from this important work (Barber and Jackson, 2017). At the same time there is a growing literature on what constitutes the co-benefits (e.g. Barber and Jackson, 2017) and/or core benefits (e.g. Aboriginal Carbon Fund, 2017) of this work, and how these could be measured, at what scale and by whom.

The term 'co-benefits' refers broadly to the "beneficial socioeconomic effects of community-based natural resource management activities, either Indigenous or non-indigenous" (Barber and Jackson, 2017:10). Conceptual frameworks to understand co-benefits accrued from Indigenous involvement in natural resource management, including (cultural) ecosystem services and carbon off-set schemes, are plentiful (e.g. Hunt et al, 2009; Chan et al, 2012; Barber, 2015; Robinson et al. 2016a; Robinson et al. 2016b; Aboriginal Carbon Fund, 2017; Barber and Jackson, 2017). Each framework has a slightly different definition of what is included in each of the broad benefit categories (cultural, social, economic, ecological/environmental, wellbeing, political) but a close examination shows that the attributes of these categories are similar (see Barber and Jackson, 2017 for an excellent and comprehensive review). However, of particular note is that the Aboriginal Carbon Fund (2017) is the only framework reviewed that draws attention to *gender* (it lists 'opportunities for women' as an attribute of social benefit) an issue that was raised in our research by some participants; and both Aboriginal Carbon Fund (2017) and Hunt et al, (2009) frameworks make particular mention to *fire* under 'ecological/environmental benefits'. Benefits accrued to young Indigenous people are also included within these categories. We draw from a review of the many aforementioned conceptual frameworks, as well as the work of the Firesticks Alliance to derive the benefit categories and attributes used in this research (see Table 1).

Important to note is that although it is possible to derive benefit categories *theoretically*, in practice these categories overlap, and indeed, as is shown in the analysis in this chapter, and the potential

measures of benefits presented in Figure 7 and Table 4 (Chapter 12: Framework to report on benefits of Indigenous cultural fire management work), measures for benefits may also overlap. Further, although some interviewees did report on benefits accrued to non-indigenous people (fire managers, the wider community), the focus of *this* work is on benefits accrued mainly to Indigenous fire managers as well as ecological benefits (also see Barber and Jackson, 2017).

Table 1: Benefit categories and attributes used in this research

Benefit category	Benefit attributes
Cultural	Meaningful work, protection of heritage, Indigenous knowledge transmission, retention of language and identity.
Social	Social capital, self-esteem, pride, community harmony, opportunities for women.
Economic	Employment, career development opportunities, secure income, reduced reliance on welfare, strengthening of local economy
Ecological/environmental	Decrease in incidence of wildfires, fire hazard reduction, biodiversity recovery, Indigenous knowledge contributions to CNRM, biodiversity, Threatened Species, restoration of waterways, bush regeneration.
Health and wellbeing	Spiritual and physical health from completion of cultural responsibilities, exercise, improved nutrition, decrease in drug/alcohol use.
Political(self-determination)	Economic independence, leadership skills, confidence to work with non-indigenous partners, knowledge-science exchange

The rest of this chapter presents the data analysis focussed on 'benefits' in Figure 2 (a visual that summarises the benefits and supporting text). Please note that each benefit was not necessarily noted by *everyone* engaged in Indigenous cultural fire management. Even so they do provide a useful insight into existing noted benefits and the potential for future benefits accruing from this important work.

Benefits of Indigenous cultural fire management (qualitative research data)

Author attribution: Kirsten Maclean

Importantly, this research identified that different benefits were accrued at *different stages* (pre-burn, at the burn event, post-burn) of the fire management process, and via different kinds of activities. As such, we discuss the different benefits under the following four headings:

1. **Knowledge sharing and training events** were identified as occurring mainly pre-burn but included some that occurred at the burn event and immediately after the burn event;

2. Activities that related to the development of the **fire management plan and, or project** occurred mainly pre-burn;

3. **Site preparation, country visits and the act of actually doing the burn** were identified as activities that occurred both pre-burn and, not surprisingly, during and after the burn event; and

4. **Reporting (including M&E)** occurred as a post-burn activity.

Figure 2 Diagram of benefit categories and attributes derived from the research for the three relevant stages of fire management.

Knowledge sharing and training
- Supports meaningful work
- Knowledge exchange
- Personal benefits for partners

Plan/project development
- Fire management plans include cultural burning regimes

Site preparation, country visits, doing the burn
- Protection of cultural heritage, knowledge transmission
- Re-connection to country and cultural
- Cultural re-invigoration
- Meaningful work

Knowledge sharing and training
- Builds self-esteem and sense of belonging
- Builds social capital

Plan/project development
- Empowerment/build self-esteem

Site preparation, country visits, doing the burn
- Empowerment/build self-esteem
- Builds a sense of Pride

Knowledge sharing and training
- Indigenous knowledge informing fire agency approaches

Plan/project development
- Planning for particular fire regimes on Aboriginal land

Site preparation, country visits, doing the burn
- Mosaic cool burns
- Protect Threatened Species and habitats, RAMSAR
- Decrease incidence of wildfire
- Mixed fire regime to manage exotic and natives species and seedbanks
- Improve native pastures
- Heal country/heal people
- Local scale on-country fire management

Knowledge sharing and training
- Cultural burning knowledge shared to prevent wildfires

Plan/project development
- Fire management planning (including cultural fire management) to protect assets from wildfires

Site preparation, country visits, doing the burn
- Future enterprise development
- Protection of place-based assets
- Cultural burning to prevent wildfires
- Meaningful employment
- Employment and training pathways for youth
- Future boosts to regional economy
- Designated Aboriginal positions in government

Knowledge sharing and training
- Mental health

Site preparation, country visits, doing the burn
- Exercise and improved nutrition
- Spiritual health
- Psycho-social benefits
- Mental health

Cultural benefits

Social benefits

Economic benefits

Cultural fire management

Ecological benefits

Health and wellbeing benefits

Political, self-determination benefits

Knowledge sharing and training
- Influencing institutional change via cross-scale networks
- Leadership skills: e.g. via self-sufficient remote area fire crews.

Plan/project development
- Building confidence to work with Indigenous *and* non-indigenous partners
- Leadership skills: E.g. project management, knowledge of government plans and processes

Site preparation, country visits, doing the burn
- Leadership skills: raising public awareness through action
- Leadership: Indigenous knowledge information fire agency management approaches

Benefits accrued through knowledge sharing and training events

Benefits accrued from knowledge sharing and training events were identified as occurring mainly **pre-burn** (e.g. from cultural fire management workshops, conferences, workshops and training events with fire management agencies) and also included some that occurred at **burn events and during post burn assessments**. Benefits were also identified by Aboriginal fire managers, their organisations and in some instances their partners and some were also considered to be accrued at the regional scale by the wider Indigenous communities and cross-scales by state government fire management agencies.

Social benefits identified by interviewees as accrued by Indigenous fire managers and their organisations included: the building **of self-esteem and a sense of belonging** for local Aboriginal people via attendance and learning at cultural fire management workshops. Interviewees also reported that **social capital was built** when the wider Aboriginal and non-Aboriginal community see Rangers successful caring for their country because

> *[…] when the community starts seeing our rangers [caring for country with fire…] it helps them gain respect by their actions and builds their confidence in the community about oh, they're quite proud that they're looking after our land on our behalf. So, you've got this good healthy social interaction taking place. It's one of those uniting factors […] they [work together to] care for country (TAS 2)*

Social benefits identified as accrued by Indigenous organisations and fire managers included the **building of knowledge networks and social capital** via region fire workshops, especially when they meet for the first time. As this interviewee stated:

> *… [It was] the first time all the groups in SEQ had come together about fire and it's given other people motivation and confidence to know there are others doing the same thing that they want to do. [The network] almost goes nationally (e.g. includes groups in VIC, NSW) (QLD 1)*

Health and Wellbeing benefits included those identified by interviewees as those relating to the alleviation of mental health issues by local Indigenous land managers.

Cultural benefits related to how attendance at the Cape York Fire workshop resulted in participants feeling support for meaningful work that enabled them to connect with their culture and country. One interviewee highlighted the personal benefits he accrued as a partner of Indigenous fire managers: he reported how he enjoys learning about local cultural heritage and shares new knowledge with his own children.

Cultural knowledge exchange was reported as **cultural benefit** by bringing different groups together from neighbouring regions or jurisdictions, different groups can learn from each other about what works and what does not.

Economic benefits from the prevention of wildfire as a direct result of the sharing cultural burning knowledge with the wider community was identified by one person as potentially accruing at a range of scales into the future. As she explained:

> *I'm sure our [fire management] practices would stop a lot of wildfires from happening out there, and extending that knowledge out to communities and landholders, because I think a*

lot of landholders [are] relying on TFS to battle a wildfire. So, I think lots of people could benefit from [knowledge]. (TAS 1)

Political and self-determination benefits were noted as related to influencing **institutional change at local, regional and even state-wide scales** from growing cross-scale cultural fire management networks, local projects and action. As this Manager from a state government fire agency explained:

At a state level [there have been] huge changes in the RFS from being involved in the [Firesticks] project […]. Through [local scale] engagement in a whole range of other projects, you see this change starting inside the organisations. Interesting state wide change. A national movement which is gaining in that [there is now] national attention around Indigenous fire and land management across the country (NSW 1)

Political *and* **self-determination benefits** were considered to have been accrued by Aboriginal fire managers who were developing both **leadership and practical fire management skills** from their training with the local state fire management agencies and other Aboriginal fire managers.

Current and potential **ecological benefits** related to how cultural fire management knowledge might inform future fire management approaches used by government agencies – for example **using cool burns rather than hot burns** in their wildfire mitigation activities.

Benefits accrued in the course of plan and project development

Benefits accrued from activities to develop the **fire management plan and, or project** occurred mainly pre-burn. Benefits were also identified as accrued mainly **by Indigenous fire managers and their organisations**.

The **social benefits** of Indigenous people leading fire management planning on their land were described as pertaining to **empowerment** and the **building of self-esteem**. **Cultural benefits** were accrued from the **inclusion of cultural burning regimes** into fire management plans. **Economic benefits** were seen to be directly connected to the fact that the aim of some fire management planning is to protect assets, including infrastructure, from wildfires.

The **political-self-determination benefits** of Indigenous people being active in fire management planning discussions on their land relate to building new confidences and skills (e.g. project management, knowledge of government plans and processes) to be able to work with Indigenous and non-indigenous partners. As this Indigenous manager who works in government explained these benefits relate directly to having a voice in fire management discussions:

Building that confidence to have a voice and own that space […] be brave enough to have that conversation [about cultural values and cultural fire], it's ok if you don't know the answers. Knowing how to use government plans and processes to make own argument. (NSW 5)

The future benefits that will come from **Indigenous people having a voice in government planning and policy**, were considered to be **of significance**. These also related to **ecological benefits** of fire management plans having **burning regimes (cool and cultural) to protect ecological assets**, in particular given that many threatened species and communities are still present on Aboriginal land.

Benefits accrued in the course of site preparation, country visits, doing the burn (pre-burn and during the burn)

Benefits accrued from site preparation, country visits and the act of actually doing the burn occurred mainly from activities conducted pre-burn and 'during the burn'. Many of these benefits were described as being accrued by Indigenous people involved in the activities, however many were also identified as having cross-scale benefits. Important to note is the **health and wellbeing benefits** derived from this set of activities was more prominent than those derived from any other set of activities (e.g. knowledge sharing, plan development, reporting).

Social benefits derived from these activities relate mainly to **empowerment, pride and the building of self-esteem** of Indigenous people at the local scale. This Indigenous manager who works for an NRM body explained the transformation that he has seen in people involved in on-country fire management activities (site preparation, country visits, doing the burn):

> If you could possibly see the transformation between people who at first come into it and say, oh yeah what's all this about […] and sit there with their hands in their pocket and looking at the ground […to] actually become physically involved (putting on the overalls, the fire mask) and working with the ecologists, writing things down, wanting to learn, doing studies, using tablets to record stuff and then lighting the fire and observing it, it's quite a transformation. (NSW 8)

Health and Wellbeing benefits derived from these activities were noted as relating to increase in exercise and improved nutrition; psycho-social benefit of getting back on country; and importantly spiritual health, as this Indigenous fire manager articulated:

> healing is a good word, healing the country and healing the people who are doing [cultural fire management] too (QLD 1)

All these benefits were considered to be accrued by the Indigenous fire managers. Improved mental health was considered an important benefit derived from this on-country work that has cross-scale benefits and ramifications, as this Indigenous manager who works with an NRM body attested:

> …so we're talking about Aboriginal people back on the country which is a high priority. A lot of our people are possibly unemployed […] but this gives them the opportunity of doing something with their hands and their minds; of learning something and practicing 1000s of years cultural practice and all of a sudden they have a purpose and they get re-engaged (NSW 8)

Cultural benefits derived from these activities were noted to be mainly accrued by those involved directly with the fire management activities. Interviewees noted that **protection of cultural heritage, knowledge transmission and re-connection with country and culture** as the main benefits of on-country fire management work. **Cultural re-invigoration** was a benefit that was noted to have **benefits** at many scales. Cultural revival and re-invigoration was seen to be supported by the **meaningful work of cultural fire management**. The words of this interviewee highlight the role of fire in this cultural revival and re-invigoration:

> Fire is very important part of the Indigenous land management story, prior to colonisation […so important for managers] to reinstate independent burning practices and [cultural] re-discovery through burning. Fire is very powerful tool for anyone, so to regain control it is very empowering. (NSW 4)

There were many **economic benefits** noted by interviewees as to be derived from on-country fire activities (site preparation, country visits, doing the burn).

Benefits included the use of **cultural burning to prevent wildfires** and thus **protect place-based assets** (including infrastructure, neighbouring farming properties). As this Indigenous manager who works with an NRM body explained, there is great potential for future **enterprise development** which would bring many other benefits:

> *The purpose of that is [...to] set up properly, end up being a commercial enterprise. That empowers all sorts of things for Aboriginal people – it gives them a sense of belonging, a sense of achievement, a sense of being able to practice their cultural learnings over a period of time"* (NSW 8)

The words of this Manager from a state government fire management agency highlighted the many benefits of providing **employment and training pathways for young people**, and **meaningful employment** for Indigenous people:

> *Fundamental question we ask is what does [the program of cultural fire management] mean to you? Young [Aboriginal] people are so thrilled to have a job and do something, and feel proud to have support from their Elders (Intv.11)*

Economic benefits were noted to include an **increase in designated Aboriginal positions** in (Victorian) government agencies, **and future boosts to the regional economy from improved biodiversity** (parks as nice places to visit) resulting from cultural fire management. The following quote from a Manager working in a state government fire management agency highlights the institutional change that has occurred from brokers within government supporting cultural fire management:

> *[our agency has] increased number of designated Aboriginal position as well, gone up by 50% or more as direct result of this [cultural fire management related] project. Those employed as fire fighters, get sent to fight bush fires and general works they would normally do [...] the agency is now seen as an Indigenous friendly organisation by the community (VIC 3).*

Further economic benefits included those that would come from **increased employment opportunities** for Aboriginal land managers (and the flow-on effects for families and communities of increased family income, meaningful employment, connection with country); in some instances **reduced wildfire fighting costs to government** by having place-based remote fire crews; and the benefits that would come from increased funding for Indigenous organisations to create more employment opportunities.

Political-self-determination benefits were noted as relating to Aboriginal people **being seen by the wider community as fire management leaders**, and their role in building public awareness of the benefit of cultural fire management, as this ecologist articulated:

> *[some non-indigenous] people are dubious about Aboriginal people throwing matches around, [but] when they see they have partnerships and they are doing a good job, it changes people's opinions. For example around [name of Aboriginal-owned property] there are now some very support landholders - people are serious about wanting to support it [...the fire management work] is shifting ideas (NSW 7).*

A further **benefit** was noted as the leadership role of Indigenous organisations to ensure that **Indigenous cultural fire management knowledge continues to inform** the management approaches of government-led fire management agencies.

The noted **ecological benefits** of on-country cultural fire management were plentiful. They included benefits of cool vs hot burns, and mosaic, patch burns vs hectare wide burns; protection of threatened species, habitats and RAMSAR wetlands from the incidence of wildfire; native species regeneration from cool burns; managing native woody vegetation, seed banks and exotics weeds with fire (rather than chemicals); healing 'upside down' and 'sick' country; and managing at a local place-based scale, rather than at larger scales using for example helicopters and incendiaries.

The words of this Manager from a government fire management agency highlight how all these ecological benefits are entwined with social, health and wellbeing, cultural and political-self-determination benefits:

> [The] main reason why they would do this burning and one of the main reasons why they want to do that burning is to heal country. Healing country healing people. Getting people back on country literally healing country (VIC 3)

Other benefits were noted as: improved fire regimens and decreased in incidence of wildfires through increased knowledge of better ways to burn. Further, as the words of this manager from an eNGO highlight, the related prevention of the spread of wildfires (e.g. from Indigenous owned land to neighbouring conservation properties) through cultural burning on Aboriginal land.

> the asset protection is awesome, that's [also] an economic benefit and social. Parks know that [the Tasmanian Aboriginal Centre] did [a planned cultural burn at truatha that abuts the Parks estate]. Parks are happy [because] they know that [area] was burnt last year. We know that if a fire comes we might have a full backline there and the one last year that TAC did at truatha was a planned burn so the shape file from the fire boundary would have gone to TFS so it would be available to the planners and to any fire response units that would know about that, so that's a good thing. So, that's again making the Tasmanian Aboriginal community a part of the wider [fire] community if there's such a thing (TAS 7).

Further benefits related to Indigenous cultural burning knowledge informing government fire agency management approaches. This Manager from one such government fire agency explained the success they have already had to support cultural fire management:

> [we will support] 20 traditional burns in the fire operations plan over period of 4-5 years with [name of the Aboriginal Corporation] and we hope that template can be used across Victoria with other [Aboriginal] groups, and will make it easier to integrate traditional burns into the regions in the future. We have developed a template, a fact sheet and have proven it can be done easily within [existing] government structures (VIC 3)

Benefits accrued in the course of reporting (including M&E) (post-burn)

As highlighted at the start of this section different benefits are accrued at *different stages* (pre-burn, at the burn event, post-burn) of the Indigenous cultural fire management process, and via different kinds of activities. **The benefits accrued from activities related to reporting (including M&E)** occurred during the post-burn phase of any cultural fire management. These benefits are best captured from the MERIT reports that are lodged at the end of a funded project as part of the contracting requirements.

Benefits reported in MERIT (2015-2017) Indigenous fire related projects (quantitative data)

Author attribution: Cathy Robinson

Indigenous fire projects reported in MERIT (2015-2017) supported by Commonwealth natural resource management programs show that most cultural fire management activities occur in Northern Australia (71% of projects occur in the Northern Territory, Queensland or Western Australia) but there are growing numbers in southern regions of Australia.

The review also highlighted that ecological benefits are a key motivation behind Indigenous fire project activities (97%), as is cultural activities (82%) and livelihoods (83%). Carbon was reported as less important (24%). Economic outcomes were also reported from Indigenous fire project activities. Livelihood / employment outcomes was the major economic outcome (60%) participants reported. Only 4% of the economic outcomes recorded by participants stated that carbon trading was one of the economic benefits of the project. Asset protection was largely reported as an economic outcome by community led projects, as was the improvement of the local economy. Finally a range of social and cultural outcomes were reported from Indigenous fire project activities. Education and training is the major social outcome from Indigenous fire enterprises (64%), following closely by traditional knowledge sharing (56%). Indigenous led projects cited cultural (re)connection and on-country benefits more than other proponents.

Benefits reported in the on-line survey data

Author attribution: Kerstin Zander (see also Appendix A)

In the online survey we asked participants to rank benefits of Indigenous cultural fire management for different groups of people. Access to country and opportunities to practice culture and care for country were the two most important benefits for Indigenous people while strengthening partnerships between Indigenous and non-Indigenous organisations and receiving greater public awareness and recognition were the two most important benefits for the region. The most important benefits for the partners were increased recognition of the roles of Indigenous fire managers and education and training opportunities for non-Indigenous managers to learn about Indigenous cultural fire management. Recognition of the roles of Indigenous fire managers was also mentioned as important benefit for the fire management organisations, along with caring for country and Indigenous enterprise development. Threatened species and habitat management were also perceived as important benefits for the region, the partner and the fire management organisation.

Economic benefits of Indigenous cultural fire management occur from preventing uncontrolled fires which can damage infrastructure and pastures, damage sensitive ecosystems and pollute the air. Nearly 80% of the respondents agreed that their fire management work assisted to reduce the risk of uncontrolled fires. Assets protected mostly included outstations, homesteads and cultural sites. The costs of rebuilding those could give an estimate of the damage avoided but would also an assessment of the risk that they would be destroyed without the burning taking place. Another indirect economic benefit relates to the cost savings when controlling weeds through Indigenous cultural fire management and the avoided damage that weed incursions do to native ecosystems. Nearly half of the respondents said that they have cleared weeds through their fire management activities.

3.1 Conclusion

There are key yet simple messages that are important to highlight in this section. Indigenous cultural burning is not the same as non-Indigenous landscape burning and, if done properly, deliver a range of benefits for Indigenous people engaged in these burning activities and for Indigenous communities whose country is being appropriately burned. To be done properly Indigenous cultural burning needs to have knowledge sharing, planning, engagement, site preparation, on-ground burning protocols and practices and reporting back to communities that need to be undertaken through Indigenous-led leadership and approaches. This has important implications for how Indigenous cultural fire management needs to be reported so the benefits from each phase of preparing and caring for country through fire can be appropriately acknowledged. The next chapter highlights examples of Indigenous cultural fire management activities and partnerships across southern regions of Australia to show the diversity of collaborative fire management regimes that now exist. Both chapters then form the basis for the discussion on how reporting under the National Landcare Program can accommodate the diversity of (planning, engagement, on-ground, knowledge sharing and learning) activities and wide range of benefits that encompass Indigenous cultural fire management.

4 Indigenous cultural fire management and partnerships in southern Australia

This Chapter introduces and provides an overview of how we have understood the diversity, extent and impact of Indigenous fire management activities and partnerships in southern Australia. The discussion highlights how the rich diversity of these enterprises and partnerships relates to their purpose (and intended outcomes), land management context (and related funding source), the purpose of the partnership, and the management activities undertaken. This rich diversity is then showcased in more detail in Chapters 5-10. As discussed in Chapter 14 this diversity has implications for the design and conduct of monitoring and evaluation methods and approaches.

Indigenous cultural fire management and partnerships in southern Australia

Indigenous people from southern Australia are re-engaging with cultural fire management practices via diverse and innovative enterprises and partnerships. This work is carried out on a mix of land tenures, including Aboriginal land, Indigenous Protected Areas, the Conservation Estate (Government, eNGOs), local council or Crown land and private property. It is developed and conducted via a suite of partnerships including Indigenous peer to peer partnerships, Indigenous-government partnerships, Indigenous-scientist partnerships and knowledge exchanges. Many, if not all, of these Indigenous fire managers are also members of the regional networks explored in more detail in Chapter 11.

Important to note is that Indigenous fire managers and their partners engage in a suite of activities that each form part of the 'fire management' project and/or partnership. Outline in more detail below, these activities relate to different, sometimes concurrent stages of knowledge sharing and training, Planning, Site Preparation, Doing the Burn, Monitoring and Evaluation, including Reporting on the outcomes of the project and/or partnership.

Purpose

Many of the Indigenous fire managers involved with this study highlighted that the purpose of their fire management practice was driven by four main imperatives:

- Caring for country, fire provides a fundamental way for them to re-connect to country, re-invigorate their culture and share knowledge; and related cultural, health and wellbeing outcomes;
- Regeneration and protection of native species and managing invasive weed species via mosaic and patch burning and the related ecological/environmental outcomes;
- Fuel reduction to protect important places (e.g. cultural heritage, RAMSAR), species (e.g. threatened species and ecological communities), infrastructure (e.g. buildings, powerlines) and neighbouring properties; and
- Meaningful employment, related social and economic benefits and outcomes.

Many of the non-indigenous partners interviewed for this study, discussed their support for the above mentioned imperatives and highlighted the purpose of their involvement in partnerships with Indigenous people as driven by imperatives to:

- Enable fire management capacity building, skills development and knowledge exchange with Indigenous people;
- Support meaningful employment within government agencies; and
- Create/drive institutional change to a) recognise and institute cultural fire management techniques; b) provide genuine support/funding/employment for Indigenous fire managers.

Partners who work for government agencies tasked with fire management and, or conservation (e.g. Tasmania Fire Service, Victorian Country Fire Authority, Tasmania Parks and Wildlife Service) and eNGOs also highlighted the imperative of:

- Hazard and fuel reduction to protect natural assets (e.g. ecological communities, RAMSAR) and infrastructure (e.g. community infrastructure) and neighbouring farming and/or conservation estate properties.

Private land holders, government agencies tasked with conservation and managers of eNGOs highlighted the imperative of:

- Regeneration of native vegetation and ecological communities, including in some instances native pastures using 'cool' burning techniques.

Context

The purpose of Indigenous cultural fire management may be influenced and/or determined by the context in which the work can take place (which may determine funding and, or partnership arrangements).

As the case studies in Chapters 5-10 highlight, Indigenous cultural fire management in southern Australia occurs on diverse land tenure and via related partnership arrangements which may dictate the kind of funding available to support the Indigenous managers in their fire management work. Further, funding to support Indigenous managers operating *within* government agencies (e.g. Forest Fire Victoria, Victorian Country Fire Authority, Tasmania Fire Service, Tasmania Parks and Wildlife Service, ACT Parks) is dependent upon government policies and commitments and budget.

As some participants who work for government agencies explained, proactive support for Indigenous cultural fire management and related employment within these agencies is often determined by higher level leadership, and the flexibility of structures to accommodate the needs of Indigenous employees and wider community.

Partnerships

At the local scale, Indigenous cultural and cool fire management is comprised of diverse partnerships. *Indigenous Enterprises* work in partnership with government fire management

agencies[3] and private landowners and/or farmers[4] for the benefits of caring for country, promotion of native species diversity and pastures, bushfire preparedness and reconciliation and with *Indigenous Rangers* groups work with scientists to investigate how cultural fire management approaches can improve native vegetation and biodiversity[5]; work within government agencies for the purposes of caring for country and conservation and bush fire mitigation[6]. *Indigenous fire management experts* also develop and share their knowledge about the 'cool' aspects of cultural fire management approaches with private land holders and managers of eNGOs to inform property level management of weeds, native pastures and biodiversity[7].

The extent to which these partnerships are Indigenous-led and, or support and enable Indigenous leadership for *cultural* fire management or involves Indigenous leaders sharing their knowledge with non-indigenous managers to use on private or eNGO land (*cool* fire management) or a combination of both, may depend upon land tenure, how existing government institutions enable Indigenous leadership and the existing experience and skills of the Indigenous fire managers (see 'fire management activities' below).

Fire management activities

Indigenous cultural fire practitioners and their organisations are engaged in a diverse array of activities. These activities may relate to different 'phases' of fire management:

- Knowledge sharing and/or training events and activities;
- Consultation and discussion regarding the development of a plan;
- Country visits and fire mitigation activities to prepare the site;
- Doing the actual burn; and
- Monitoring and evaluation of the burn including reporting.

These activities may include capacity building and skills development via Indigenous-led workshops and networks; government-led bushfire and wildfire response management training; fire management planning; Indigenous-science exchanges to inform fire management (e.g. development of seasonal calendars, use of experimental plots); on-country monitoring and evaluation of fire management work; Indigenous peer to peer training; Indigenous to non-indigenous training in principles and practices of fire management using cool slow burns rather than hot burns; enterprise and business development; informing Indigenous policy development and related institutional change, and so on.

Indigenous cultural fire practitioners and enterprises may be active participants and/or leaders of any or all of these activities. The extent to which they are involved in cultural fire management appears to be directly related to their cultural fire management knowledge and experience; their

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[3] Examples of these partnerships include: Dja Dja Wurung Clans Aboriginal Corporation (see Dja Dja Wurrung, 2016) and Forest Fire Management Victoria (see Forest Fire Management Victoria, 2015); truwana Rangers and Tasmania Fire Service (see Chapter 7); Banbai Enterprise Development Aboriginal Corporation and the Tablelands Local Land Services, NSW (see chapter 5).

[4] Example of such a partnership includes the work done between the Tasmanian Aboriginal Centre, Mr. von Bibra owner of Beaufront in central Tasmania, the Tasmanian Land Conservancy, Greening Australia, the Tasmania Fire Service and University of Tasmania (see ABC, 2018; UTAS, 2018).

[5] Examples of these partnerships include: Murray Rangers Bunya Mountains (see Chapter 6); Minyumai Indigenous Protected Area (see Firesticks, 2017).

[6] Examples of these partnerships include: Indigenous Rangers in Tasmania Parks and Wildlife Service (see Parks and Wildlife Service, 2012), and ACT Parks and Conservation (see Williamson, 2015)

[7] Examples include: Euroa Arboretum (see chapter 7) and work conducted by farmers in the Kiewa Valley, Victoria (see Chapter 9)

related confidence to lead and manage a burn; leadership capacity; and the extent to which the institutional environment supports and enables this leadership.

The following Chapters 5 to 10 showcase this diversity. Chapter 11 ties each of these examples of Indigenous cultural fire management work together by considering and articulating by use of examples the important role of regional and/or national networks to Indigenous cultural fire management work. As is discussed later in Chapter 14 this diversity has implications for the design and conduct of monitoring and evaluation methods and approaches.

Figure 3: Oliver Costello speaking at the 2018 National Indigenous Fire Workshop, NSW

Source: Oliver Costello, November 2018 and courtesy of Heidrun Lohr© Firesticks Alliance.

5 Banbai Enterprise Development Aboriginal Corporation on-country fire management

Authors: Tanya Elone (Banbai Enterprise Development Aboriginal Corporation, Harry White (Northern Tablelands Local Land Services), Michelle McKemey (PhD student, consultant), Oliver Costello (Firesticks Alliance) and Banbai Enterprise Development Aboriginal Corporation.

Banbai Enterprise Development Aboriginal Corporation

The Banbai Enterprise Development Aboriginal Corporation (here-on called Banbai Enterprise) represents the interests of the Banbai Nation, from the northern New England Tablelands, NSW. It was established to oversee the daily management of the Wattleridge property purchased by the Indigenous Land Corporation (ILC) on behalf of the Banbai Traditional Owners in November 1998. In June 2001 Wattleridge was declared an Indigenous Protected Area (IPA) which was the first in NSW. Banbai Enterprise worked with Guyra Local Aboriginal Land Council (LALC) to declare the Tarriwa Kurrukun property an IPA in 2009.

The Banbai Enterprise vision is "Our country is self-sustaining for future generations where our children learn cultural values (such as bush tucker and traditional practices) and understand what healthy country means" (see BEDAC, 2015a).

Banbai Enterprise staff supports 15 Banbai Rangers primarily funded by the Commonwealth Government Working on Country program and through a series of partnerships with Northern Tablelands LLS, NSW Rural Fire Service, Guyra LALC, Firesticks and a local scientists, for cultural and conservation outcomes on the Wattleridge and Tarriwa Kurrukun IPA properties (see BEDAC, 2015a). Including the management of important cultural sites, threatened ecological communities and species. For example, the endangered spotted-tailed quoll, vulnerable brush-tailed phascogale and eastern pygmy possum as well as the vulnerable paleheaded snake and Stephen's banded snake are found at Tarriwa Kurrukun IPA (see Firesticks Alliance, 2014). The targets, threats, goals and objectives of the Banbai Plan are outlined on their website (see BEDAC, 2015b, c).

Location

Banbai Enterprises offices are located in Guyra NSW, and the Wattleridge and Tarriwa Kurrukun IPAs are situated on the New England Tablelands, NSW.

Funding sources

Fire management planning and operations have been funded by the Commonwealth Government Working on Country program, Firesticks Project (Commonwealth Government grant 2012-2017) and the Northern Tablelands Local Land Services (LLS) through the National Landcare Program (NLP).

Purpose of the fire management work

The fire management objectives outlined in the Banbai Plan are "to minimise the risk of uncontrolled fire and reduce fuel loads on Tarriwa Kurrukun and Wattleridge over a period of 10 years" and "re-introduce cultural burns through Wattleridge and Tarriwa Kurrukun to reduce the risk of wildfire and promote the health of country by 2025" (see BEDAC, 2015c).

They note *uncontrolled fire as a threat* with an overall *very high threat rating* to infrastructure, people, important flora and fauna, open and cultural sites and bush tucker (see BEDAC, 2015d); and *culturally integrated fire as a tool* along with invasive species management to "reduce bush fire risk and to retain or improve habitat condition and maintain ecological and cultural values" (see BEDAC, 2015d).

An Indigenous manager who has worked closely with Banbai for several years explained the purpose of the fire management work of Aboriginal organisations based on the Northern Tablelands as driven by:

Getting people back on-country

> *it's engaging our people back onto country which has been very, very beneficial, not so much from an administrative point of view, but just see Aboriginal people getting back onto country and taking an interest and wanting to learn and then taking that even further by studying and putting together documentation (NSW 8).*

Protecting threatened ecological communities by using fire to manage/eradicate weeds

> *protection of grass species or the eradication of weeds […there's] a whole lot of stuff out there that's pretty nasty, so maybe we can control the burn to help eradicate those. We'd much prefer to use a burning process, rather than a chemical spray if we can (NSW 8)*

Developing new partnerships via cultural fire management knowledge sharing

> *We get the Rural Fire Service people involved and we have either the local shire Council and we also invite the adjoining farmer to come in as well. So, they're all part of the process right from the very day of implementation so they can actually see the process in place (NSW 8)*

Encouraging capacity building via training courses

> *Some of our properties are quite big, they need to be managed and we're training our people through conservation and land management processes [.. to get qualifications] through TAFE, but it's also getting our people to get back and see the potential of getting employment and getting a sense of belonging (NSW 8)*

Developing new skills for enterprise development opportunities

> *The purpose of that is, it could, in fact, if it's implemented properly and managed properly and set up properly, end up being a commercial enterprise. That empowers all sorts of things for Aboriginal people – it gives them a sense of belonging, a sense of achievement, a sense of being able to practice their cultural learnings over a period of time and to perhaps make the Northern Tablelands of New South Wales the fire burning capital of Australia one day. (NSW 8)*

Partnerships

The Banbai Enterprises worked in partnership with the Firesticks Alliance (see chapter 10) to develop and implement their fire management plans, burns and monitoring for Tarriwa Kurrukun (see Firesticks Alliance, 2015a) and Wattleridge (see Firesticks, 2015b) IPAs. Firesticks has also provided practical on-country mentoring and training opportunities and support through the Firesticks community of practice (see Firesticks Alliance, 2015).

The Northern Tablelands Local Land Services support Banbai Enterprises in their fire management work via a focus on 'cultural or traditional burning' (see TLLLS, n.d.), as part of Firesticks community of practice and via the Northern Tablelands Local Land Services Aboriginal Reference Advisory Group (see TLLLS, n.d.).

Banbai Enterprise have a long standing partnership with the NSW Rural Fire Service who have assisted them with hazard reduction burns at Wattleridge and Tarriwa Kurrukun IPAs.

Activities

Knowledge sharing with other Aboriginal groups involved in fire management (e.g. Firesticks, National Indigenous Fire workshops, Jubullum LALC), with non-indigenous groups and managers (e.g. RFS and LLS) and with local school children about the 'safe way to burn' and their seasonal calendar. As this Manager from Banbai Enterprise explained:

> [a direct benefit of this work is] working with other communities and having a chance to share their experiences with them (e.g. the Jubullum mob) and also learn from them (NSW Small Group Meeting 2).

Fire and seasons calendar and PhD research with Firesticks Alliance

Banbai rangers are in the process of undertaking collaborative monitoring with PhD student Michelle McKemey (University of New England). The PhD research focuses on the ecological and cultural changes associated with the reintroduction of cultural burning into a long-unburnt landscape. It comprises detailed BACI ecological surveys as well as social science methods to consider the cultural changes associated with reintroducing an ancient cultural practice. Collaborative monitoring of the target species echidna and black grevillea informs the rangers of the impact of fire on these species and assists them in their adaptive management of the IPA. The collaborative monitoring methods have been developed in a way that the Banbai rangers can continue to monitor target species independently into the future and continue to use the information to inform their adaptive management.

> [We would also like to monitor] the black grevillea here, it is very significant because it only grows in the Wattleridge area and fire really does help the black grevillea grow a lot. We know that the black grevillea really takes well to fire, low intensity burns and just spreads. Definitely more endangered species that we have on the property… to monitor them and protect them, to see what their behaviour and habits are. The powerful owl, glossy black cockatoo, green tree frog, red chested robin, there is a whole manner of species out here that we would like to maintain and record into the future. Fire is definitely a good management tool for animals and us, so it will be good [Tremane Patterson, BEDAC Ranger Supervisor]

One of the outcomes of this research is the development of Winba = Fire, Banbai Fire & Seasons Calendar for Wattleridge IPA (see Fig 3). This calendar was developed using the results of the ecological experiments, literature review, observations and cultural knowledge gathered through interviews. It features biocultural indicators which tell us when it is the right, and wrong, time to burn. The calendar also uses Banbai language words and showcases the cultural burning activities of the Banbai rangers.

This calendar has been developed from "Aboriginal traditional and contemporary knowledge, landholder observation, scientific experiments, collaborative monitoring and grey and scientific literature (McKemey and Patterson, 2018:57). The calendar uses biocultural indicators to highlight the changing seasons and support burn planning and monitoring. The intention of sharing the Calendar, and a blank template of the calendar (see Firesticks.org.au), on these websites is to ensure related cultural revitalisation and knowledge sharing throughout Australia, and to "act as a model for Aboriginal and non-Aboriginal partners to work together, and increase awareness of Aboriginal fire management" (McKemey and Patterson, 2018:58). This calendar features on the Bureau of Meteorology Indigenous Weather Knowledge (see BOM, 2016) and CSIRO Atlas of Living Australia (see ALA, 2016) websites and an online interactive version is currently in preparation (McKemey & Patterson, 2018).

<u>On-country fire management planning</u>

The Banbai rangers worked in partnership with the Firesticks Alliance to develop their fire management guidelines and priority actions for implementation of their fire management approach including assessment and planning, access and fire mitigation, community engagement, education, training and mentoring, and undertaking burning and pre/post fire restoration activities (see BEDAC, 2015d). An example of their role to provide training and mentoring of other Indigenous groups is given in Chapter 10 when they worked with the Firesticks Alliance to share knowledge with the Jubullum Local Aboriginal Land Council via workshops that brought together "current and aspirational fire projects [to] consider a regional approach to Cultural Fire Management in North-Eastern NSW" (see Firesticks Alliance, 2018).

<u>On-country fire management</u> on Wattleridge and Tarriwa Kurrukun IPAs, which has generated interest from local farmers for Banbai Enterprise to do cultural fire management on their properties to manage weeds and improve native pastures.

Monitoring and evaluation methods and approaches

Development of seasonal and fire calendar, and related biocultural indicators to guide appropriate fire management (see ALA, 2016; BOM, 2016).

<u>Ecological monitoring</u>

The Firesticks project established a series of long term monitoring plots within Wattleridge IPA. These systematic surveys targeted fire responsive fauna groups and their habitats, including ground and low foraging birds, large owls and arboreal marsupials, small terrestrial mammals, low foraging micro-bats and introduced pest species. These fauna groups, or biodiversity indicators, were selected as the most suitable for monitoring to assess short to medium term responses to the application of Aboriginal burning practices in the IPAs. This is because species within these groups

are dependent on habitat attributes such as the litter layer, logs and ground cover and low understorey vegetation that are the most heavily impacted by fire, particularly in relation to the increased frequency and intensity of wildfires. Selection of the 2ha plots within the IPAs provide a representative sample of the most extensive and characteristic vegetation communities and also those areas most likely to have had a history of Indigenous fire management. Plots were surveyed by systematic methods twice a year, in spring-summer and autumn-winter (2013 to 2017) to provide a measure of seasonal variation in activity across the different fauna groups, which include species of nomadic and migratory birds that are absent in some seasons and species of micro-bats that become inactive in colder periods. Relevant habitat attributes within each plot were assessed by a standard methodology including an overall vegetation description and photo-points plus a detailed vegetation assessment within two 20mx20m quadrats. Other habitat attributes also being assessed in the plot include measurements of the 10 largest trees, canopy vegetation and litter cover, numbers of stags, logs and tree hollows and other attributes such as epiphyte density.

On-country monitoring and evaluation

So, we have these workshops happening and then we do what we call a trial burn and each one of these workshops everybody gets involved – farmer Brown, the Aboriginal community; we take photos/videos, everything is documented we write reports. It's a bit like scientific school you've got to write it down as you go along otherwise you'll lose it, so there are lessons to be learnt about the whole of the process and of course what applies in one area may not apply in another, depending on the vegetation/type of vegetation and then we set the date for the actual fire burn after the trial one. Then we have a monitoring and reporting process where after the fire burn has actually taken place and another series of workshops have taken place with ecologists for flora and fauna, and the Aboriginal community all work hand-in-hand where we go out and then evaluate the results of what has actually taken place – what we've set out to achieve; have we achieved it and if so, that's fine; what are the results, if not, why not, what happened, what went wrong or what can we learn out of the whole process. It's very regimented (if that's the right word). There's a lot of work in it but I'd like to think we've got a pretty good handle on it (NSW 8).

Future aspirations

Banbai are committed to using appropriate fire management approaches to continue to maintain a healthy country which in turn creates healthy people.

Figure 4: Winba = fire Banbai Fire & Seasons Calendar for Wattleridge IPA

Source: Michelle McKemey; also see McKemey and BEDAC, 2018.

6 Bunya Mountains Murri Rangers' cultural fire management at Russell Park, South-east QLD.

Authors: Michael Smith (the Bunya Murri Rangers and Burnett Mary Regional Group) and Paul Dawson (Burnett Mary Regional Group)

Bunya Mountains Murri Rangers

The Bunya Mountains Murri Rangers (hereon called 'Murri Rangers') of the Bunya People's Aboriginal Corporation is managed as a program of the Burnett Mary Regional Group. The Murri Rangers program began in 2009 following the development of the *Bonye Bu'ru: Bunya Mountains Aboriginal Aspirations and Caring for Country Plan* (see Bunya Mountains Elders Council and Burnett Mary Regional Group, 2010) by the Bunya Mountains Elders Council with support from the Burnett Mary Regional Group. The program employs four full time Rangers and a Ranger Co-ordinator who work to conserve and protect the natural and cultural resources, and as areas of traditional importance of the Bunya Mountains (see BMRG, n.d). The work of the Murri Rangers has won Landcare Awards at both the State (in 2011, and 2017) and Federal (2012) arenas. In particular, their fire management work in the Bunya Mountains was recognised with Bunya People's Aboriginal Corporation and the Burnett Mary Regional Group receiving the Rio Tinto Indigenous Land Management Award as part of the Queensland Landcare Awards in 2017 (see QWALC, 2017).

Location

The Murri Rangers are located at Wondai, QLD and conduct the majority of their on-ground work at Russell Park, a conservation reserve in the Bunya Mountains on Western Downs Regional Council managed lands in South East Queensland.

Funding sources

The Murri Rangers receive funding from the Indigenous Advancement Strategy managed by the Federal Department of Prime Minister and Cabinet, and the Western Downs Regional Council. Their fire management work has also been funded in part by project funding from the Burnet Mary Regional Group.

Purpose

Important to note is that the genesis of the *Bonye Bu'ru: Bunya Mountains Aboriginal Aspirations and Caring for Country Plan* (see Bunya Mountains Elders Council and Burnett Mary Regional Group, 2010) comes from workshops conducted in 2008 and 2009 during a cross regional NRM project (a collaboration between the Traditional Owners associated with the Condamine Alliance, Burnett Mary Regional Group, and SEQ Catchments) focussed on bringing Traditional Fire back into the landscape to shape and maintain the unique ecosystems within Booburrgan Ngmmunge (the Bunya Mountains) (see Bunya Mountains Elders Council and Burnett Mary Regional Group, 2010).

The Russell Park Fire Management Plan outlines Principles, values and priority management actions for Russell Park. These priority actions focus on:

"culturally integrated fire and invasive species management within Land Management Areas (LMA) to maintain cultural landscape features that retain or improve habitat condition and maintain ecological and cultural values, while reducing bush fire risk" (Russell Park Fire Management Plan, 2016).

The Plan also highlights that:

"cultural fire describes practices used by Aboriginal people to enhance the health of land and its people. Cultural fire means different things to different people. It is ceremony to welcome people to country or is as simple as a campfire around which people gather to share, learn, and celebrate. It can include burning (or preventing burning) for the health of particular cultural values, people, plants, animals and places" (Russell Park Fire Management Plan, 2016).

As two Managers involved with the Murri Rangers explained, the purpose of the Murri Rangers' fire management is to:

Protect and maintain the culturally significant Bunya Balds grasslands

An Indigenous manager involved with the Murri Rangers explained the purpose of the Murri Rangers' management work as driven by the need to protect and maintain the culturally significant Bunya Balds grasslands. He explains the interconnection between cultural fire management and the cultural significance of the grasslands:

The cultural view is that they [the grasslands] were the pathways for travel to the Bunyas [and Aboriginal people used fire] to keep country open to travel and provide good hunting grounds. The science view: grasslands experts were noticing they [the grasslands] were diminishing without the continued fire practices of Aboriginal groups. [The latter] contributes significantly to the biodiversity of the Bunyas, the diversity [of the grasslands] is up there with the rainforest (QLD 1).

Heal the country and its people

Healing, is a good word, healing the country, and healing the people who are doing it too (QLD 1).

Develop networks with other Indigenous fire managers via cultural fire management knowledge sharing

That affiliation with the Cape York network, including with Victor and Oli and the firesticks model and approach, is a really valuable relationship […] the work [the Murry Rangers have done] with those guys has been transformational with the project [in particular] how both of them operate: meaningful capacity building, sharing, but not pushing their own agenda, sitting back and letting local groups take control of their own stuff. Seen the bunya team really take strong ownership, and increasingly driving everything to developing the network, and doing the fire, every aspect of it. It's been really positive (QLD 1).

Work in partnership with other local land managers and ecologists to develop and share knowledge to look after the Bunya Mountains.

Partnerships

The success of the Murri Rangers is declared on the BMRG website to be due in part to the "partnership between Bunya Peoples Aboriginal Corporation, Queensland Parks and Wildlife Service, Western Downs Regional Council, the Department of Natural Resources and Mines and the Burnett Mary Regional Group, working together to promote the Aboriginal history of the area and help reconnect country and culture" (see BMRG, n.d)

The Murri Rangers have additional partners with ecologists from QUT (Dr. Jennifer Firn and Ms Coral Pearce, PhD student) and UQ to determine whether the diversity of the grassland at Russell Park improves with Indigenous cultural burning practice (see Firn, 2018).

They also work with other Indigenous fire managers to share and develop fire management knowledge including, for example, via a partnership with the Firesticks Alliance (see Chapter 10).

These partnerships are practiced and supported by the suite of activities outlined below.

Activities

Knowledge sharing with other Aboriginal groups involved in fire management (e.g. fire workshops) with non-indigenous groups and managers (e.g. the 'Burning for healthy land' workshop), with ecologists (as mentioned above), at conferences and fire management forums (e.g. see Bushfire 2016) and with University groups (e.g. 2nd year ecology students)

In the last two years (2015-17) the Murri Rangers have been involved in two fire workshops, the first one was 'small' and involved developing the fire management plan for Russell Park. They co-hosted a second workshop with Firesticks in 2017 that brought together with other Indigenous land managers from southeast Queensland. This Indigenous manager explained:

> it was large, 35 people attended. People form Gladstone, to NSW, as far west as Warwick (QLD). People doing fire or who were looking to start to do fire activity […it was…] the first time that all the groups in SEQLD have come together about fire. And it's giving other people motivation and confidence to know there are others doing the same thing that they want to do (QLD 1).

They were actively involved with the 'Burning for healthy land' workshop (23-27 April, 2018) hosted by Condamine Headwaters Landcare Group Inc., supported by the Condamine Alliance through funding from the National Landcare Program. This workshop facilitated discussions between local Indigenous and non-Indigenous landholders and farmers from the region with Victor Steffensen (see Mulong, 2018) and the Murri Rangers to "learn how to read what [your country] it is telling you about its needs and understand how to use fire to control weeds and regenerate a good balance of grasses, trees and shrubs" (unpublished workshop flyer, n.d). The fire management team (Steffensen, Murri Rangers) visited 5 properties from the region to share knowledge about, and activity engage in fire management (unpublished workshop flyer, n.d).

On-country fire management planning

The Murri Rangers worked in partnership with Firesticks, representatives from the Western Downs Council, and QLD Parks and Wildlife; ecologists from QUT and UQ; and a fire consultant from Firelands (see Russell Park Fire Management Plan, 2016) to develop their fire management

guidelines and priority actions for Russell Park. This includes the implementation of their fire management approach including assessment and planning, access and fire mitigation, community engagement, education, training and mentoring, and undertaking burning and pre/post fire restoration activities (see Russell Park Fire Management Plan, 2016).

On-country fire management

The on-country fire management work of the Murri Rangers includes cultural burning at Russell Park with FireLands who "are very open minded people […] they respect the cultural approach and knowledge around it" (QLD 1); responding to wildfires and assisting in control burns with the QLD Parks and Wildlife.

Monitoring and evaluation methods and approaches

The Murri Rangers were originally funded through Working on Country as part of the Australian Government's 'Caring for our Country' program. They are now funded through the Department of Prime Minister and Cabinet, and have thus reported the outcomes of their work to the relevant programs. The Managers reflected on the different focus of each program:

> *When [the Murri Rangers were funded under] WoC as part of Caring for our Country program, the outputs were filtered out to show [how the program] was achieving environmental change. But [now it is funded under the] PMC [and the focus is on] jobs and training, for example: number of positions, type of training, qualifications, some questions about n improvements in wellbeing (QLD 1).*

The Managers explained about the importance of any such reporting frameworks to enable a focus on telling the stories behind the data. For example, they highlighted how a focus on telling 'performance story' of their fire management provided a good way to "pick up the qualitative stuff, rather than just the widgets" (QLD 1).

Future aspirations

The Murri Rangers are committed to using appropriate fire management approaches to manage the Bunya Mountains.

They are also keen to work with state and local government agencies to facilitate cultural change within those agencies (e.g. QLD Parks and Wildlife, Rural Fire) to enable managers to respect cultural burning knowledge and approaches. They explain that although many individuals working from within such agencies have respect for cultural fire management knowledge and approaches, but they acknowledge how the structures of those agencies can sometimes be very inflexible regarding adoption of new approaches:

> *There's real interest in cultural burning from agencies involved in fire management but it varies depending on their structures on how engaged they can be (QLD 1).*

The Murri Rangers are also keen to seek out enterprise development opportunities, as this manager explained:

> *Economically, we are still at the start of exploring [enterprise opportunities…] but part of the conversations with Parks and Western Downs [regional council] is about how to enter service*

work, it's a real niche in the market, to be able to provide that service and burning the right way. [We are] on the cusp of trying to implement some of that in the next 12 months (QLD 1).

7 The truwana Rangers working to manage fire on remote truwana/Cape Barren Island, Tasmania

Authors: Fiona Maher (truwana Rangers), Graeme Gardner (Aboriginal Land Council Tasmania) and Lyell Dean (Tasmania Fire Services)

Figure 5: truwana Rangers with the Cape Barren Island Fire Chief, Rews Hill, truwana/Cape Barren Island

L-R: Terry Maynard, Bourbon Hodges, Bill Maher, Brian Summers, Fiona Maher, Shayne Maher (Fire Chief of the Cape Barren Island Brigade). Photo source: Fiona Maher, 2018.

The truwana Rangers, were formed in 2015 to undertake land and sea management work on truwana/Cape Barren Island. The six Rangers are funded through the Federal Government Indigenous Advancement Strategy which is administered through the Aboriginal Land Council of Tasmania (see PM&C, 2018).

Their work includes management to look after endangered native flora[8], fauna and ecosystems[9], the East Coast Cape Barren Island Lagoons (ECCBIL) Ramsar site[10]; stop feral animals from damaging water holes (see PM&C, 2017); weed management; management of Aboriginal heritage sites including 'contact sites' (e.g. the first sealer's camp south of Sydney was at Kent's Bay, the first Police Station on the island at Rocky Head/Wombat Point); general management of all community use areas on the island; and mutton bird monitoring on Big Dog and Babel Islands with the TAC land management crew from Flinders Island.

Of particular note for this case study, and as part of a project with the Tasmania Fire Service (TFS), the truwana rangers actively monitor fires and fire grounds, conduct cool and cultural fire management (see ABC, 2017), and, more recently are trained to fight fires that may break out on remote truwana/Cape Barren Island.

Location

truwana/Cape Barren Island is part of the Furneaux Group of islands of the Bass Strait, located approximately 50 kilometres off Cape Portland on the NE coast of Tasmania.

truwana/Cape Barren Island and Clarke Island were returned to the Aboriginal Land Council of Tasmania on 10 May 2005 under the *Aboriginal Lands Amendment Act, 2004 (Tas)* (a partial return of Cape Barren Island occurred on 1 January 1995 under the *Aboriginal Lands Act 1995 (Tas)*. The Tasmanian Aboriginal Centre note that truwana/Cape Barren Island is the only parcel of land in Tasmania that has had permanent Aboriginal community presence since before colonisation (TAC, 2015).

Funding sources

The fire management work of the truwana Rangers is funded from the Australian Government's Working on Country program of the Australian Government Department of Prime Minister and Cabinet. The Aboriginal Land Council of Tasmania sources and manages this funding on behalf the Rangers.

Major fire events

In 2006 and 2016, two major bushfires swept through truwana/Cape Barren Island. As a result of these experiences, the wider community (made up of approximately 90 inhabitants) has developed a fear of fire. As the following Manager explains, the fire management project and partnership with the TFS developed, in part, in response to this.

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[8] The small tongue-orchid, Cryptostylis leptochila, "found in open eucalypt forest with paperbark and tea-tree shrubby understory and in heathland on clay loams" (see Threatened Species Section, 2018:1) is listed as endangered under the Threatened Species Protection Act, 1995.

[9] Threatened ecological community Oyster Bay Pine Forest

[10] The *East Coast Cape Barren Island Lagoons (ECCBIL) Ramsar site* was listed in 1982, and "is a complex of freshwater, brackish, saline and somethings hypersaline lagoons, wetlands and estuaries […and] provide habitat for a wide range of vegetation communities and flora species […and] may be important for birds as the extensive undisturbed shorelines provide potential habitat and nesting sites for shorebirds, waders, and other birdlife" (DSEWPC, 2012:v).

One of the key outcomes we want to get out is there have been two major fires on truwana, 2006 and 2016, and there's a real fear of fire and I think what we want to do is change that and that's what we're doing now with traditional burning and a lot more managed and structured burning off on the island, including through the regional Tas Fire Service, so we actually become more relaxed with it and we just break that fear and encourage good fire burning practices (TAS 2)

Purpose of the fire management work

The aim of the truwana rangers' fire management work is five-fold.

Re-connect to country and culture:

> *it gives us the opportunity to connect back with country which is really important and through that connection learn about all the plants and that here, the flora […] the plants and the surroundings are the indicators for different seasons throughout the year (TAS 1).*

Manage the cultural and natural values of the island using appropriate fire management approaches (e.g. cool burns and/or hot burns) given changes to vegetation since contact times.

> *Traditional burning, it's a fire that will just trickle across landscape, rather than getting up into the middle and top of the plants because we get a lot of She Oak here and She Oak if one of those goes up it's like a bomb going off and then you get a lot of flying embers off those. Because of those wildfires we've got a lot of seed bank in the ground – one She Oak forest could have 10/20 years of seed in the ground there – so, it's trying to get those areas that are dense back to how they should be. […] So, even though we might put a cool burn through there are times we have got to put a hot fire through to kill some of that seed bank off and also we're looking at, and it might be another 10 years' time before we get those areas back to how they should be with continual burning (TAS 1).*

Protect important places from wildfire. These places include community 'assets' (all infrastructure on the island); cultural heritage sites including coastal locations where shells are collected to create necklaces, the previously mentioned 'contact sites'; ecological sites including the RAMSAR wetland, the Cloudforest and threatened species habitat and communities.

> *to protect those sites. So, cool burning will come into that, yeah, that's another reason we do it is to protect significant areas on the Island and our heritage sites, so they're not destroyed (TAS 1).*

The truwana Rangers have been trained by the TFS in remote fire-fighting and in February 2018 successfully manage their first wildlife alone. As their manager explains:

> *our rangers have become volunteer firefighters on the island and from there they have now progressed to becoming a project, being trained to mainly fires that become remote area firefighters which is a complete new level (TAS 2).*

Providing employment opportunities on the Island

> *It creates employment for local residents here on Island […] and we have the junior ranger program too in the hope that when these kids grow up the ones that want to stay on Island here we can create some opportunity for them to be here, rather than have to move away for work (TAS 1).*

> *I think the main one is to get the communities we're working with to the point where they lead it, so they're not getting told what to do. I think that's the main thing, training them to that level where they're confident enough to show leadership and they make the call. We trained our fire chief here on Island through with us as well and we're getting him to do a lot of the training with us so that his skills stay up to scratch with ours. And that's where that partnership is important* (TAS 1).

Partnerships

Work in partnership with Tasmanian Aboriginal Centre (TAC) for example, with TAC Rangers on Flinders Island for the purposes of knowledge sharing and mutual support, and at the TAC managed property Gowan Brae (see TLC, 2018; ILC, 2015)

> *We did that [cool burn] with TAC land management crew on Flinders Island – they have a crew out there that looks after Chapple Bay to Clarke, Big Dog and Babel, I think. Yeah, they do the land management out there. At times we work with that crew together because we have a common cause and we enjoy working with them too because they're local fellas on Flinders Island so we get to see each other, support each other* (TAS 1).

Work in partnership with TFS (including Cape Barren Island local fire officer) for the benefits of caring for country, bushfire preparedness and reconciliation.

> *We're nearly at the end of TFS developing the new Fire Management Plan for the Island and that will have a lot of our input and our language in it, so things that are important to us here on Island.*

> *We work with them because we've got a lot of assets here to protect, all our infrastructure, our power, our dam that serves the community, all our housing and that and there's been a lot of bushfires here over the years that have swept across the Island.*

> *So, we've built that relationship with them over all those years and now we work together and they've been training and helping coming on board with our cool burn, so it's shared information between the two.*

> *They've taught us a lot of things and we've taught them a lot of things and that's still ongoing.*

> *As part of that project we're developing a cultural calendar for the Island and a poster as well that will go out to community members, something that they can quickly have a look at and understand with maps and that what areas have been burnt in the past; what areas we intend to burn and why* (TAS 1).

A TFS manager who has been instrumental in the development of the partnership between TFS, the ALCT and the truwana Rangers also reflected upon this partnership:

> *I was invited by the Aboriginal community to go and meet with the community and the truwana rangers and out of that a partnership formed and to look at developing our fire management project. The project was the development of the fire management plan for the whole of Cape Barron Island. The main focus/objectives we were trying to achieve out of that is support both traditional and temporary burning practices […] Really we're trying to mesh*

– it's going to be a bit of a challenge – the traditional and contemporary burn practice together within the management plan.

The plan will assist within the mitigation to the bushfires and reduce bushfires [...] there are training programs that we've developed. Knowledge and skills in order to merge traditional and modern time management strategies.

We've got the truwana rangers over to the Mainland Tasmania to our training complex in Launceston and we've provided them with some fire management training [including] fire weather monitoring; fire behavior; mapping; pumps and hoses; firefighting techniques; fire safety and also working with the helicopters, water bombing exercises; communication – radio [...].

In October we were invited to work with the truwana rangers on doing a cultural burn and that was an opportunity for the truwana rangers to impart their traditional knowledge back to us at TFS [including] some cultural awareness around traditional knowledge and management strategies [...]

The main aspiration of the project and the partnership is to foster fire management skills and that connection back to land through fire and cultural cool burning [...]the importance of that connection back to land through fire, that fire is the way back, not only for the truwana rangers but for the community and Tasmanian Aboriginal people. It's so important having different fire, see, smell, be a part of it, draws them back to that connection. (TAS 4)

The result of this partnerships will be a Fire Management Plan for the Island that aims to integrate the place-based traditional knowledge of fire from truwana/Cape Barren Island with contemporary fire management practices.

Important to note: the partnership that has formed between the truwana Rangers, the ALCT and the Tasmania Fire Service has been highlighted in national news websites including through video footage (e.g. ABC, 2017). The partnership was also recognised by the Tasmanian State Government: it won the prestigious Resilient Australia Community Category of the 2018 Resilience Australia Awards (see Tasmanian Government, 2018) that recognise resilience in emergency situations. The partnership is in the running for the National Resilience Australia Award to be announced in November 2018.

Activities

truwana rangers engage in a variety of activities as part of their fire management work.

<u>Knowledge sharing</u> with other Aboriginal groups involved in fire management (e.g. TAC) and with non-indigenous groups and managers (e.g. the TFS) and remote area fire-fighting and first aid training.

Importantly, the truwana Rangers have attended the National Indigenous Fire Workshop, and, as this Ranger states, their involvement with that network has been instrumental in their cultural fire management work going forward:

We go off to the national fire workshop – we've been to 2 of those and we'll be going again this year [2018] – and they're really valuable; those workshops have sort of set us off on that path (TAS 1).

<u>On-country fire management planning</u> with TFS that includes cultural fire management zones and fuel reduction (wildfire presentation) zones. The final Plan will include the *palawa kani* language (see TAC, 2018) and a seasonal calendar developed by the truwana Rangers to guide appropriate fire management. Their manager explains:

what we want to do is have an overall fire plan for the island which includes both types of burn that is, fire prevention, back burning putting in mitigation lines, mapping out the terrain and working out which are the best areas and included in those are traditional fire burn practices, not just randomly, but selected for the purpose of a flow-on effect to it. That's probably been one of the first where that has occurred on 50-odd thousand hectares, so it's a very big project. The project itself has helped also to protect the values of the island; it protects the assets or the township and also there are a number of wetland areas, so protecting that as well. (TAS 2)

<u>On-country fire management</u>: cultural cool burning (including mapping of fire grounds) and firefighting:

We do cool burning on Island. We also do firefighting for wild fire. We also monitor before cool burns and after. We map all fire grounds so that we have a record of them and that'll help in the future management and we'll know when to cool burn those areas once they're all mapped out and that'll guide us in what areas they're able to be burnt in because we have a lot of different vegetation, three-quarters of the Island would be heathland and they can create very hot bushfires here (TAS 1).

Monitoring and evaluation methods and approaches

Development of cultural [seasonal] calendar to guide appropriate fire management.

Fire mapping and monitoring of fire grounds before and after fire.

Future aspirations

The truwana Rangers are committed to using appropriate fire management approaches on truwana/Cape Barren Island and to support the cultural fire management of others around Australia. They will do so by continuing to share knowledge and skills within the Indigenous community via the National Indigenous Fire Workshop and involving more local Aboriginal people in fire management, in particular women (and the management of women's areas).

[…] continue the learning through the National Indigenous Fire Workshop, because they are just invaluable and just the people you meet and seeing the different countries that come together; know that we're all on board together. My main one this year though will be is to get more females on board so that we can maintain a lot of the women's areas and that creates that connection to that place as well (TAS 1).

They will also continue their work by maintaining existing partnerships and developing new partnerships with the wider Indigenous and non-indigenous communities of practice.

[…] we'll just keep all our partnerships going […] we're always trying to build new ones. People that are interested and have that they think the same, it's just good working with them. With so many knowledgeable people around they're willing to share what they have, so it's a win-win situation for everyone (TAS 1).

As their manager explains, they will continue to develop these partnerships to support two-way knowledge sharing, Indigenous leadership and as a mechanism for long term institutional change.

I think there's a time for both. The traditional practice is where that's first and foremost but for safety, for reassurance. […] I think in the future – it's a bit like taking steps for the future – we will be able to do burns as a crew on their own without the assistance of others […but we also want to] involve other agencies because I think other agencies need to learn and if we get a rotation of their staff coming along, that'll go through that agency about there are other ways of burning, rather than everything between Point A and Point B. So, again, we can just hold back on what we're doing because the bigger picture is that we want to educate others and the best way to do it is to have them come along […] you've got to create a mindset change. […] At the end of the day showing the general public that there is more than one way to burn and I think there's a safe and inviting way and comfortable way that I think people just aren't aware of (TAS 2)

8 Euroa Arboretum and the Country Fire Authority supporting Aboriginal cultural fire management on private properties in north east Victoria

Authors: Cathy Olive (Euroa Arboretum), Phil Hawkey (Victorian Country Fire Authority), Sue and Jono Hayman.

Euroa Arboretum

Euroa Arboretum sits on 27 hectares of ex-farmland that is now a public reserve land just outside of the township of Euroa in the Goulburn Broken CMA, Victoria. It includes a native plant nursery, and is managed by a small team of employed staff members and large team of volunteers, specialising in growing local native plants "arranged in groups to represent how they would be found growing naturally in different parts of the local landscape" (Euroa Arboretum, 2018). The primary focus for development of the Arboretum is "the conservation, restoration and expansion of existing Woodlands and Wetlands" (Euroa Arboretum, 2018) and the future aim is "to continue to develop partnerships with local environment groups and be a local showcase for landscape restoration […] protecting threatened species, strengthening our connection to the indigenous community and developing our education role in local schools and the community" (Euroa Arboretum, 2018).

Victorian Country Fire Authority

The Country Fire Authority is both a volunteer and community based fire and emergency services organisation funded by the Victorian State Government and other revenue (e.g. fees and charges, donations, sales of goods and services) (see CFA, 2018a). They are located in 21 'CFA Districts' across Victoria, and provide "Statewide fire and related emergency coordination' and 'is also involved in a range of non-emergency activities […including] fire prevention and planning, […] planned burning, sustainable fire management" (CFA, 2018b).

The CFA is committed to engaging further with the Aboriginal community and have developed their CFA Koori Inclusion Action Plan 2014 – 2019 (see CFA, 2014) and Engagement Guidelines (2015) to guide the way forward. As stated in the Plan, the Plan and guidelines signal the "start of a new journey that the organisations and the Aboriginal community are beginning together" (p4) whereby "the CFA's structures, behaviours, cultural and values will increasingly reflect our respect for the Koori community, the Traditional Owners of the land upon which we now all live and work as Victorians." (p4). Of particular note for this research and case study is Action 12 of the Action Plan (p12) that states:

> "CFA will work collaboratively with Koori communities to:
> • share vegetation management knowledge;
> • increase awareness of cultural burning traditions;
> • increase Koori community engagement in CFA activities through the Vegetation Management Program. For example, planned burning activities.

CFA will collaborate with Aboriginal communities locally about the rehabilitation of traditional lands to better inform and increase the shared understanding of caring for country."

Purpose of the (cool) fire management work

<u>Euroa Arboretum</u>

Fire is used at the Euroa Arboretum as an experimental tool to manage specific weeds and promote the growth of native ground cover species. A manager at the Arboretum explained how they have experimented with fire during autumn to establish control of annual weedy grasses.

> *Burns conducted are after the autumn break when annual grasses have initially germinated, and while there is standing dry grass to carry a flame. We have conducted these burns for 3 years now in May, and feel we are establishing some control of the weedy grasses* (VIC 6)*.*

She described these burns as cool burns:

> *when we burn, it's a cool burn, there's no heat in it at all. The flame is ankle high and as soon as the flames pass you can touch the ground and it's cool to touch. You've got a flame but there's no heat really involved in it* (VIC 6).

<u>Victorian Country Fire Authority</u>

Fire is used for a variety of purposes by the CFA in Victoria (see CFA, 2018b for details). The focus of this case study is upon how the CFA works to support Aboriginal cultural burning activities. In this context, as this CFA manager explained, the purpose of this kind of fire management work is to help create opportunities for Traditional Owners to use fire to care for their traditional country:

> *So, that is where I see CFA having a very strong involvement is helping to create those opportunities and supporting…..we have all sorts of Legislation around putting fire in the landscape which we have to try and tiptoe through this minefield of Legislation, but my role as a Vegetation Management Officer is to do that and I can do that and support traditional fire management so that they're not confounded by all the rules and regulations* (VIC 4).

The same manager went on to explain the benefits of Aboriginal cultural burning as including healing country and people (the primary focus), reduction of fuels (as a bonus), weed management and for promoting new growth (the right kind of growth):

> *[…] it's about returning to traditional land practices, so it's about returning to country and healing country in a traditional way. The traditional owners/Aboriginal communities just haven't had that opportunity and when you talk to the fire practitioners they talk about sick country. What you see in Victoria is quite sick, particularly in bushfire-affected parts of Victoria, and those areas can be treated by fire with fire and applied in a traditional way, rather than how we conventionally do plan burning and there is the potential to heal that country. I think the other thing too is, there's the potential to heal some people as well – giving Aboriginal communities the opportunity to undertake those traditions that their ancestors had done is really important* (VIC 4).

Partnerships

Institutional change is being driven by some individuals at the CFA who also actively support Indigenous cultural fire management via a variety of partnerships and activities. One such partnership occurs at the State level with the CFA being guided by the Federation of Victorian Traditional Owner Corporations to support the development of their state-wide Victorian Cultural Burning Strategy (also in partnership with the Victorian Department of Forest Fire Fighting Management Victoria, and other land managers). Other partnerships are facilitated by passionate CFA staff who work with local Traditional Owner groups to develop local fire management skills; and working with the Catchment Management Authorities (and via them the National Landcare program) for a similar ends; and running workshops with local Landcare groups to raise awareness of "the potential for traditional fire knowledge [to help] private landholders manage small areas of land" (VIC 4).

One such partnership exists between staff from the Arboretum and the CFA who are keen to support Aboriginal cultural burning activities between local land holders and the local Traditional Owner groups to support them to re-connect to their country and a place to practice cool burning. They do this via a variety of activities including field days and workshops, and via the brokering of networks and knowledge between local Traditional Owner groups and local land holders.

Activities

Field day at Euroa Arboretum to support Aboriginal-led fire management

A field day was held at the Arboretum where the cool burn was lit, directed and managed by a local Traditional Owner, who also used the event to share knowledge with the wider non-indigenous community. Following the Victorian Fire Management laws, the event was attended by local CFA representatives. This event was focused upon knowledge sharing and practice, as this representative from the Arboretum explained:

> *Euroa Arboretum has been specialising in restoration of grasslands and grassy woodlands for some time. We grow plants for seed, and have worked at restoring parts of the grounds with diverse native grasslands. In addition, cool burning has been part of our method for managing weeds for about 5 years, and we are seeing great results. Grassy Woodlands are a cultural landscape, and were managed for thousands of years to maintain food and medicine plants. The opportunity for Euroa Arboretum to work with Traditional Owners is not only a huge privilege, but an integral part for us in healing and learning about this landscape.*

CFA funded workshops and field days with local landcare groups (linked to CMAs)

Representatives from the CFA also support Aboriginal cultural burning by raising awareness in the wider community as to the methods and benefits of this kind of fire management. As this CFA manager explains, he arranges practical workshops whereby local Traditional Owners share their knowledge and experiences of cultural fire management:

> *It can be simply doing a presentation to groups in relation to their experiences so far and particularly the Cape York and the Orange experiences are of great interest. The workshops that we have conducted are small workshops showing people how to manage fire on a small scale. So, managing fire in that traditional sense, the trickling little fire Aboriginals talk about*

fire should trickle through the landscape like water and showing that understanding the timing - late Autumn, early winter, and it's later than we would normally burn. Those workshops are well attended; we've had quite a few of those now. Where there is burning to be done and Legislation needs to be adhered to, so we would write burn plans, the formal documentation and get the permissions, etc., then the fire practitioners can undertake the works without issues regarding the Legislation and that might come down to things like traffic management and those sorts of things which we are obliged to do now if we're putting smoke over roads, etc. Most of the work that we've been doing is being linked in with Catchment Management Authorities and/or Land Care groups and that seems to be a good place to be (VIC 4).

<u>Network and knowledge brokering to enable Indigenous and non-indigenous people to learn about fire management from Indigenous practitioners</u>

Arboretum and CFA staff have actively brokered connections between local Aboriginal groups and *local land holders* who are interested both in the benefits of cool burning for native vegetation on their properties and for local Aboriginal people.

Two such landholders, interviewed for this study, who have experimented with fire to manage weeds and promote the growth of the local native kangaroo grass on their 'Trust for Nature' property, also located in the GBCMA region. To this ends they hosted a Firesticks workshop (funded by the CFA with in-kind from a number of Aboriginal organisations) on their property. The workshop was run by an Indigenous fire manager from Cape York, QLD, attend by about 25 Aboriginal people from the region and from closer to Melbourne as well as some "young Aboriginal boys [who] were absolutely spellbound" (VIC 7). There were also about 40 non-Indigenous farmers, conservationists and the local CFA: all keen to learn about how to use fire on their properties.

As these land owners recounted, they had a 'real awakening' at the workshop as to the holistic nature of using fire as management tool.

I think what he was awakening in us the fact that it is not just about burning the kangaroo grass; that burning has all these other dimensions. For instance, [name of the Indigenous fire manager] told us that when the smoke goes to the trees that encourages the blossom. He also talked about all the benefits to other creatures. For instance, I was bemoaning the fact that the cockies come in and eat the onion grass, which is a weed and he said, no, you're burning for them what else are they going to eat and they aerate the soil. […] it's just not that easy! I also didn't know that you burn at different times for instance the stringy barks at the back, he said you burn them in winter, didn't know that either (VIC 7).

These land owners are also committed to support Aboriginal people to re-connect to cultural fire management into the future, and to provide a place (their property) for them to practice their cultural burning practices.

Monitoring and evaluation methods and approaches

The CFA has a reporting framework that allows managers to report on Koori Engagement activities including workshops, forums, meetings (community engagement related to community safety); and a data base that allows managers to record the time, date, area burnt for ecological and fuel reduction purposes.

Reporting can be directed to four separate directorates within CFA being Inclusion and Fairness, Planned Burning, Community Safety and Learning and Development. This emphasises the

importance and far reaching potential impact Traditional burning has on CFA and the Victorian community.

Future aspirations

Drive ongoing institutional change

There is much scope to drive institutional and cultural change of agencies such as the CFA where the notion of 'cultural burning' is a relatively new concept. To date, institutional change within the CFA includes for example, the form of the Koori Inclusion Action Plan, 2014 and related Engagement Guidelines, 2015; partnership development with the Federation of the Victorian Traditional Owner Corporations to support their State wide cultural burning strategy; support for ongoing partnership development with local Traditional Owner groups; cultural awareness training programs of CFA staff; and recognition of the need to create cultural heritage advisor positions in the CFA but also in relation to the 'Safer Together' program that links public land manages with the CFA to develop a tenure blind management approach to fire.

This manager explained the great potential for sharing learnings going forward:

> *It's an exciting place to be. I laugh, [when] I talk about [cultural burning at the] CFA, that this is something new that is 40,000 years old! To CFA it's new and it's an exciting space where fire is being used in a different way but has been for a long, long time and we need to respect that. I'm enjoying the learnings that I'm on because it is so different to our [CFA] traditional sort of burning* (VIC 4).

Pursue options for cultural burning on public land

To date, some passionate individuals are extending the discussion about cultural burning on public lands to other forums including for example via discussions in Municipal Fire Management Committees of Shire Councils. As the manager from CFA explained:

> *In the last few weeks I've introduced a paper to that group asking that we put in a new fire management zone within the plan where we have conventional asset protection zones and those sorts of things and I've asked that we introduce a traditional fire management zone. This has been accepted by the committee and is being adopted into the plan, so in our municipal plan we will identify areas where traditional fire management may be applied to the landscape on a tenure blind basis it might be small council reserves; it might be public parkland; it might be private land; it might be something under the covenant of a trust for nature or something like that and it'll identify in the plan these are areas that may be used for traditional fire management. Then we will sit down with the local Traditional Owner groups and say, OK, where do you want to start; we've got some land here, we've made that opportunity, how can we progress this? It's not an obligation it doesn't have to be done but if an opportunity arises it can be done and we can involve the traditional owners* (VIC 4).

Support Aboriginal people to build their knowledge of fire and traditional burning techniques and practices

There is great potential to support Aboriginal people to re-connect to country including inspiring young people to also want to engage; to learn how to read their country and then to also develop their fire management knowledge and skills. There is interest and support from managers of

organisations such as the Euroa Arboretum and some private land holders to facilitate access to private and public land to support these efforts. Indeed, as this private land holder explained, such efforts can result from partnerships between diverse organisations that have a similar goal in mind:

> *We recently had two successful burns with local Indigenous groups, on land adjacent to our property and owned by the Trust for Nature. They were most successful, initiated by a manager from the Euroa Arboretum and facilitated by a local manager from the CFA. First steps towards a situation where it will be easier for the Indigenous leaders and communities to learn and share their knowledge and lead. It is a changed environment in which we all need to learn together* (Hayman, pers. com, 07/08/18).

Important to note, as this manager does, is the need to exercise caution before the scaling 'up and out' of cultural burning practices across the landscape before Aboriginal managers are ready to take the lead. The focus should be on Aboriginal managers building their knowledge, experience and skills in the immediate future:

> *I'm cautious about scaling up the extent of cool burning with Traditional Owners. I think we really need to work at the pace of Indigenous people, build confidence, and skills without pressure to perform. It was reinforced with [an Indigenous fire manager saying] that fire is just one simple tool. It's learning about country – a whole system, and the role and timing of fire that affects that system. I think for the Indigenous community that it's really important to build that connection to country. To start small, to watch and learn the effects of burning at different times and how the land responds. So, I think we need to work at their pace, have Traditional Owners leading the way, and where we can, provide support and some safety nets to allow confidence and connection to country.* (VIC 6).

<u>Support Aboriginal fire managers to share their knowledge about 'cool burning' techniques with non-Aboriginal land owners and managers</u>

As this manager explained, he feels there is great scope for knowledge sharing about 'cool burning' techniques to inform the management of private and public lands in Victoria, with the future benefit of healing the country, healing the people but also reducing the risk of wildfires.

> *That's where I see the future lies is educating people to manage their land themselves and using those traditional practices and traditional practitioners in that process. I work on the principle - in Victoria we're in a very unsafe environment because of fire - if every land manager undertook only a few square metres of burning per year that would add up across the landscape to thousands of hectares and everyone did a little bit every year in a patchwork sort of way, then I think we could change the landscape and the risk quite significantly* (VIC 4).

He went to make explicit the important difference between 'cool burning' and 'traditional burning'. Non-Aboriginal people can learn cool burning techniques to improve land, but it's important to note that clearly 'cool burning' is not the same thing as 'traditional burning':

> *If you call it something else, if you call it cool burning and take the traditional word away, I think it's much more acceptable. Don't say its traditional burning because you're not a traditional landowner, I can't do traditional burning because I'm not an Aboriginal person, but I can do cool burning and show people how to do cool burning [...] but as I said before, it's very complex* (VIC 4).

9 Building the knowledge for Indigenous cultural burning

Authors: Uncle Ken 'Tunny' Murray, Uncle Allan Murray, Andon Rendell and Steve Onley

During a meeting held at Wonga Wetlands Uncle Allan reflected on the need to spend time to build the knowledge and capacity needed to burn country appropriately because 'burning with a little bit of knowledge can be a dangerous thing'. The group of local Elders agreed and noted that their knowledge was based on a deep connection between people and place and guided Elders to, as Uncle Allan put it ' burn at the right time and in the right way'.

The local Aboriginal community has worked with Albury City Council officer Steve Onley to engage in this process by participating in a cultural burning event in the Orange region and completing the Rural Fire Services training required to undertake a safe burn. Both Uncles agreed that events to share knowledge with other Traditional Owners engaged in burning activities was an important step in this process. Both were also clear that local knowledge and protocols were critical to guide long-term burning partnerships and activities. These protocols include:

- the need to provide Elders with enough time to build the knowledge and consensus needed to engage in cultural burning activities and partnerships;

- the importance of sharing and building knowledge with other fire management experts to guide fire planning and on-ground management; and

- the need for partnerships that are built on trust to enable local Wiradjuri people to engage and benefit from the delivery of sustainable local fire management services.

10   Firesticks Alliance Indigenous Corporation

Author: Oliver Costello (Firesticks Alliance)

Our Story

The Firesticks Alliance Indigenous Corporation provides Indigenous leadership, advocacy and action to protect, conserve and enhance cultural and natural values of people and country through cultural fire and land management practices. The Firesticks Community of Practice has supported many communities, organisations and stakeholders with engagement and development of a range of collaborative Fire Management projects across eastern Australia. The Firesticks approach is to support Indigenous leadership through community mentorship on country. It is about respect for country, local knowledge and protocols of Elders and ancestors. The Firesticks Alliance is committed to providing a supportive Community of Practice to maintain communication pathways, shared learnings and applying fire on country.

The Firesticks Alliance evolved from Indigenous community member aspirations to see the reciprocal kinship relationship between Fire, People and Country restored. It started with a hand full of people and the mentorship of elders and country. There are thousands to thank for their part in maintaining this knowledge and practice since it was first learnt and shared back in the dreaming, but there are a few that sparked and guided the original Firesticks conception in 2009 that we must thank for inspiring us. Dr George Musgrave and Dr Tommy George who founded the first Cape York Indigenous fire program and workshops with Victor Steffensen and Peta Marie Standley which subsequently grew into the National Indigenous Fire Workshop. Billy Yalawanga from central Arnhem Land, my father in lore that first introduced me to Aboriginal fire practise and reading country.

Firesticks began in 2009 as an unfunded pilot project, but soon evolved into several projects and ongoing initiatives. In 2011 the Nature Conservation Council of NSW secured funding from the Australian Government's Clean Energy Future Biodiversity Fund to fund a partnership project titled the Firesticks project: Applying contemporary and Aboriginal fire to enhance biodiversity, connectivity and landscape resilience. The NCC project aimed to 1) develop a set of engagement principles to guide how non-indigenous fire managers could best work with Indigenous fire managers (see Firesticks Alliance, n.d.); 2) to work with Indigenous organisations to develop fire management plans for areas of their traditional country; 3) to consolidate the community of practice and build partnerships with non-indigenous organisations (e.g. Northern Rivers Fire and Biodiversity Consortium).

The Firesticks Alliance became an Indigenous Corporation in 2018 (Firesticks Alliance Indigenous Corporation) with the aim to continue the ground breaking work of the Firesticks Project.

Our Approach

Firesticks is driven by community mentoring, empowering people, communicating learning pathways and on ground land management and cultural practices to create resilient social and ecological landscapes. It is achieving this through the following processes:
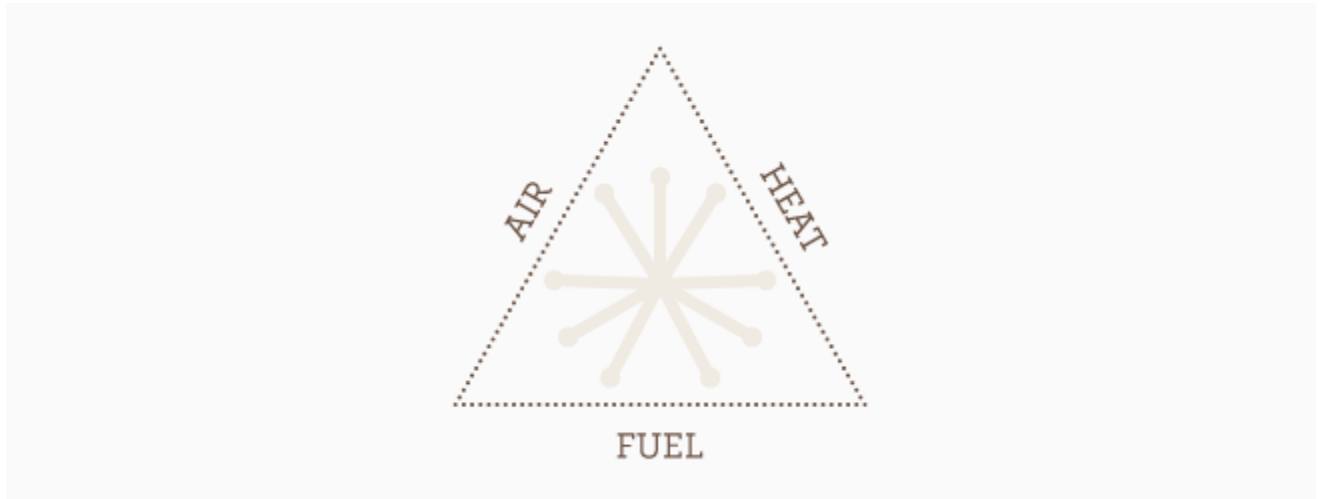
AIR – Making Space: building understanding and recognition; sharing stories and information; connecting communities with each other and with land management/ fire practitioners; driving change.

HEAT – Facilitating Action: Delivering on ground mentoring; planning; training; managing Country by burning and integrating land management; revitalising Country and knowledge by building community networks and recording cultural knowledge.

FUEL – Reading Country: Supporting future work by providing evidence for the effect that cultural fire is having a positive impact. Using appropriate monitoring methods to support learning by observation, practice and the importance of sharing knowledge (mentoring).

Our Aim

The aim of the Firesticks Alliance is to: continue to build and support an Indigenous led cultural fire community of practice and mentoring program; support Indigenous led cultural fire projects; enable equitable partnerships with government and research organisations and NGOs that support Indigenous led cultural burning practices and partnerships; and advocate for recognition or revival of cultural burning to maintain healthy people and country.

Firesticks aims to continually build, expand and develop a community of practice that

> "allows knowledge to be shared through our stories and practice [...] We want this community to keep growing. We welcome you as an important part of the community to

share your values and your stories. Through this sharing we can all help each other on the empowering journey of cultural burning" (Firesticks Alliance, n.d)

Location

Firesticks is based on Bundjalung Country in the Northern Rivers Region, NSW. Firesticks has no boundaries, our members and partners are mainly along the east coast of Australia, but we hope to expand to connect with communities and country where ever fire belongs to country. Firesticks claims no authority over country and only works by invitation with willing communities committed to healing and maintaining country. The Firesticks community of practice members mentor and support each over through on country workshops, forums and on ground activities held through the east coast of Australia and expanding. These include workshops held between local Indigenous organisations from neighbouring regions (e.g. Cultural Fire Gatherings workshop at Jubullum, NSW and Bunya Mountains, QLD) and larger national workshops (e.g. the 2018 National Indigenous Fire workshop).

Partnerships, Funding sources and key supporters

Firesticks is driven by collaborative partnerships between Indigenous organisations and communities; and includes partnerships with non-indigenous organisations, fire and land managers and others in the government, research, NGO and community sectors. The community of practice includes Local Aboriginal Land Councils and Indigenous organisations (including Indigenous Protected Areas) in New South Wales, Tasmania, Victoria and Queensland. It includes involvement from regional NRM bodies in ACT, Queensland, NSW and Victoria. Indigenous and non-indigenous Scientists and researchers.

The first Firesticks Pilot Project in 2009 was unfunded, but soon grew with small grants and in-kind support. Since then Firesticks activities have received various funding through grants and contracts to support projects to date. Some key partners, investors and supporters include the Australian Government; Cape York Natural Resource Management; Perpetual Philanthropic Services; NSW Government (Office of Environment and Heritage, Bushfire Risk Management Research Hub National Parks and Wildlife; Rural Fire Service, Local Land Services, Saving our Species and Environmental Trust); Nature Conservation Council of NSW; the University of Technology, Sydney; Macquarie University; James Cook University; Mudjingaalbaraga Firesticks Team; Mulong Pty Ltd; The Importance of Campfires; Bundanon Trust; Federation of Victorian Traditional Owner Corporations; Victorian Department of Environment, Land, Water and Planning; NSW Rural Fire Service Association, Northern Rivers Fire and Biodiversity Consortium; Banbai Enterprise Development Aboriginal Corporation, Bunya Peoples' Aboriginal Corporation and Jagun Alliance Aboriginal Corporation.

Purpose of our fire management

The aim of Firesticks fire management work goes beyond in situ burning. Fundamentally is it about acknowledging and respecting past and present Traditional Custodians and honour their connection to Country. Firesticks does this via a set of stated aims:

- Acknowledge and respect past and present traditional custodians and honour their contribution and connection to country;
- Enable Indigenous leadership through community mentorship on Country;
- Actively develop and engage in projects that protect, conserve and enhance cultural and natural values of Country;
- Empower the local community to take an active role in decision-making by building community skills and capacity and providing a greater sense of custodianship;
- Create partnerships with industry professionals to deliver joint venture commercial and community activities that will provide mentoring and information exchange to promote capacity building with Aboriginal enterprise;
- Promote cultural safety and support best practice work health and safety procedures;
- Deliver community education, training and capacity building activities;
- Produce and share resources and stories;
- Raise community awareness, understanding and information gathering of cultural and environmental issues to create positive change;
- Build recognition of cultural practice and knowledge;
- Deliver and assist cultural values mapping and monitoring projects;
- Support Traditional Custodians in maintaining and building fire knowledge and practice; and
- Maintain and enhance the Firesticks Alliance Community of Practice".

Firesticks uses the term 'cultural burning' to describe fire practices developed by Aboriginal people to enhance the health of the land and its people. Cultural burning is about burning for the culture and kinship of country which in turn reduces fuel and hazards, maintains access and pathways, protects and enhances natural values and resources.

Activities

Firesticks activities have been extensive and diverse. Below are a few examples that are relevant to this research.

Development of fire management plans

Firesticks has worked with local Indigenous organisations and fire managers to develop fire management plans for tracts of traditional country that is managed as Indigenous Protected Area (e.g. Banbai Aboriginal Enterprise Corporation – see chapter 5) or in partnership with government agencies (e.g. Murri Rangers Bunya Mountains – see chapter 6).

Facilitates regional Indigenous networks for knowledge sharing and capacity building

It has facilitated the development of networks for peer to peer cultural fire management knowledge sharing and capacity building between local Indigenous organisations within and, or between neighbouring regions. These place-based on-country workshops have been aimed at Indigenous peer to peer learning about cultural fire management planning and action. One such workshop '*Cultural Fire Gatherings – Making our way together*' was held at the Jubullum Local Aboriginal Land Council in Jubullum, NSW 12-14 June (see Firesticks Alliance n.d). This workshop included representatives from several regional Aboriginal Corporations including Banbai Aboriginal Enterprise Corporation; as well as the Northern Rivers Fire and Biodiversity Consortium, Northern Tablelands Local Land Services, NSW Rural Fire Services, Mulong and Michelle McKemey, a scientist who works with both Jubullum LALC and Banbai to develop seasonal calendars to guide cultural fire

management work (see McKemey and Patterson, 2018). The aim of the gathering was to "bring together current and aspirational fire projects and consider a regional approach to cultural fire management in north-eastern NSW" (see Firesticks Alliance n.d.). It was funded by the National Landcare Program via the Northern Tablelands Local Land Service Aboriginal community grant program.

Firesticks has facilitated networks across regions and state jurisdictions with the aim of Indigenous peer to peer on-country cultural fire management knowledge sharing, capacity building and also higher level cultural fire management planning and policy (e.g. National Indigenous Fire workshop –see Cape York Fire, n.d and Chapter 11).

Figure 6: Cultural burning, 'Cultural Fire Gatherings – Making our way together' was held at the Jubullum Local Aboriginal Land Council in Jubullum, NSW 12-14 June

Source: Oliver Costello, November 2018.

<u>Facilitates Indigenous and non-indigenous networks to support regional and national forums/workshops</u>

It has also supported the development of networks between Indigenous and non-indigenous fire managers at the various workshops, and at workshops run by other entities. In addition to Indigenous peer to peer knowledge sharing and capacity building, these forums also aim to support network development with non-indigenous fire managers, researchers and government agencies (e.g. the South-east Australia Indigenous fire forum – see chapter 11).

Monitoring and evaluation methods and approaches

Research programs can empower traditional owners by supporting Indigenous led research projects that provide opportunity for Indigenous people to demonstrate and document their cultural fire knowledge practices forming partnerships that support them in co-generating innovative approaches to the delivery of the multiple services that result from cultural fire management.

Firesticks practitioners and researchers welcome the opportunity to work with relevant research institutions, agencies and partners in developing a research program that supports the process of describing an appropriate framework for building, implementing and monitoring an cultural fire strategies that support traditional custodians aspirations in cultural fire management and the custodianship of Country.

Future aspirations

Going forward we hope to be able to gather the right resources and people to bring fire stories back to all the country that needs it and restore the fire circles that once existed throughout our cultural landscapes. In the short term we are focused on building a sustainable and regenerative business model and mentorship program that can expand with the over whelming demands of country and aspirations of people. Hopefully you will help light some fire with us along the path.

11 Regional networks and organisations supporting Indigenous cultural fire management

This Chapter ties each example of Indigenous cultural fire management work (Chapters 5-10) together by considering and articulating by use of examples the important role of regional and/or national networks to Indigenous cultural fire management work.

Regional Indigenous networks

Indigenous people from southern Australia are also re-engaging with cultural fire management practices via membership of *regional* Indigenous networks (e.g. Firesticks Alliance) and associated activities; through partnerships with NRM regional bodies, State government agencies (e.g. Fire Authorities) and eNGOs; and with non-Indigenous fire managers and scientists to share knowledge at workshops and conferences. Although these networks and partnerships are diverse, the primary focus is to support on-country Indigenous cultural fire management. This chapter provides a few short examples of how regional networks, partnerships and workshops/forums enable Indigenous cultural fire management.

Indigenous-led regional networks include those between Indigenous organisations within regions, state/territory jurisdictions. The purpose of these networks may include: Indigenous peer to peer cultural fire management knowledge sharing and capacity building and, or higher level cultural fire management planning and policy. Activities may include:

Local on-country workshops such as the place-based on-country workshops, for example the *'Cultural Fire Gatherings – Making our way together'* workshop, held at Jubullum Local Aboriginal Land Council and facilitated by Firesticks Alliance in partnership with the Northern Tablelands Local Land Service, Banbai Rangers and Jagun Alliance; and

Regional planning forums and discussions, for example for the ongoing development of a Victorian Aboriginal Cultural Burning Strategy, facilitated by the Federation of Victorian Traditional Owner Corporations (see FVTOC, 2018).

Partnerships with NRM regional bodies, State government agencies and eNGOs

Many NRM regional bodies, state government agencies and eNGOs support Indigenous cultural fire management via partnership related activities. The aim of most of these partnerships is to support on-country Indigenous cultural fire management through projects specifically about on-country fire management or via projects that include cultural fire management as part of the suite of activities (Chapters 5-9 highlight some local examples), examples of other such partnerships are presented below.

'Burning for healthy land' workshop

Some NRM regional bodies support local Landcare groups by providing funding to host place-based cultural fire workshops. One such example is the *'Burning for healthy land'* workshop hosted by the Condamine Headwaters Landcare group southeast Queensland, supported by the Condamine Alliance through funding from the National Landcare Program. This workshop brought together Indigenous farmers from the Warwick region with the Bunya Mountain Murri Rangers (see Chapter 6) and Victor Steffensen (see Mulong, n.d) to "present innovative and challenging ideas for managing land, which make a lot of sense to many local landholders and farmers" (Condamine Headwaters Landcare, n.d)

Wiyn-Murrup Yangarramela (Fire Spirit Comes Back) Joint Fire Project

Some Aboriginal Corporations partner with NRM bodies and state government agencies for Indigenous cultural fire management. One such project was the Wiyn-Murrup Yangarramela (Fire Spirit Comes Back) Joint Fire Project co-ordinated through the Corangamite Catchment Management Authority, Victoria (see Evaluation of the Wiyn-Murrup Yangarramela Fire Spirit Comes Back Joint Fire Project, 2018). This project was developed via a collaborative partnership between the Wathaurung Aboriginal Corporation, the Country Fire Authority (CFA), the Department of Environment, Land, Water & Planning (DELWP), Glenelg Hopkins Catchment Management Authority (GHCMA), Golden Plains Shire Council (GPSC) and Parks Victoria (PV). The stated aim of the multi-partner project was "to assist Wadawurrung people and Aboriginal community of western Victoria to meet their expressed aspirations to practice traditional burning for the health of Country and People" (p 4) (see Evaluation of the Wiyn-Murrup Yangarramela Fire Spirit Comes Back Joint Fire Project, 2018 for more details).

Workshops and forums

National Indigenous Fire Workshop

The National Indigenous Fire Workshop (NIFW) is an on-country workshop, with the inaugural Workshop having been held in Cape York in 2008. It is an Indigenous led initiative (see Mulong, 2018; Firesticks, 2018a, n.d.) that aims to provide: "demonstrations of research, plant and cultural knowledge workshop that all lead to practicing culture by making country healthy through fire" and "to strengthen culture and share the importance of getting traditional fire regimes back on country" (Cape York Fire, 2018). The NIFW evolved from the Kuku Thaypan fire Management Research Project, Cape York that began in 2004. The on-country workshops have been held annually since 2008, supported by Cape York NRM, the National Landcare Program, The Queensland Government and James Cook University. The workshop is now co-led by Mulong and the Firesticks Alliance (see Chapter 10) with support from The Importance of Campfires and Design Collaboration and Country (University of Technology, Jumbunna and Firesticks). The vision is to bring Indigenous fire practices to the forefront of looking after our communities and environment (Firesticks Alliance, 2018).

In July 2018 the Workshop was held at Bundanon on the NSW south coast, hosted by people from the Yuin Nation through a partnership between Mudjingaalbaraga Firesticks Team, Mulong Pty Ltd, Cape York Natural Resource Management, The Importance of Campfires, Firesticks Alliance

Indigenous Corporation, University of Technology Sydney, James Cook University and Bundanon Trust.

Figure 7: Adrian (Ado) Webster, Yuin – Thunghutti Fire Practitioner, at the National Indigenous Fire Workshop, 2018

Source: Oliver Costello, November 2018 and courtesy of Heidrun Lohr© Firesticks Alliance.

The Workshop was sponsored by the NSW Government's Bushfire Risk Management Research Hub, Saving our Species, South East Local Land Services, Rural Fire Service along with the Federation of Victorian Traditional Owner Corporations and NSW Rural Fire Service Association.

Participants came from as far north as Napranum, Cape York in northern Queensland to truwana in Tasmania, and from as far west as the APY Lands in Central Australia. The last day of the workshop was a Cultural Fire Day that was open to the public (Firesticks Alliance, 2018). Workshop participants learned how to read Country, animals, trees, seasons, and understand the cultural responsibility of looking after Country. The 2018 Workshop masterclasses were delivered through practical demonstrations which focused on:

- Monitoring techniques and indicators;
- Ethnobotany;
- Understanding invasive native plants;
- Traditional dancing and weaving;
- Sharing of local knowledge;
- Cultural burning of gum and sand Country; and
- Reflecting and planning for rebuilding cultural fire practice.

During the Workshop and over the fourteen days that followed, 150 hectares of surrounding Yuin Country were treated with the 'good fire'.

Feedback from participants was overwhelmingly positive, with over 90% of respondents reflecting that the Workshop helped them connect to Country and community and increased their knowledge of Indigenous fire management practices. Over 60% of participants said they are likely to change their fire management practices because of the Workshop, with another 30% unsure of their ability to influence current practices but still very supportive of the rebuilding of cultural fire management (Firesticks Alliance, 2018).

South-east Australia Aboriginal Fire Forum

Cultural burning: evolving with community and Country, Canberra, 10-12 May 2018

The Forum was supported by "local Traditional Custodians to host an Aboriginal Fire Forum in the ACT for interested stakeholders in the region and First Nations people" (ACT NRM, 2018:1). It was funded through a partnership between the Australian Capital Territory Natural Resource Management (ACT NRM) region, the Australian Government's regional National Landcare Program; and Parks and Conservation ACT of the ACT Government Environment, Planning and Sustainable Development Directorate. The purpose of the forum was to "hear from First Nations people and professionals speaking about their work in fire to care for Country. This three day event showcases speakers, panel discussions, a field trip and workshops to share and exchange knowledge of cultural ecological practices in different land tenures across south eastern Australia" (see ACT NRM, 2018).

12   A national framework to report on the benefits of Indigenous cultural fire management

This chapter presents thee derived framework including draft measures that could be used in MERIT to capture the benefits of Indigenous cultural fire management.

The National Landcare Program Phase Two

The National Landcare Program Phase Two includes the Regional Land Partnerships program. It replaces the Regional Stream of the National Landcare Program Phase one, and moves from a grants program to procurement. It aims to deliver national natural resource management (NRM) priorities at a regional and local level (NLP, 2018a) through "clear, targeted objectives with actions and outcomes that be clearly monitored and demonstrated" (NLP, 2018b:1). An open competitive tender process was introduced where interested parties tendered to deliver specific NRM services that are deemed relevant to the specific Outcomes and Principles of the Regional Land Partnerships program (see Fig. 5).

The NLP Regional Land Partnerships investment will report in the Australian Government's NRM Monitoring, Evaluation, Reporting and Improvement Tool (MERIT) so that the Australian Government is able to continue to demonstrate and account for intermediate and long term outcomes and improvements from its NRM investments (NLP, 2018c). An outcome of the 2016 Review of the National Landcare Program was further refinement of MERIT to better support outcome reporting and to improve the capture of social and economic benefits in reporting (NLP Final Report, 2017).

Prior to July 2018, managers working with Indigenous groups may have included 'fire management' as one part of a larger project. The outcomes of Indigenous cultural fire management work was reported on in the 'Fire Management Activity Sheet'. This sheet did not have the categories needed to capture the many benefits accruing from Indigenous cultural fire management. In this chapter we outline the suite of services that Indigenous cultural fire practitioners and their partners may be able to deliver to enable the outcomes of the Regional Land Partnerships Program. Important to note is that these suggestions are derived from this research project that takes a focus on the co-benefits derived from cultural fire management work of some Indigenous groups based in parts of southern Australia, as well as insights gleaned from previous work conducted with some Indigenous groups from northern Australia (e.g. see Robinson et al, 2016b). Next we discuss how the suggested changes to the MERIT 'Fire Management Activity Sheet':

- Provide a way to assess how the fire management activity contributes to the Regional Land Partnerships outcomes;

- Enable recognition of Indigenous cultural fire management; and

- Enable ways to consider and capture the multiple purposes and benefits of fire including those accrued from Indigenous cultural fire management.

The Framework is presented as a flow chart (see Fig. 6) and in tabulated form (see Table 2).

Potential cultural fire management services to deliver outcomes to the Regional Land Partnerships

The program logic of the Regional Land Partnerships includes six long term outcomes (see Fig 5).
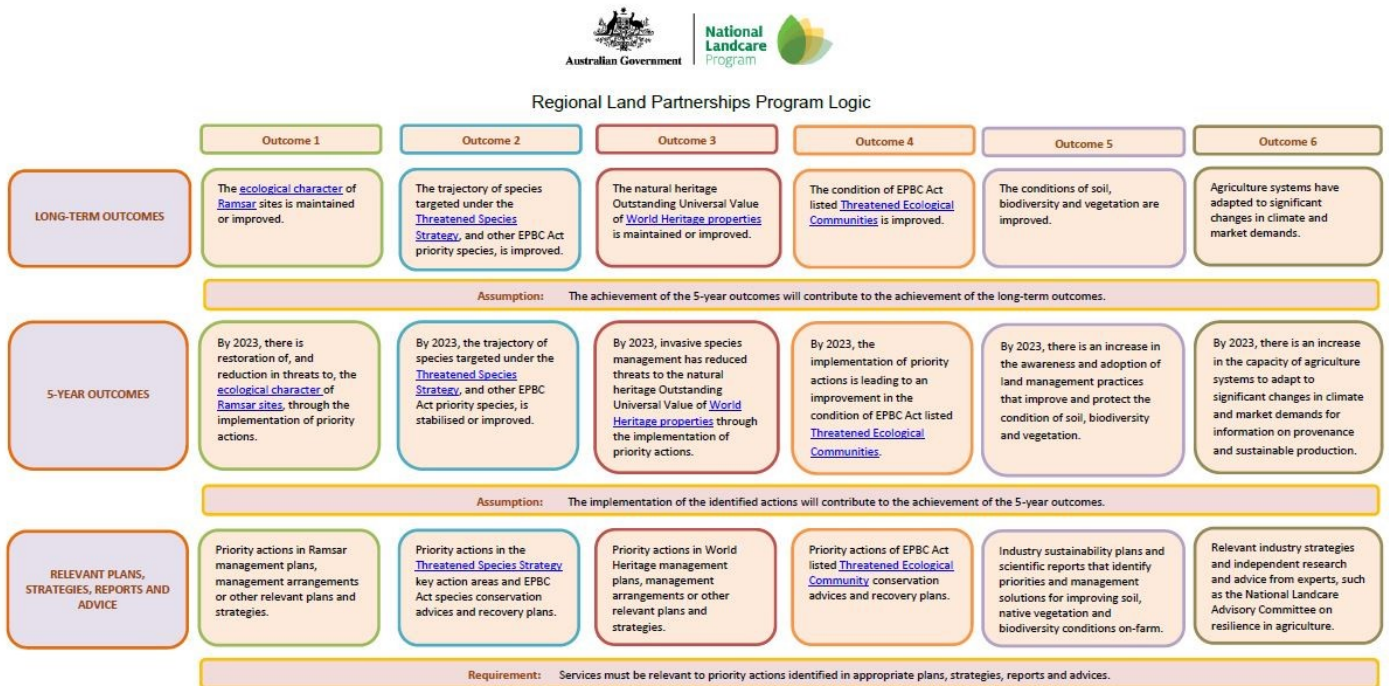
Figure 8 : Regional Partnerships Program Logic (source, NLP, 2018d)

Indigenous cultural fire practitioners and their partners have potential to deliver cultural fire management services to outcomes 1-5 of the Regional Land Partnerships Program Logic:

- Protect the **ecological character of RAMSAR sites** through appropriate fire regimes that reduce the incidence of wildfire (outcome 1)

- Protect, enhance and improve **threatened species**[11] through appropriate fire regimes that also reduce the incidence of wildfire (outcome 2)

- Maintain, improve and/or protect the **natural heritage Outstanding Universal Value of World Heritage properties** through appropriate fire regimes that also reduce the incidence of wildfire (outcome 3) on WH properties or neighbouring properties.

- Improve the condition of **EPBC Act listed Threatened Ecological Communities** through appropriate fire regimes that also reduce the incidence of wildfire (outcome 4)

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[11] Pertaining to the trajectory of species targeted under the Threatened Species Strategy and other EPBC Act priority species.

- Improve the **conditions of soil, biodiversity and vegetation** through appropriate fire regimes that also reduce the incidence of wildfire (outcome 5)

As outlined in Chapter 3 Indigenous cultural fire management activities/services might include:

- Knowledge sharing, training and exchange:
  - Indigenous peer to peer cultural fire management knowledge exchanges via local, regional and national workshops and networks;
  - Indigenous-science knowledge exchanges about ecological benefits of cultural burning; and
  - Indigenous-farmer knowledge exchanges about 'cool' burning.
- Fire management planning (and project development);
- Managing fire regimes through cultural fire management activities; and
- MERI.

These services may relate to primary activities (other than fire management) that are outlined in the MERIT Activity Family Tree (including community participation and engagement; conservation actions for threatened species; conservation grazing management; heritage conservation; management practice change; research; weed treatment) (see DoE, 2015)

Further, as outlined in chapter 3, each of these services would likely deliver a suite of benefits (social, health and wellbeing, cultural, political-self-determination, ecological, economic) to the local Indigenous managers/service providers, many to the wider regional community and may influence positive institutional change within local, regional and state fire management agencies.

Overview and explanation of the Framework

Figure 6 provides an overview of the Framework. It includes an outline of the fields and categories suggested that can provide valuable background information on the fire management project/partnership/activity. An explanation of these suggested additions to these fields and categories follows below.

Figure 9: Overview of the Framework
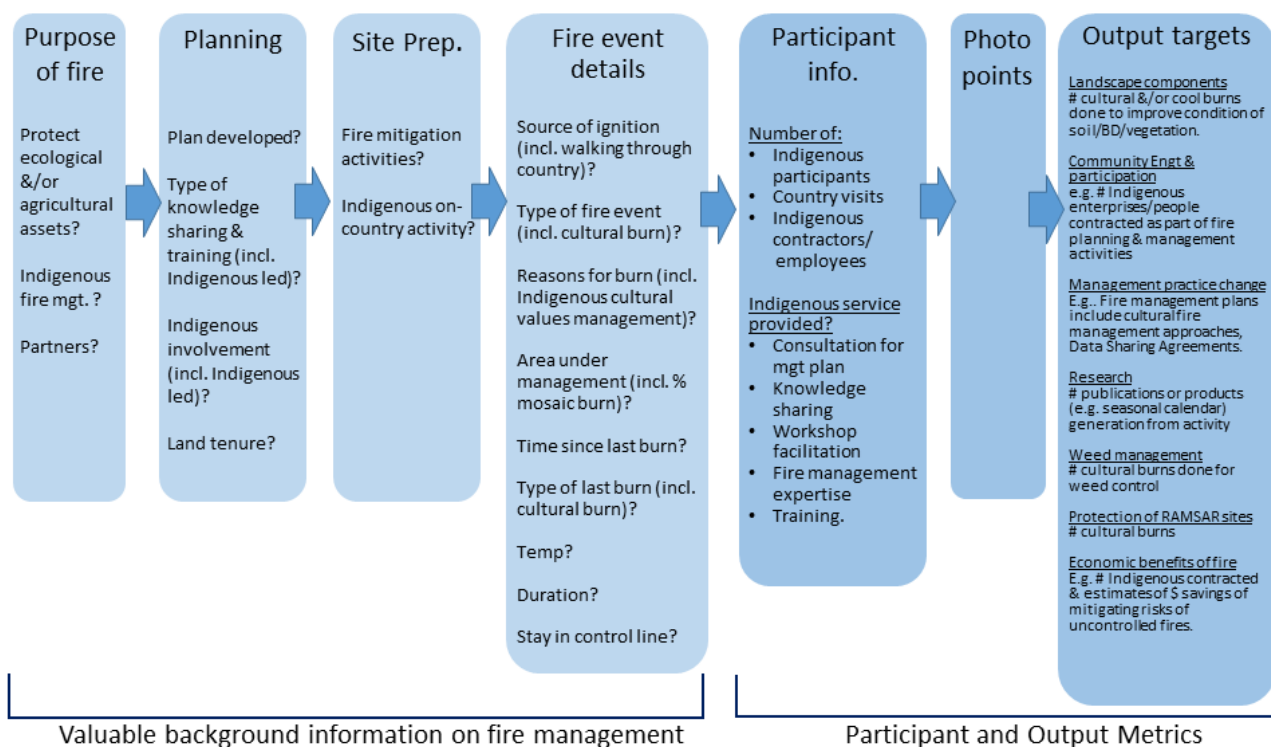
These categories can guide assessment of the fire management activity/project:
- How it contributes to the NLP Regional Land Partnerships outcomes.
- If it includes Indigenous cultural fire management.
- The extent of Indigenous leadership in Planning, Site prep. & the burn event.
- If it was a mosaic patch burn (%).

These metrics can provide:
- Ways to consider the multiple purposes & benefits of fire.
- Data to track the expansion & maturity of partnerships & activities.
- Data to consider if they are one off events or transitioned to sustainable Indigenous fire management enterprises.

Explanation of suggested additions to the 'Fire Management Details' of the MERIT Fire Management activity sheet.

This explanation relates to the first part of the Framework Table 2: Fire Management Details. Explanation to the second part of the Framework, Participant information (Table 3) and Output Targets (Table 4) comes later. The suggested new field **Purpose of fire** helps guide the assessment of how fire management contributes to the range of Regional Land Partnership Program outcomes. Note inclusion of 'Indigenous management' to help capture the attributes and benefits of Indigenous fire management activities. This field also includes a category to capture the fire management partners, noting that partnerships are key to delivery of types and levels of environmental and Indigenous social, cultural and economic outcomes.

The suggested new field **Fire Management Details** includes restructuring of existing fields to capture different stages of fire management (Planning, Site Prep., fire event) and change some language to more user-friendly language (e.g. 'site preparation' in place of 'fire prevention works').

The 'Planning' category allows for acknowledgement that the development of a plan may involve various activities, with various levels of 'Indigenous involvement'.

The *planning* sub-category provides a way to acknowledged that a plan may be a revision of an existing plan, or the development of a new plan, and that a Plan might include a vision statement,

geographic values mapping and relevant fuel types and burning requirements – frequency and intensity, a seasonal calendar, data sharing agreement[12].

The *Knowledge sharing and training* sub-category acknowledges that planning may include Indigenous-led events such as fire circles, country visits, training, mentoring and other consultation processes to inform planning; science-led knowledge sharing including to do with local ecology and fire behaviour; and Fire agency-led training.

Importantly, this category also provides a way to capture the extent to which Indigenous managers were 'involved' in the planning process: whether the plan developed through *Indigenous-led* consultation, or whether Indigenous fire experts or technical officers were contracted, Indigenous people were trained and/or resourced to participate in fire circle discussions and/or planning activities (*High, Medium*) or whether Indigenous involvement was *Low* (non-indigenous technical officer led, Indigenous community participate as volunteers).

The suggested addition of the Land tenure sub-category provides a way to capture this value background data.

It is suggested that **Site Preparation** be used in place of the existing title 'Fire prevention works' as more user-friendly language. This includes the addition of Indigenous on-country activity to enable a way to capture the diverse Indigenous-led site preparation activities that may vary between regions.

The 'fire event' category provides the place to capture the details of the actual burn event.

The inclusion of 'walking through country' to the *source of ignition* sub-category captures Indigenous practices, allows the state of the country to inform ignition points and purpose.

The addition of 'cultural burn' to the *type of fire event* sub-category with additional details to be selected to describe the extent of Indigenous leadership in the burn (Indigenous-led; High, Medium, low involvement).

The inclusion of 'Indigenous cultural values management' to the sub-category *reasons for burn* and a field that requests the manager doing the reporting to also provide a description of the ecological and/or cultural aspects of the country targeted for the burn (e.g. risk to what assets; what weeds species; cultural heritage sites, bush tucker species).

Importantly, the words *area of land under fire management plan* replace 'area of burn ground' and 'area burnt' to move away from using 'area burnt (ha)' as a measure of fire management to a focus upon mosaic patch burning. This enables mosaic patch burning area can be captured and avoids assumption that a certain % of area is a good/bad burn.

The addition of a new sub-category: *type of last burn* captures change/sustained effort since last burn. Suggest adding in 'cultural burn' as option for 'type of burn'. This helps to capture (amongst other things) sustained effort of cultural burning activities, versus one off events, useful for 5 year program review evaluations.

The change of 'wildfire' to 'bushfire' moves away from the terminology used in the USA. Finally, the deletion of sub-category *duration of activity* is suggested as the category does not appear to provide any useful information.

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[12] See reference to UN Data Sovereignty

Table 2: Fire Management (Mgt) Details

Field	Subfield	Suggested change	Suggested data collection technique	Tick box options	Drop Down menu options	Extra data	Data use
Purpose of Fire	This new field helps guide the assessment of how fire management contributes to the range of Regional Land Partnership Program outcomes. Note options are included to judge if fire management is Indigenous cultural fire management.						
	Purpose of fire	ADD Suggest adding category called 'Indigenous management'. We note this isn't an outcome of the Regional Land Partnership program logic but it does help capture the attributes and benefits of Indigenous fire management activity[13].	Tick box – can tick more than one	Protect WHA; Protect TS; Protect threatened Ecological communities; Protect RAMSAR wetland; Manage Ag systems; Indigenous management;		Please provide specific details (e.g. which WHA, TS, RAMSAR wetland).	Valuable background data
	Fire mgt partners	ADD Partnerships are key to delivery of types and levels of environmental and Indigenous social and economic outcomes.	Tick box – can tick more than one	Fire management agency (Govt); eNGOs; Research; Local Council; Indigenous organisation; Other Indigenous fire experts; Private land holders; Other		if select 'other', please specify	Valuable background data
Fire Management (Mgt) Details Suggest adding additional fields, and re-structuring existing fields to capture different stages of 'fire management', and change some language to more user-friendly language.							
Planning	**Plan developed** (might include a vision statement, geographic values mapping and	ADD	Drop down menu		New plan; Revision of existing Plan		Program KPI (?)

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[13] Indigenous management has 1) Participant and 2) Landscape elements. *Valuable background information* for Indigenous participation includes #Indigenous people employed, #Indigenous people engaged, #training opportunities for Indigenous people. *Value background information* for landscape elements of cultural fire management includes: Description of cultural-ecological aspects of the country targeted for the burn (e.g cultural heritage sites, bush tucker species, weeds, risks to important assets). This valuable background data could be provided under 'type of burn' or as part of Fire Management Details in the 'reasons for burn' and 'type of fire event' fields. And/or it can be captured as # of data in the output targets.

	relevant fuel types and burning requirements – frequency and intensity, a seasonal calendar, data sharing agreement[14], etc)						
	Knowledge sharing and training	ADD	Tick box, can tick more than one and then specify number of activities for each one selected	Indigenous-led; Science-led (ecology and fire behaviour); Fire agency-led training.		Number of activities for each one selected.	Program KPI (?)
	Indigenous involvement	ADD	Drop down menu		**Indigenous-led** (Plan developed through Indigenous-led consultations) **High** (Indigenous fire expert contracted, Indigenous people trained and/or resourced to participate in fire circle discussions and/or planning activities); **Medium** (non-indigenous technical officer contracted, Indigenous people trained and/or resourced to participate in fire circle discussions and/or planning activities); **Low** (non-indigenous technical officer led, Indigenous community participate as volunteers); **NA**		Valuable background data
	Land Tenure	ADD	Drop down menu		Private; Indigenous owned; Public; Other	If 'other' please specify	Valuable background data

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[14] See reference to UN Data Sovereignty

Site prep.		Changed title from 'fire prevention works'	Tick box, can select more than one	Fire Mitigation activities; Other.	fire trail construction; fire break/containment construction; woody vegetation removal; grass slashing; water point construction; airstrip/helipad construction;	If 'other' please specify	Valuable background data
		'Site preparation' is preferred term rather than 'fire prevention works'; Indigenous site preparation activities vary between regions.					
				Indigenous on-country activity		Please specify	Valuable background data
Fire event	**Source of ignition**	KEEP & ADD - suggest adding 'walking through country' to capture Indigenous practices, allows the state of the country to inform ignition points and purpose.	Drop down menu		Lightning; drip torch; aerial incendiary; accidental human; arson; walking through country; unknown; NA; other	If 'other' please specify	Valuable background data
	Type of fire event	KEEP & ADD – suggest adding 'cultural burn' Cultural fire has medium to high levels of Indigenous participation, and is focussed on areas that have cultural and environmental assets. Description of cultural-ecological aspects of the country targeted for the burn (e.g cultural heritage sites, bush tucker species, weeds, risks to important assets)	Drop down menu		Managed controlled burn; Cultural burn	If selected 'cultural burn': 1. Please select one of the following drop down menu options: **Indigenous-led** (burn led by Indigenous fire expert with cultural authority and/or under supervision of Indigenous entity with cultural authority); **High** (Indigenous fire expert contracted and local Indigenous people trained and/or resourced to participate); **Medium** (non-indigenous technical officer contracted, Indigenous people	Valuable background data

						trained and/or resourced to participate); **Low** (non-indigenous technical officer led, Indigenous community participate as volunteers).	
	Reasons for burn	KEEP & ADD, suggest adding 'cultural burn'	Tick box – can select more than one.	Fuel reduction; Asset protection; weed management; pest animal management; ecology management; Indigenous cultural values management; unplanned fire event; other.		Please provide description of the ecological and/or cultural aspects of the country targeted for the burn (e.g. risk to what assets; what weeds species; cultural heritage sites, bush tucker species). If selected 'other' please specify.	Program KPI (?)
	Area of land under fire mgt plan	Suggest change 'area of burnt ground' to 'area of land under fire management plan' Strong negative response about using area (ha) as useful field. Suggest to collapse 'area of fire ground' and 'area burnt' to one field, so that mosaic patch burning area can be captured and avoids assumption that a certain % of area is a good/bad burn.	specify number, then provide drop down menu 'mosaic burn; whole of site'	Specify number	Drop down menu 1: mosaic burn; whole site burn; drop down menu 2 - if mosaic burn selected ask '% of site burnt'; if 'whole of site' selection, ask 'size of area (ha)	Specify number	Program KPI
	Time since last burn	KEEP	Drop down menu		1-3 years; 4-6 years; 7-10 years; >10 years		Valuable background data

	Type of last burn	ADD An additional field to be added to capture change/sustained effort since last burn. Suggest adding in 'cultural burn' as option for 'type of burn'. Helps to capture (amongst other things) sustained effort of cultural burning activities, versus one off events, useful for 5 year program review evaluations	Drop down menu		Managed controlled burn; Escaped controlled burn; Cultural burn; Bushfire; Bushfire prevention works (including back burning in response to bushfire event).		Valuable background data
	Temp. of burn (fire intensity)	KEEP	Drop down menu		Cool; Moderately hot; Very hot; Extreme		Valuable background data
	Duration of activity	DELETE Suggest delete as no useful data collected from this field.					
	Did the fire stay within the identified control line	KEEP	Drop down menu		Yes; No; Uncertain.		Valuable background data
	Comments/notes	KEEP	Free text				Valuable background data

Explanation of suggested additions to Participant Information and Output Targets tables of the MERIT Fire Management activity sheet.

The suggested inclusions to the Participant information and output targets of the MERIT Fire Management Activity sheet are aimed to acknowledging the specific role of Indigenous cultural fire practitioners and their partners to deliver fire management services to the Regional Partnerships Program Outputs 1-5, that also provide benefits.

Participant information (see Table 3)

Suggest remove 'number of new people attending project activities' as not sure that 'new participants' can be defined, nor what useful information it provides.

Addition of 'number of Indigenous contractors and/or employees (FTEs) employed to do project activities' to acknowledge role of enterprises to deliver cultural fire services.

Addition of 'Type of Indigenous service provided through Indigenous organisations (as defined by procurement policy)' to acknowledge the range of services that could be delivered including: Consultation for fire management plan; Knowledge sharing; Workshop facilitation; Fire management services and expertise; Training.

Output Targets (see Table 4)

The many suggested inclusions to the Output Targets Table provide a way to capture information regarding how the Project delivers to Regional Partnerships Program Outputs 1-5, have specific landscape components (Threatened Species, Ecological communities, WH, RAMSAR, conservation grazing management), Community Participation and engagement components; Management practice change components; Research components; and Weed management components.

The suggested additions (examples) should also provide a way to consider the multiple purposes (as per the mentioned components) and benefits of fire (environmental, economic, social, cultural, health and wellbeing, political-self-determination), and the different partners who are engaged in this work. It should also provide data that can be used to track the expansion and maturity of different cultural and cool burning partnerships/events, and to consider whether these partnerships/event are just one off engagement efforts, or have they translated into sustainable Indigenous on-country fire management enterprises.

Important to note is that many of the measures for each component may related to more than one benefit category. Also, these benefit categories can be mapped to the different stages of fire management and thus the 'fire management details' of the MERIT Fire Management Activity sheet. Figure 7 provides a visual that maps these measures to the different stages of fire management as per benefit category.

Focus on landscape components (example): the suggested new output target that considers the *number of cultural and/or cool burns done to improve the condition of soil, biodiversity and vegetation* targets the fire activity to key outcomes of the program and doesn't use area as a measure of success. It also provides a way to capture ecological and economic benefits.

Focus on community engagement and participant components (examples): the suggested new targets provide a way to capture the economic and political-self-determination benefits of Indigenous enterprises, contractors and carbon farming activities of fire planning and management activities, and cultural burns.

Focus on management practice change components (examples): the suggested new targets provide a way to capture and track the important management practice change occurring over time (including institutional change)

and also the diverse benefits that may be accrued from the stated activities (including knowledge sharing, training, development of seasonal calendars, inclusion of Data Sharing Agreements in Fire management plans, ATSI identified positions in government/eNGOs, positive media stories, co-investment for fire management).

Focus on research component (example) the suggested new target output - *number of publications or products (e.g. seasonal fire calendar) generated from fire activity* provides a way to track co-development of knowledge and products, as well as cultural benefits.

Focus on weed management component and protection of RAMSAR sites (examples) track how cultural burns deliver services to other Regional Land Partnership Outputs areas.

Focus on economic benefits of fire (examples) provide ways to capture Indigenous employment targets and non-indigenous benefit, as well as economic and ecological benefits.

Figure 10: Diagram showing how the draft measures are matched to benefit categories and attributes (as per the three relevant stages of fire management)
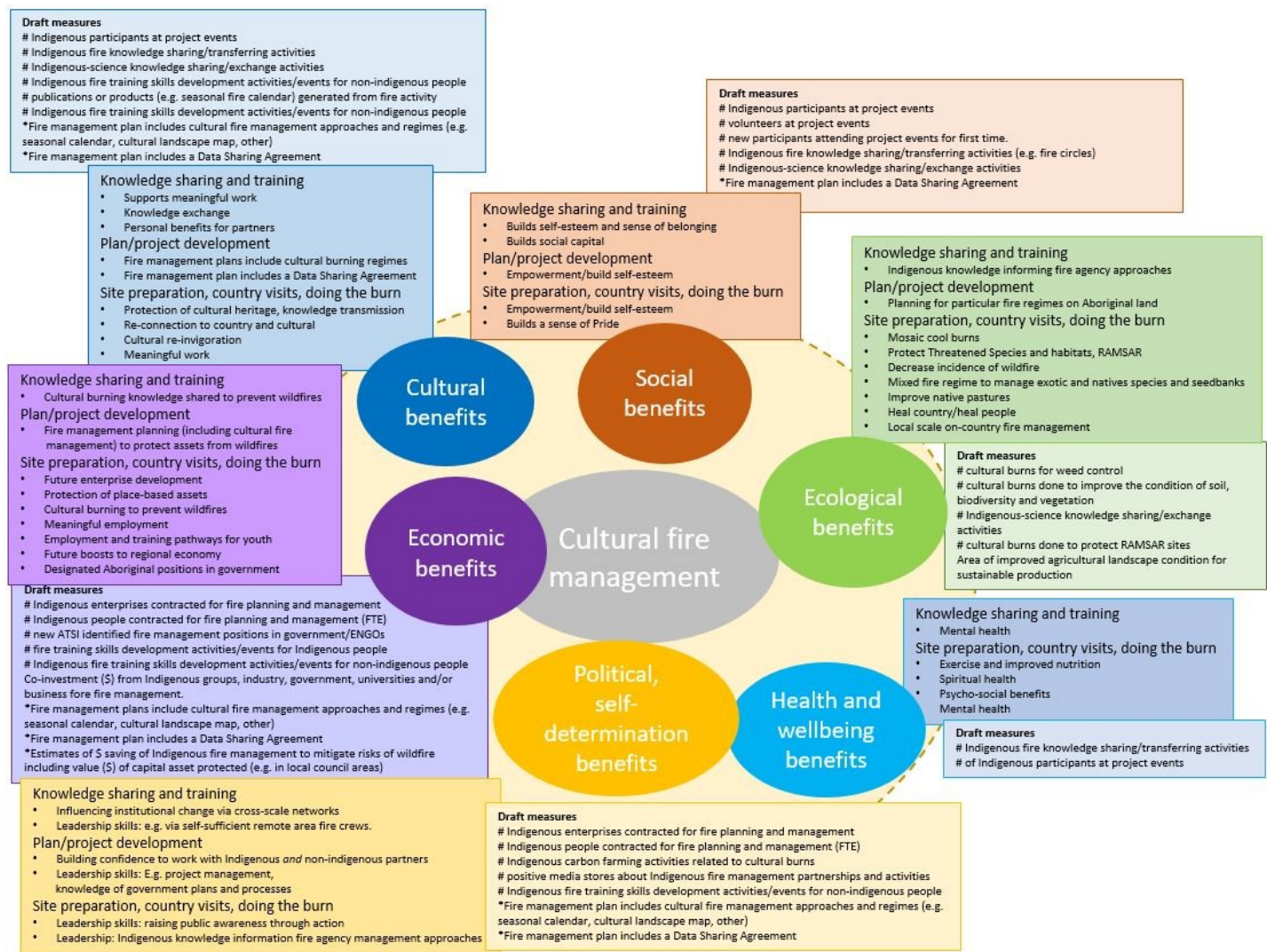
Table 3 Participant Information

Field	Suggested change	Data use	Type
Number of participants (i.e. not employed on this project)	Keep	Program KPI	Number
Number of new people attending project activities	Delete – can 'new participant's be defined, and does it provide any useful data?	Program KPI	Number
Number of Indigenous participants (i.e. not employed on the project)	Keep	Program KPI	Number
Number of Indigenous country visits	Keep	Program KPI	Number
Number of community groups (non-delivery partners) participating	Keep	Program KPI	Number
Number of farming entities participating in project activities for the first time	Keep	Program KPI	Number
Number of Indigenous contractors and/or employees (FTEs) employed to do project activities	Add	Program KPI	Number
Type of Indigenous service provided through Indigenous organisations (as defined by procurement policy)	Add	Program KPI	Drop down menu: Consultation for fire management plan; Knowledge sharing; Workshop facilitation; Fire management services and expertise; Training.

Photo points – keep

Table 4: Output Targets

Output targets	Suggested change	Explanation - benefits
Focus on landscape components (examples)		
# of cultural and/or cool burns done to improve the condition of soil, biodiversity and vegetation.	Add	This targets the fire activity to key outcomes of the program and doesn't use area as a measure of success. Ecological and economic benefits
Focus on community engagement and participation components (examples)		
# of volunteers participating in project activities	Keep	Social benefits
# of Indigenous participants at project events	Keep	Social, cultural, health and wellbeing benefits
# of Indigenous enterprises contracted as part of fire planning and management activities	Add	Economic and Political-self-determination benefits
# of Indigenous people contracted as part of the fire planning and management activities (FTE).	Add	
# of Indigenous carbon farming activities related to cultural burns	Add	
Focus on management practice change components (examples)		
# of new participants (attending project events for the first time)	Keep	Social benefits
# of Indigenous fire knowledge sharing/transferring activities (e.g. fire circle discussions, school programs)	Add	Cultural, social, health and wellbeing benefits
# of Indigenous-science fire knowledge sharing and exchange activities (e.g. development of seasonal fire calendars)	Add	Cultural, social, ecological benefits
Fire management plans include cultural fire management approaches and regimes (e.g. seasonal calendar, cultural landscape map, other)	Add	Economic, political-self-determination and cultural benefits
Fire management plans include a Data Sharing Agreement (to protect IK, sensitive cultural and landscape information)	Add	Political-self-determination, economic, social and cultural benefits
# of positive media stories about Indigenous fire management partnerships and activities	Add	Political-self-determination and cultural benefits
# of new ATSI identified fire management positions in government /ENGO organisations	Add	Economic, political/self-determination benefits
# of fire training skills development activities/events for Indigenous people	Add	Cultural and economic benefits
# of fire training skills development activities/events for non-Indigenous people (e.g. including cultural awareness training)	Add	Cultural, Political-self-determination and economic benefits
Co-investment ($) from Indigenous groups, industry, government, universities and/or business for fire management.	Add	Economic benefit, political/self-determination benefits
Focus on research component (examples)		
# of publications or products (e.g. seasonal fire calendar) generated from fire activity	Add	Cultural benefits
Focus on weed management component (examples)		
# of cultural burns for weed control	Add	Ecological benefit
Focus on protection of RAMSAR sites (examples)	Add	Suggest adding this category
# cultural burns done to protect RAMSAR sites	Add	Ecological benefit
Focus on economic benefits of fire (examples)		Suggest adding this category to capture Indigenous employment targets and non-Indigenous economic benefit.
# Indigenous enterprises contracted as well as estimates of $ saving in terms of mitigating risks of uncontrolled fires.	Add	Economic benefit
Non-Indigenous employment generated to support cultural burns (FTEs)	Add	It would be interesting to track this in terms of how it supports cultural burns.
Area of improved agricultural landscape condition for sustainable production (H)	Add	Ecological benefit
Value ($) of capital asset protected (e.g. in local council areas)	Add	Economic benefit

13 Draft protocols for non-Indigenous partners to support Indigenous cultural fire management

This Chapter draws on perspectives offered in this and previous work to *suggest draft protocols* for non-Indigenous managers to support partnerships that can deliver maximum benefits for Indigenous people engaged in this important initiative.

Draft Protocols

A further outcome of this research was to derive *draft* protocols to guide **non-indigenous** managers in their efforts to ensure Indigenous people (Indigenous organisations and managers) gain maximum benefits from the growing national initiative – cultural fire management. As such, many of the suggested draft protocols related to the need to develop improved formal governance processes that support Indigenous people within the formal governance system landscape.

This chapter combines analysed interview data with the suggested draft protocols. Important to note is that the suggested draft protocols are mutually supportive and interconnected, and relate mainly to supportive governance arrangements and supportive partnerships. As outlined below, these protocols resonate with and provide a southern Australia lens on many of the draft protocols advocated by Indigenous fire managers who participated in workshops held in northern Australia. That work highlighted 6 protocols: recognition of traditional and legal rights and interests; knowledge recognition; learning and sharing knowledge; partnerships; governance and benefits (see Robinson et al 2016b).

Governance arrangements to support Indigenous leadership

Many Indigenous fire managers work in partnership with Indigenous and non-indigenous managers who may be based with government agencies. Partnerships that are set up to support Indigenous leadership in the way Indigenous fire managers want to be supported, will more likely succeed. As this Indigenous manager highlighted:

> *I think the main one [protocol] is to get the communities we're working with to the point where they lead it [the burn], so they're not getting told what to do. I think that's the main thing, training them to that level where they're confident enough to show leadership and they make the call. (TAS 1)*

Examples might include support for Indigenous fire managers to develop new knowledge, fire management planning and reporting building community capacity to development enterprises and thereby provide services to the private sector. It might also include designated Indigenous positions within government agencies and appropriate support provided to those people to enable them to succeed.

This suggested draft protocol resonates with the *recognition of traditional and legal rights and interests* draft protocol advocated by other Indigenous fire managers as: "highly significant in terms of the values Indigenous managers are aspiring to enhance and in terms of the nature of partnerships they seek. Much of the impetus for Indigenous cultural burning is to substantiate and manifest local identity, connection,

responsibility and control of locally defined outcomes. These are core benefits sought through caring for customary lands and increasingly enabled by synergistic business. Supportive governance arrangements are needed including training and support for planning, engagement and on-ground activities (Robinson et al 2016b: 41)."

Fostering supportive, place-based partnerships

Successful partnerships recognise the importance of building trust, fostering friendships, are flexible, placed-based and not time-pressured (it can take time). They recognise the complexity of cross-cultural engagement and interactions; respect Indigenous knowledge, know-how and protocols (e.g. seek guidance and approval from Elders and 'the right' people); yet do not assume that everyone in the partnership has the know-how and the answers. They provide space and opportunities to support Indigenous people to develop new knowledge and skills in their own time-frames; and create the space for non-indigenous people to learn from Indigenous people. They broker opportunities and networks, and are based on balance, as this manager explained:

> To get better collaboration, [there] needs to be more balance. For example if we respect Indigenous knowledge then we will pay them the same and respect them the same as those who work in the [non-indigenous] system (NSW 1).

This suggested draft protocol resonates with the *partnerships protocol* advocated by other Indigenous fire managers who emphasised the need for place-based partnership approaches to design and deliver Indigenous fire management programs across Australia. This recognises that Indigenous communities are now applying, adapting and rejuvenating Indigenous fire knowledge to guide a range of landscape-burning regimes. This protocol also recognises the many examples of practical efforts to incorporate local Indigenous fire knowledge, practices, priorities and techniques into the times and places for burning. While this can be challenging, it should not prevent collaborative and adaptive approaches to landscape burning.

Formal protection of Indigenous Cultural and Intellectual property

This suggested draft protocol highlights the central role of Indigenous Cultural and Intellectual Property to Indigenous cultural fire management knowledge and practice. Individuals interviewed for this research highlighted recognition might be in the form of support for Indigenous-led systems and processes such as those discussed at the Victorian cultural burning strategy workshop and include "the development of culturally meaningful indicators for M&E, options for collecting, storing and using data that would be owned and managed by Traditional Owner groups" (VIC 4).

Governance processes to protect ICIP might include issues to do with Data Sovereignty (including data sharing agreements between partners).

Existing partnerships that work hard to respect and protect ICIP include those between the Dja Dja Wurrung and Forest Fire Management Victoria, as this manager explained:

> One of the areas they have to be careful is in IP. Being very conscious of what that means, [we] don't have all the answers yet but [we] won't do it unless it's been approved by Dja Dja Wurrung. For example, Dja Dja Wurrung need to nominate the burn, [state it is] for this purpose, at this location. Then talk about how they are going to do it, where [and how it can be] integrated into the state's processes. [It's] so much easier to burn on private land, outside of permit time of year,

you ring the CFA, and do it. But on public land [there are] Acts, legal responsibilities, OH&S standards, so that's the difference. Burning in the state's system - it's more complicated. (VIC 3)

This suggested draft protocol resonates with the *knowledge recognition* protocol advocated by Indigenous fire managers who participated in workshops across northern Australia whereby "fire management partnerships must recognise and support Indigenous fire knowledge and fire management as part of local Indigenous systems in which custodial and other institutional forms of governance are central (Robinson et al, 2016b:41).

Prioritise and formalise Indigenous cultural burning

This suggested draft protocol highlights the important role of governments to support Indigenous cultural burning. Some individuals interviewed for this study pointed out that before partnerships can develop between Indigenous organisations and other entities, Indigenous cultural burning "has to be prioritised [by the State], and governance around that is really important". (VIC 3).

Examples given included Indigenous cultural burning becoming formalised within State government agencies via programs resourced effectively (employment, reporting of outcomes, training, and so on) to support Indigenous managers, as this government manager explained:

[…If] you don't have those formal things in place its always very unclear as to what you've actually promised versus what you've delivered […including the fact that] the expectations of one organisation might have been different to the other (TAS 6).

Further, it was suggested that fire management agencies need to set formal targets to engage and work with Aboriginal community to support them to conduct cultural burning within their contemporary institutional and governance arrangements.

This suggested draft protocol resonates with the governance protocol advocated by Indigenous fire managers from northern Australia. This is outlined in Robinson et al (2016b:42-3) as: "Indigenous fire knowledge and management is influenced by an array of governance arrangements, including Indigenous customary governance regimes; government fire institutions and programs; and market-driven fire agreements. The rules and purposes of each fire governance regime influence the burning regimes and the management issues facing Indigenous fire management partners."

Formal cultural awareness training for non-indigenous people to build their capacity to support Indigenous cultural burning activities and partnerships.

Many Indigenous fire managers work in partnership with Indigenous and non-indigenous managers who may be based with government agencies. Many interviewees noted the need for improved cultural awareness training to support non-indigenous managers and scientists to be able to better work with Indigenous staff and Indigenous organisations. This might include regional staff who may feel threatened by different ways of using fire and non-indigenous scientists who are committed to supporting Indigenous fire managers (there's so much to learn). The formalising of cultural awareness training to support Indigenous cultural fire management may also facilitate a pathway to institutional change.

This suggested draft protocol suggests a particular action that both resonates with *the learning and sharing knowledge protocol* advocated by Indigenous fire managers in northern Australia. It is outlined in Robinson et al (2016b:42) as: "Partners that wish to support Indigenous fire management activities and enterprises need to pursue the best methods for learning, sharing and passing on fire knowledge.

Although other tools are needed to manage large areas, walking the country together is the best way to learn about Indigenous fire knowledge. Effective and appropriate landscape-burning regimes are based on high-quality information, built through collaborative knowledge-sharing partnerships. Indigenous communities need to be empowered to build knowledge about fire and fire management in their own way, and they need to be trained to appropriately integrate Indigenous and non-Indigenous fire management efforts to help make good decisions about where to burn, how much area to burn, and what transport methods to use to access and burn places on country. Information from Indigenous communities combined with information from scientists can guide this effort"

Ensuring Indigenous cultural fire management activities benefit local Indigenous communities

As outlined in this project: cultural fire management programs, partnerships and activities can and should deliver social, cultural, economic, political-self-determination and environmental benefits for Indigenous people.

This resonates directly with the *benefits* protocol advocated by Indigenous fire managers from northern Australia and outlined in Robinson et al (2016b:43) as: "multiple benefits from Indigenous fire management activities and partnerships are important to recognise, support and record, but they are often hard to balance and achieve. There are concerns that the institutionalisation of Indigenous fire management can lead to the simplification and diminution of local Indigenous fire knowledge and practices."

14 Implications for National program efforts to evaluate and enable effective Indigenous cultural fire management

The Chapter concludes the Report with a discussion about the implications of this research for the National MERI frameworks. We can draw several insights from the outcomes of this research for National program efforts to design monitoring and reporting frameworks that can evaluate and enable effective Indigenous cultural fire management.

First there is a need for National programs to **recognise and support cultural fire management as part of Indigenous caring for country responsibilities and activities.** Indigenous cultural fire management is likely to be one aspect of a suite of caring for country activities, and at the same time is likely to fulfil a variety of purposes and result in a variety of outcomes. As such many Indigenous managers who practice a holistic approach to management, find it challenging to report on it as a separate activity to their other caring for country activities.

Second **the diverse benefits of Indigenous cultural burning and that are accrued to local Indigenous communities need to be reported and supported.** These benefits can be accrued throughout the engagement, planning, on-ground activity and learning phases of Indigenous cultural burning. Some of these benefits rely on significant financial, social and cultural resources and it is important to track these multiple benefits to help justify continued funding and support from non-government partners. Draft protocols to guide non-Indigenous partners in their efforts are suggested in an effort to guide broader support for Indigenous cultural burning activities and these are broadly consistent with other principles and protocols highlighted in earlier work.

Third and finally **there is a need for an integrated approach in the way Indigenous cultural fire management is reported between agencies, purposes and programs.** Indigenous people across southern Australia are engaging and re-engaging with cultural fire management practices via diverse and innovative enterprises and partnerships. This work is carried out on a mix of land tenures with a range of partners. Although much of this work is funded from the Australian Government's National Landcare Program, some of it is funded via other initiatives such as the Indigenous Protected Area Program, via state and territory government agencies including those tasked with providing rural fire services, eNGOs, and some is funded through fee for service arrangements with the private sector. While each of these funding arrangements have program logics which affect how reporting frameworks are designed it is worth considering that all these programs engage with Indigenous Elders, fire experts and practitioners who work with a cultural fire management logic that reflects Indigenous people's responsibilities to care for country. Practical examples of how Indigenous cultural landscape management partnerships and activities 'work' are highlighted in this report and show how Indigenous cultural burning can offer diverse benefits to local Indigenous communities. Reporting on these benefits between agencies and organisations supporting these efforts can offer vital evidence needed to enable Indigenous cultural fire management, to support enterprises and sustain partnerships.

15   References

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Appendix A : Assessment of the economic benefits of Indigenous cultural fire management

Kerstin Zander, Northern Institute, CDU

1 Introduction and framework

Natural resource management (NRM) has many direct and indirect (co-) bene[...] ecosystem services. Besides benefits to nature itself, the benefits include soci[...] political and cultural benefits (Table 1). The benefits from NRM have been des[...] extensively by ecologists (e.g. Daily 1997) and economists (e.g. De Groot et al. 2002). Conceptual frameworks to understand benefits from Indigenous NRM including fire management are also plentiful (e.g. Chan et al, 2012; Barber, 2015).

This report focuses on the economic benefits from Indigenous fire management. While it also touches on social benefits, it does not attempt to evaluate cultural benefits. Cultural benefits can be direct or indirect and are mostly intangible and sensitive. As such they should not be the subject of economic evaluation.

Table 5. Benefit categories and attributes used in this research (adopted from main report)

Benefit category	Benefit attributes
Cultural	Meaningful work, protection of heritage, Indigenous knowledge transmission, retention of language and identity.
Social	Social capital, self-esteem, pride, community harmony, opportunities for women.
Economic	Employment, career development opportunities, secure income, reduced reliance on welfare, strengthening of local economy
Ecological/environmental	Decrease in incidence of wildfires, fire hazard reduction, biodiversity recovery, Indigenous knowledge contributions to CNRM, biodiversity, Threatened Species, restoration of waterways, bush regeneration.
Health and wellbeing	Spiritual and physical health from completion of cultural responsibilities, exercise, improved nutrition, decrease in drug/alcohol use.
Political (self-determination)	Economic independence, leadership skills, confidence to work with non-indigenous partners, knowledge-science exchange

Non-cultural benefits from NRM can be assessed in monetary terms. Economic evaluations are important for decisions about investments and developments. Government agencies must make decisions about how to allocate public funding to different environmental and non-environmental causes and benefit-cost analysis is a useful tool to justify spending. In Indigenous fire management, for example, economic evaluation can be used to justify additional labour or equipment costs when the benefits arising from the additional burns that could be done exceed those costs. Benefit-cost analysis could also be used to prioritise areas for burning when funding is limited and agencies want to maximise the benefits from a certain budget. Benefits also arise for different groups of people and different regions, and economic valuation can help to compare the benefits to these different groups.

A range of methods (Table 2; Bateman et al. 2003) are available to assess direct and indirect benefits of NRM. The choice of method depends on the availability of data, the good or service to be evaluated (e.g. Indigenous fire management) and the objective (e.g. which benefits or values should be evaluated and from whose perspective?). There are two broad evaluation methods: revealed and stated preference methods. Economic evaluation is based on peoples' willingness to pay for a good or service. Revealed preference methods include hedonic pricing, travel cost method and production function (Table 2) and are based on actual market behaviour. They can only be applied to evaluate goods and services which have market prices, i.e. they are used to assess direct and indirect use values. Stated preference methods include contingent valuation and choice experiments and because data are obtained through surveys and from hypothetical settings, direct and indirect use values as well as non-use values can be assessed. A third approach, and the approach used in this report, comprises three elements: damage cost avoided, replacement cost and substitution cost method. This method is not, strictly speaking, a method of valuation. Instead it assumes that the costs of avoiding damages or replacing ecosystem services can provide useful estimates of the value of these services.

Table 2. Benefit categories and attributes used in this research (adopted from main report)

Method	Required data
Production function	Market data / Real prices
Hedonic pricing method	Market data / Real prices
Travel cost method	Market data / Real prices
Contingent valuation	Data from hypothetical survey settings / stated values
Choice experiments	Data from hypothetical survey settings / stated values
Damage cost avoided, replacement cost, substitution cost method	Market data / Real prices

2 Method

15.1   2.1 Online survey design

Data were collected though an online survey which was designed in Qualtrics.

The questionnaire was developed in a participatory approach with frequency testing within the project's Indigenous steering committee (see main report). The final questionnaire comprised five parts (see appendix for the complete questionnaire):

- questions about respondents themselves and their roles in fire management within their organisations

- questions about respondents'' organisations, how Indigenous people are employed to do fire management, how much time they spend doing fire management, and where this is done (e.g. Indigenous land, public land, private land)

- questions about fire management activities I, how many fire management activities respondents have been involved in over the last 24 months, and the reason for the burn

- questions about fire management activities II, the amount of time and resources respondents and their organisations invest in the different fire management

- questions about the benefits of on-country burns, benefits to the Indigenous fire managers, the related Indigenous organisation, the partner organisations, and the region as a whole

2.2 Sampling

The link to the online survey was sent out by email. Some contacts were obtained through the MERIT database and some through the Firesticks network.

2.3 Responses

Thirty fire managers started the survey and 23 completed it. Of these 19 completed most of the questions. Data from this group, called from here on the respondents, were used in further analysis.

3 Results

15.2   3.1 Profile of respondents

Of the 19 respondents, 6 (32%) were Aboriginal and 19 (68%) non-Indigenous. The average age was 46 with a range between 27 and 64. Twelve (63%) respondents were male, seven (37%) female.

Most (11; 58%) have been involved in or/and worked in fire management between one and five years, six (32%) for more than 5 years and two (10%) since less than a year.

Most (12; 63%) were managers of the fire management and the involved staff within their organisations, two persons (10%) were the NRM managers and the remaining five (26%) described their positions as 'others'. This included Aboriginal water officer, National Park coordinator, former coordinator of Indigenous fire project, Landcare coordinator, and General Manager 'Growth', responsible for building network connections and preparing grant applications that include support for regional applications of cultural burning.

Fifteen of the 19 respondents (79%) were personally involved in actual or attempted on-country burns. Of these, most had done their last on-country burn in 2018 (9) or in 2017 (5). One person last did a burn in 2015.

15.3 3.2 Profile of respondents' organisations

The organisations where respondents were involved in were located in the following jurisdictions (Table 3):

Table 3. Distribution of jurisdictions of respondents' organisations (%)

Jurisdiction	Number	Percentage
NSW	6	32
NT	1	5
QLD	2	10
TAS	1	5
VIC	5	26
WA	4	22

Six respondents (32%) described their organisation as a 'NRM organisation', six (32%) as an 'Indigenous organisation', five (26%) as a 'government organisation' and two (10%) as a 'Landcare organisation'.

Most organisations either involved two to five (7; 37%) or more than 20 (6; 32%) Indigenous people. Four (21%) involved one Indigenous person and one (5%) six to 10. One respondent (5%) did not report the number of Indigenous people who work for or are involved in the organisation.

The organisations of almost half of the respondents (9; 48%) did involve Indigenous and non-Indigenous volunteers; two (10%) only non-Indigenous volunteers and eight (42%) did not involve any volunteers.

Many respondents (57%) stated that their organisation worked in partnerships and / or with a regional body (29%) when directing the actual or attempted burns. About 29% said that only the Indigenous people and their Indigenous organisation would decide over the burns.

The percentage of land that was burned or attempted to be burned over the last 24 months by respondents' organisations was mostly up to 2% (Table 4).

Table 4. Percentage of organisations' land that was burned in the last 24 months

Category	Number	Percentage
0 to 2%	9	48
3 to 5%	0	0
6 to 10%	2	10
11 to 15%	0	0
16 to 20%	1	5
more than 20%	3	16
Could not answer	4	21

Most of the reported burns were done on Indigenous land (78%). Some respondents (3) had done all their actual or attempted burns on Indigenous land, four most (two-thirds or more) and three about half of all their burns. Two respondents had done all actual or attempted burns on public land and two on private land. On average, 18% of all reported burned land was public and 4% private.

3.3 Reasons for on-country burns

Respondents could state multiple reasons for burning. Culture was stated as the reason for actual and attempted on-country burn by nearly all respondents, independent on the land title on which burning took place (Figure 1). Ecological management was stated as the reason for about 80% of burns done on Indigenous and public land, with a lower percentage for burns done on private land. Threatened species (TS) management was mentioned as the reason for almost 80% of burns on Indigenous land and about 60% of burns on private and public lands. Asset protection was mostly mentioned in relation to burns done on private land while weed protection was mostly associated with burns on public land.

Assets protected included outstations and homesteads, cultural sites, pastoral property assets (fences, water points, bores, stockyards, solar systems, cattle, tanks, sheds), public houses and koala captive facilities.

Cultural burns were mostly of low risk (slow moving, patchwork burn, ignited and monitored on foot, self-extinguishing, short duration e.g. cultural ceremonial, social, hazard reduction, ecological, scientific research, educational) (11), with fewer being of very low risk (contained fires that did not require firefighting appliances e.g. ceremonial, cooking, camp fire, contained) (3), and only one of moderate or higher risk (fast moving, erratic or complex low intensity burns, require firefighting applications for ignition, patrol, mop up, e.g. cultural hazard reduction, ecological,

scientific research, education). One respondent described their cultural burns as open edge burning with self-extinguishment.

Figure 1. Reasons for actual and attempted on-country burns – by land title
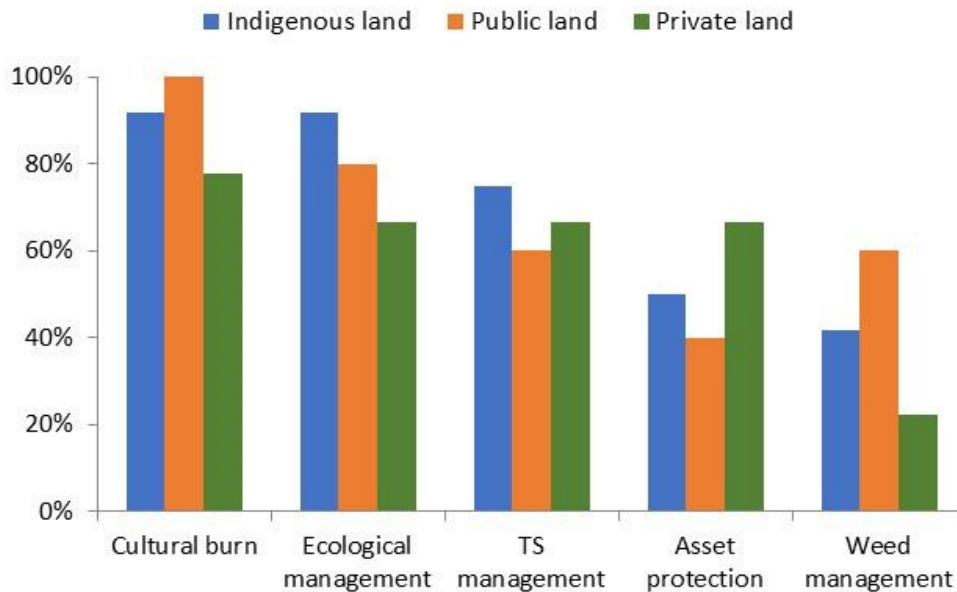
3.4 Activities and associated costs

Activities

Activities were investigated within the different stages of Indigenous fire management:

- Planning for the burn

- Site Preparation

- Doing the burn

- Monitoring the outcomes and effects of the burn activity

Most respondents stated multiple activities in each stage over the last 24 months (Table 5) which were mostly undertaken by Indigenous and non-Indigenous staff. Planning meetings and discussions before the burn were the activities most frequently undertaken by Indigenous and non-Indigenous staff members.

The main activity for non-Indigenous volunteers was undertaking bird surveys, during the site planning and monitoring phases. When planning for the burn, Indigenous and non-Indigenous volunteers attended the cultural burns in one organisation. Surveying was the most frequently

mentioned activity during site preparation, again, undertaken by Indigenous and non-Indigenous staff members.

Table 5. Main activities respondents undertook over the last 24 months – by different stages of fire management

Indigenous staff	N	Non-Indigenous staff	N	Volunteers	N
Planning for the burn					
Planning for the burn meetings, preparation and administration	6	Planning for the burn meetings / workshops	9	Bird survey (non-Indigenous)	1
Servicing / maintenance of equipment	2	Project management support and admin	4	Attend cultural burns (Indigenous & non-Indigenous)	1
Project management	1	Contracting	2		
Indigenous community consultation	1	Budgeting	2		
Establishing and maintaining partnerships	1	Apply for funds	2		
Bush Firefighter course	1	stakeholder engagement	2		
IPA restoration	1	IPA restoration	1		
Site preparation					
Vegetation Monitoring & assessment, recording, Fauna surveys	5	Vegetation assessment/ Fauna Surveys	3		
Burn Area Preparation e.g. fire breaks and road preparation	2	Fuel Load assessments	2		
Clearing site	2	Clearing sites/cool burn	1		
Cultural burning workshops	1	Project management support	1		
Project management incl. seeking permissions	1	Stakeholder engagement	1		
		Cultural Site Monitoring	1		
Doing the burn					
On-ground burns	4	On-ground Burns	3		
Event coordination	1	Transport of equipment and fuel	2		
Transport fuel and equipment to site	3	Preparing site	2		
Aerial Burns	1	Helicopter bookings	2		
Prepare the site	1	Help with transport to site	2		
		Editing digital files	2		
		Safety management	2		

		Event coordination support	1			
		Aerial Burns	1			

Monitoring the outcomes and effects of the burning

|					
Surveying burns	2	Reporting	4	Bird survey (non-Indigenous)	1
Project evaluation and reporting	1	Evaluation / Post assessments	2		
Post assessments	1				

Costs

The costs of the activities under each phase depend on many factors, such as the size of the fire management group (number of staff, number of burns) and the area in which they operate (travel requirements, need for helicopters). The costs were explored for all activities within the four phases of fire management (as sated in the previous section) for the 24 months and were broke down into:

- Costs for equipment

- Travel costs such as airfares and accommodation

- Training and workshop/conference attendance costs

- Administration, office and coordination costs

The organisations incurred most costs for fire management activities while planning for the burn (60%), the least during site preparation (Figure 2).

Figure 2. Distribution of costs across the different phases in Indigenous fire management
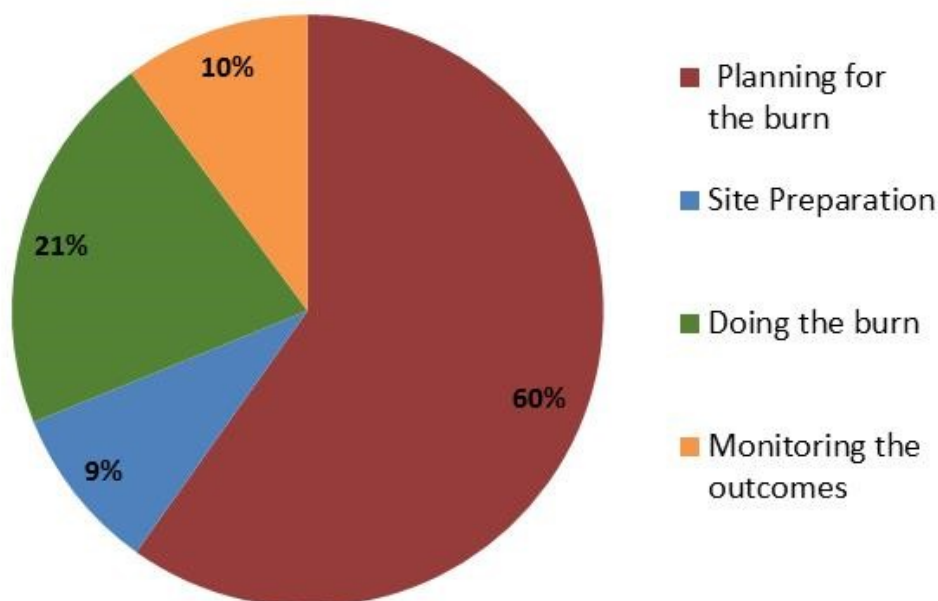
The number of full time equivalents (FTEs; Indigenous & non-Indigenous) involved in the fire management were as follows (Table 6):

Table 6. Number of FTEs involved in fire management activities

Number of FTEs	Number	Percentage
0.1	2	14%
0.2	2	14%
0.5	2	14%
1	3	22%
2	1	7%
10	1	7%
62	2	14%
80	1	7%

Those organisations who stated that they have 62 or 80 people involved in their fire management activities do not necessarily employ so many people themselves. They work in partnerships (see section 3.2) and the involved people are employed somewhere else. This is reflected in one respondent's statement:

"The success of our program was not employing people in our organisation to deliver the program, instead building capacity in external Indigenous organisations."

The following table (Table 7) outlines examples of detailed cost breakdowns of organisations' fire management activities over the last 24 months. The total costs per burn ranged between $17,600 and $46,000 and per ha between $53 and $54, although not many respondents could identify the area burned, or managed in general.

Table 7. Examples of costs (in AU$) of fire management over the last 24 months

	Example 1	Example 2	Example 3	Example 4
	Land managed: 100,000 ha	Land managed: 600,000 ha	Land managed: unknown	Land managed: unknown
	Land burned: 1,000 ha	Land burned: 6,000 ha	Land burned: unknown	Land burned: unknown
	FTE involved in burning: 0.1	FTE involved in burning: 0.5	FTE involved in burning: 0.1	FTE involved in burning: 0.1
	Number of burns: 3	Number of burns: 12	Number of burns: 1	Number of burns: 2
Variable costs				
Labour	10,000	50,000	10,000	10,000
Travel	1,000	11,500	21,000	2,600
Training and workshops	35,000	2,000	12,000	6,000
Total variables costs (24 months):	46,000	63,500	43,000	18,600
Fixed costs				
Equipment	2,000	27,000	0	0
Administration, office, coordination	5,000	233,000	3,000	21,000
Total fixed costs (24 months):	7,000	260,000	3,000	21,000
Total costs (24 months):	53,000	323,500	46,000	39,600
Total costs per burn (24 months):	17,667	26,958	46,000	19,800
Total costs per ha burned (24 months):	53	54	unknown	unknown

Note: labour cost assumptions: 1 FTE = $50,000 per year

3.5 Benefits of Indigenous cultural fire management

Fourteen of the 19 respondents did the ranking. Recovery of biodiversity and 'sick' country was mentioned among the five main benefits for Indigenous people by all but one respondent (93%; Figure 3). Access to country and opportunities to practice culture and care for country was most frequently ranked as most important benefit for Indigenous people (Table 8).

Figure 3. Benefits of Indigenous cultural fire management ranked among the five main benefits (%) – for <u>Indigenous people</u>
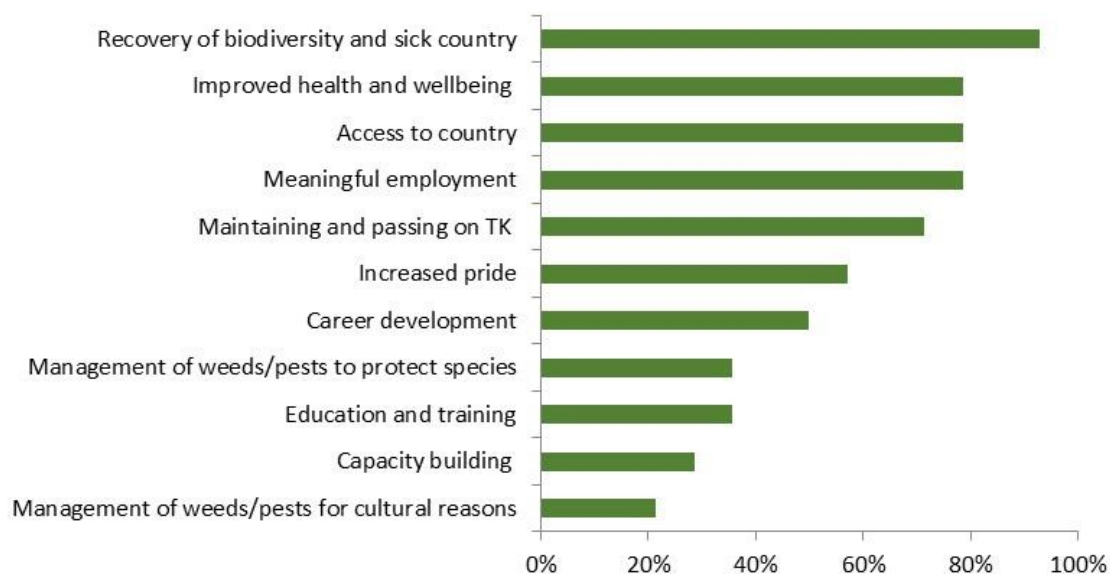

Table 8. Ranking of benefits (rank 1 = most beneficial) (%) – for <u>Indigenous people</u>

	Rank 1	Ranks 2 or 3	Ranks 4 or 5
Access to country and opportunities to practice culture and care for country	43%	7%	29%
Recovery of biodiversity and sick country	36%	21%	36%
Maintaining and passing on TK to others including between Elders and children	29%	36%	7%
Improved health and wellbeing of people from looking after and spending time on country	29%	21%	29%
Increased pride in self and others, increased self-confidence and self-esteem	21%	7%	29%
Meaningful employment that aligns with caring for country interests and values	14%	36%	29%
Career Development opportunities including development of leadership skills	14%	21%	14%
Management of weeds and pest animals and to keep **cultural** sites and country safe	14%	0%	7%
Management of weeds and pest animals and to keep culturally significant **species** and country safe	14%	14%	7%
Education and training about non-Indigenous fire management approaches	7%	7%	21%
Capacity building about how to write management plans and report on the outcomes of fire management activities	7%	14%	7%

For the region, the most frequently mentioned benefits included strengthening partnerships between Indigenous and non-Indigenous organisations and receiving greater public awareness and recognition (Figure 4). Strengthening partnerships was ranked as the beneficial frequently (Table 9).

Figure 4. Benefits of Indigenous cultural fire management ranked among the five main benefits (%) – for the region
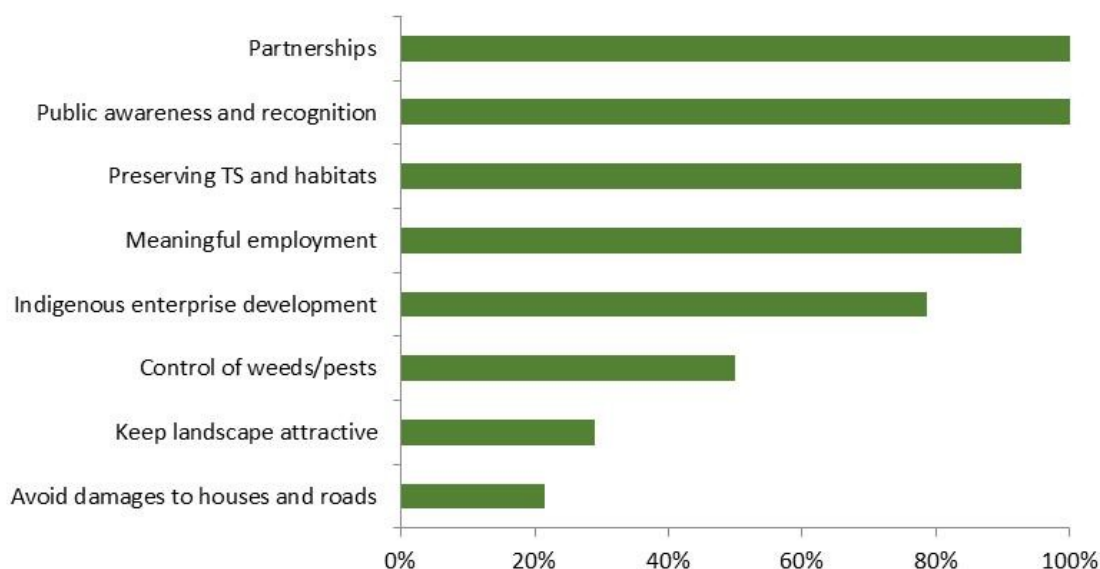

Table 9. Ranking of benefits (rank 1 = most beneficial) (%) – for the region

	Rank 1	Ranks 2 or 3	Ranks 4 or 5
Strengthening **partnerships** between Indigenous and non-Indigenous organisations	36%	29%	36%
Meaningful employment opportunities for Indigenous people	29%	7%	57%
Preservation of **threatened species and habitats** and/or caring for country	29%	57%	7%
Greater **public awareness and recognition** of, and support for Indigenous managers and Indigenous cultural fire management	29%	43%	29%
Keep the **landscape attractive**	29%	0%	0%
Indigenous enterprise development	21%	21%	36%
Control weeds and **pest** animals	21%	14%	14%
Avoid damages to houses and roads	14%	7%	0%

The most frequently mentioned benefits for the fire management organisations included the preservation of threatened species and habitats and/or caring for country, followed by strengthen Indigenous-led fire management work and Indigenous enterprise development and increased recognition of role of Indigenous fire managers in NRM (Figure 5). Increased recognition of the roles of Indigenous fire managers in NRM and education and training opportunities for non-Indigenous managers to learn about Indigenous cultural fire management were both ranked the most beneficial (29%; Table 10).

Figure 5. Benefits of Indigenous cultural fire management ranked among the five main benefits (%) – for <u>partners</u>
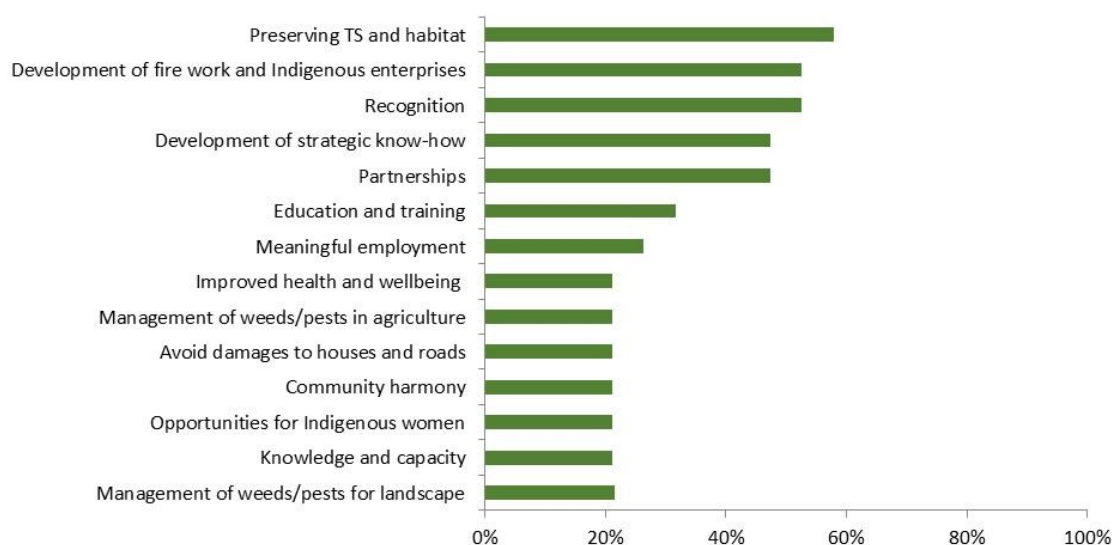

Table 10. Ranking of benefits (rank 1 = most beneficial) (%) – for <u>partners</u>

	Rank 1	Ranks 2 or 3	Ranks 4 or 5
Increased **recognition** of role of Indigenous fire managers in NRM	29%	21%	21%
Education and training opportunities for non-Indigenous managers to learn about Indigenous cultural fire management	29%	7%	7%
Meaningful employment opportunities for Indigenous people	21%	0%	14%
Development of **partnerships** between Indigenous and non-Indigenous managers	21%	21%	21%
Further **development of the strategic know-how** of Indigenous managers	21%	29%	14%
Avoid damages to houses and roads	21%	7%	0%
Preservation of **threatened species and habitats** and/or caring for country	21%	21%	36%
Management of weeds and pest animals for **agricultural** production purposes	21%	7%	0%
Increased **knowledge and capacity** of non-Indigenous managers/organisations to work with Indigenous people	14%	0%	14%
Increased **opportunities for Indigenous women** to participate in and benefit from Indigenous cultural fire management projects, partnerships, activities	14%	0%	14%
Increased **community harmony** within the Indigenous community through working together on projects	14%	7%	7%
Strengthen Indigenous-led fire management **work** and **Indigenous enterprise development**	14%	29%	29%
Management of weeds and pest animals and to keep the **landscape** attractive	14%	7%	0%
Improved health and wellbeing	14%	7%	7%

Strengthen Indigenous-led fire management work and Indigenous enterprise development was ranked among the five most important benefits by most respondents (Figure 6), followed by the preservation of threatened species and habitats and/or caring for country which was also ranked the most beneficial outcome of Indigenous fire management (Table 11).

Figure 6. Benefits of Indigenous cultural fire management ranked among the five main benefits (%) – for <u>organisation</u>
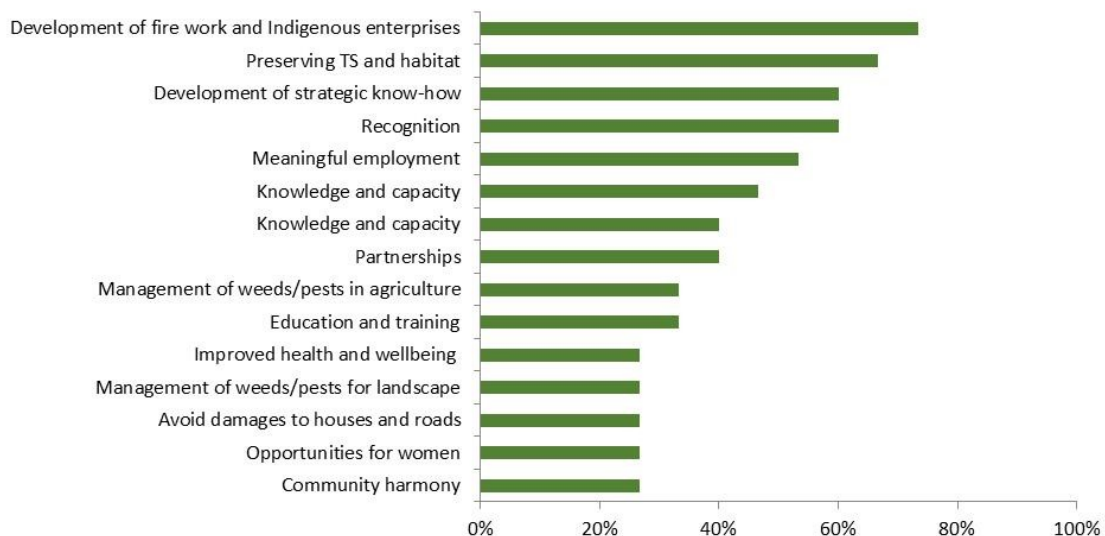

Table 11. Ranking of benefits (rank 1 = most beneficial) (%) – for <u>organisation</u>

	Rank 1	Ranks 2 or 3	Ranks 4 or 5
Preservation of **threatened species and habitats** and/or caring for country	43%	21%	7%
Further **development of the strategic know-how** of Indigenous managers	29%	21%	14%
Management of weeds and pest animals and to keep the **landscape** attractive	21%	7%	0%
Increased **recognition** of role of Indigenous fire managers in NRM	14%	14%	36%
Development of **partnerships** with non-Indigenous managers	14%	21%	7%
Increased **community harmony** within the Indigenous community through working together on projects	14%	7%	7%
Increased **opportunities for Indigenous women** to participate in and benefit from Indigenous cultural fire management projects, partnerships, activities	14%	7%	7%
Increased **knowledge and capacity** of non-Indigenous managers to work with Indigenous people, organisations and enterprises	14%	21%	14%
Strengthen Indigenous-led fire **management work and Indigenous enterprise development**	14%	57%	7%
Avoid damages to houses and roads	14%	7%	7%
Meaningful employment opportunities for Indigenous people	7%	14%	36%
Education and training opportunities for non-Indigenous managers to learn about Indigenous cultural fire management approaches	7%	14%	14%
Management of weeds and pest animals for **agricultural** production purposes	7%	21%	7%
Increased **knowledge and capacity** to work with Indigenous people, organisations and enterprises	7%	7%	29%
Improved health and wellbeing	7%	14%	7%

3.6 Damage avoided by Indigenous cultural fire management

Indirect economic benefits can be assessed by the reduction of damage, such as reducing damage from uncontrolled fires to houses and infrastructure. Most respondents (11; 79%) agreed that their fire management work assisted to reduce the risk of uncontrolled fires over the last 24 months. Not all could assess how many uncontrolled fires were prevented; one respondent said 20, one said five and two said two. Four respondents said that while they did not prevent any fires, they reduced the impacts of late season wildfires. Negative impact of uncontrolled fires include air pollution and health issues for those living nearby, damage to infrastructure and fences, destroyed pasture for grazing animals, death of cattle and other animals, reduction of fire sensitive vegetation communities and loss of biodiversity.

Houses did not come up as an asset that was protected by fire management. Half of the respondents made the point that the locations where the burning was done was too remote to affect houses. Only one respondent thought that many houses were protected by preventing or reducing the impact of uncontrolled fires. However, half of the respondents thought that damage to public infrastructure was avoided by preventing or reducing the impact of uncontrolled fires, and nearly half mentioned reduced damages to vehicles or machinery.

Other indirect economic benefits arose by reducing damage from weed incursion. Nearly half of the respondents agreed that their fire management had cleared weeds over the last 24 months, while slightly more than half disagreed. Phalaris, lantana, serrated tussock and artichoke thistle, were the weeds most frequently targeted. By using fire, all of the weeds were suppressed, but not eradicated. If not for the burning, all of these weeds would have been targeted using chemicals.

3.7 Barriers

The most frequently mentioned barriers to fire management included:

- lack of capacity and availability of fire managers and high turn-over rate

- lack of volunteers and participation from community (e.g. from pastoral stations)

- balancing weather windows / conditions

- challenges in coordinating the cultural burn with Government agencies

- not enough training course dates as needed for the high turn-over rate

4 Conclusions

Fire managers across Australian fire management and NRM organisations were invited to participate in an online survey about 'benefits of Indigenous cultural fire management'. We obtained 19 responses of which 14 were mostly complete.

Fire management activities were categorised into four phases (Planning for the burn; Site Preparation; Doing the burn; Monitoring the outcomes) and were undertaken by Indigenous and

non-Indigenous staff who were involved, but not necessarily employed by the organisations. The actual staff load of Indigenous people employed by the organisations and undertaken the burns was rather low (mainly in the ranging between 0.1 and 1 FTE). There was a small degree of involvement of volunteers in the four activities. This is because of the lack of capacity and availability of fire managers, the high staff turn-over rate and the lack of participation of people from the wider community.

Most reported burns were done on Indigenous land, which explain the stated reasons for and benefits of the burns. On Indigenous land, the main reasons given for Indigenous fire management were that they ecological/ biodiversity or cultural burns. Weed management and asset protection were less relevant for the burns on Indigenous land. Cultural burning was also the main reason for burns on public land. Asset protection was mostly associated with burns done on private land and weed management with burns on public land.

The main benefits of Indigenous fire management for Indigenous people were related to culture and their well-being (Recovery of biodiversity and 'sick' country; Improve health and well-being; Access to country; Meaningful employment; Maintenance of traditional knowledge). These intangible benefits cannot be monetarily assessed. For the region, the main benefits included strengthening partnerships between Indigenous and non-Indigenous organisations and receiving greater public awareness and recognition. Threatened species and habitat management were important benefits for the region, the partner and the fire management organisation.

Other benefits occurred from damage avoided and saving of costs associated with those damages. Nearly 80% of the respondents agreed that their fire management work assisted to reduce the risk of uncontrolled fires. Negative impacts from uncontrolled fires included air pollution and health issues for those living nearby, damage to infrastructure and fences, loss of pasture for grazing animals, death of cattle and other animals, reduction of fire sensitive vegetation communities and loss of biodiversity. Assessing the value of these avoided damages was not possible. Since most burns were done on Indigenous land, few houses or other private infrastructure which could have been valued were protected by the Indigenous fire management. Assets protected mostly included outstations, homesteads and cultural sites. The costs of rebuilding those could give an estimate of the damage avoided but would also an assessment of the risk that they would be destroyed without the burning taking place. Monetary assessment of other benefits such as health benefits and ecosystem service provision could be done but not from the data obtained in this study.

Costs of Indigenous fire management varied greatly with the size of the organisations and were not always specified by respondents. Most of the total costs (60%) were associated with the planning for the burn phase and with doing the burn (21%). Monitoring the outcomes and site preparation required less money. Because of a lack of cost data and the intangible nature of the main benefits, we refrained from conducting a benefit-cost analysis.

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