

bnhcrc.com.au

A REVIEW OF EMERGENCY AND FIRE MANAGEMENT TRAINING AVAILABLE FOR REMOTE COMMUNITIES IN NORTHERN AUSTRALIA BASED ON THE VIEWS OF LOCAL INHABITANTS

Stephen Sutton
Charles Darwin University





Version	Release history	Date
1.0	Initial release of document	03/11/2017



Australian Government
Department of Industry,
Innovation and Science

Business
Cooperative Research
Centres Programme

All material in this document, except as identified below, is licensed under the Creative Commons Attribution-Non-Commercial 4.0 International Licence.

Material not licensed under the Creative Commons licence:

- Department of Industry, Innovation and Science logo
- Cooperative Research Centres Programme logo
- Bushfire and Natural Hazards CRC logo
- All photographs, graphics and figures

All content not licenced under the Creative Commons licence is all rights reserved. Permission must be sought from the copyright owner to use this material.



Disclaimer:

Charles Darwin University and the Bushfire and Natural Hazards CRC advise that the information contained in this publication comprises general statements based on scientific research. The reader is advised and needs to be aware that such information may be incomplete or unable to be used in any specific situation. No reliance or actions must therefore be made on that information without seeking prior expert professional, scientific and technical advice. To the extent permitted by law, Charles Darwin University and the Bushfire and Natural Hazards CRC (including its employees and consultants) exclude all liability to any person for any consequences, including but not limited to all losses, damages, costs, expenses and any other compensation, arising directly or indirectly from using this publication (in part or in whole) and any information or material contained in it.

Publisher:

Bushfire and Natural Hazards CRC

November 2017

Citation: Sutton S (2017) A review of emergency and fire management training available for remote communities in northern Australia based on the views of local inhabitants. Melbourne: Bushfire and Natural Hazards CRC

Cover: Nathan Maddock, Bushfire and Natural Hazards CRC

TABLE OF CONTENTS

TABLE OF CONTENTS	2
Introduction	3
Industry Informants Views on Current training	5
The paramount concern with safety	5
Material that is mis-aligned with north Australian conditions	6
Material omitted from current training	7
Geography ecology and habitat	7
Land tenure and agency responsibility	8
Demographics	8
Climate, seasons and weather	9
Communication	9
Lack of consistency in competence	9
Scale and Remoteness	10
Different landscape objectives	10
Operational Standards	10
The style of current training delivery	11
Assessment	12
Industry Representatives Suggested Improvements	13
Overarching objective	13
Content needs to broaden	14
Delivery	14
Developing real competence takes real time	14
Skill Sets, Skills, Knowledge, Elements and Criteria	16
Fire	17
Prescribed Burning	17
Teamwork and leadership	18
Information and communications technology	18
Plant and equipment	18
Logisitics and planning	18
Policy and procedure	18
Skill Set 1	20
Skill Set 2	22
Skill Set 3	26
Skill Set4	29
REFERENCES	32
Participants/Contributors	33

INTRODUCTION

This report reviews the training preferences for fire and emergency management training for remote communities in northern Australia. It then sets out a framework for development of a new training curriculum based on Skill Sets for north Australian fire management and savanna burning. The report is based on the results of some review of existing materials and consultation with land owners and managers, government agency representatives, Aboriginal Land Councils and Ranger groups as well as academics and VET program developers and trainers.

Preliminary consultations began in 2006 when the author was employed as Director of Bushfires NT, the Northern Territory's rural and remote fire management organisation. A chief complaint over the subsequent years, expressed by all sectors of the community, was that existing fire management training was inadequate.

Most of the process and the content of the report focusses on capturing the detail of the inadequacies of existing training delivered in north Australia. It is populated with the observations and ideas of a group of practitioners, trainers, Indigenous experts in the field and agency representatives whose experience and expertise have developed in north Australian contexts. These contributors were consulted specifically for this report over a period of two months. The consultation took place in several formats. Two workshops were held, the most recent and largest took place on the 18th June at the Australian Centre for Indigenous Knowledges and Education at Charles Darwin University. Small group and one-to-one interviews were also held with educators, fire managers, scientists and practitioners over the course of the project.

Interviews with Binninj people in West Arnhem Land is taken to be representative of remote communities generally. This is slightly contentious due to the fact that each community has its own unique set of natural hazard management issues. These stem from the particular circumstances of history, infrastructure, language and culture in each place. This variation from place to place is generally acknowledged by the communities themselves, but has not led to a commensurate response from agencies seeking to deliver a 'uniform' service. Here the testimony of a range of individuals from several communities in West Arnhem Land have been used as a guide for the general skills and knowledge that is required in a tailored bushfire and natural hazard / emergency management training program. It is proposed that the customising of the training for each community can and should be implemented within the wider framework of the training program. That is to say, while there are concepts that apply everywhere, specific details pertinent to each community should be captured and incorporated into training to reflect that community's specific mix of issues and personalities.

In remote indigenous communities it is also important to reflect the social network settings and protocols and again, while the nature of these will be the same from place to place, the specifics for each language and landholding group will be different.

In addition to their 'representativeness' the Bininj participants were selected due to the extensive and continuing tradition of their own cultural fire management practices, but also because they have been very active in re-installing that fire management into their traditional lands over the last decade.

The background to the views of the projects participants lie in the details of the north Australian situation. Each of the following matter influence the nature and presentation of fire and emergency management training:

- **Demography:** north Australia has a small dispersed population, many living in situations classified as remote. A large proportion are Indigenous with Language, Literacy and Numeracy (LLN) differences with southern Australia.
- **Environment:** Vegetation structures are fundamentally different to the forests of the south where most training has been developed.
- **Infrastructure:** There is little infrastructure outside major centres and away from major roads. Few resources are available to respond to wildfires, despite the fact that these may be enormous.
- **Technology:** Flowing from infrastructure and environmental settings, the technology of landscape fire management has evolved along its own path in the north and is often at variance to that included in training packages designed for southern Australia.
- **Tenure:** Most land is owned or managed by private or Indigenous interests. Whereas in the south of the country most prescribed burning and fire suppression is conducted by agencies, the north relies, and legislates, for private land managers to manage fire.
- **Heritage:** There remains extensive knowledge of the ancient Indigenous fire management traditions that delivered the state of the environment at the time of settlement. There is also a less ancient pastoral fire management tradition of active use of fire.
- **Management paradigm:** There remains a strong active management theme in the north, which recognises the ability to control fire to retain a desirable fire regime.

INDUSTRY INFORMANTS VIEWS ON CURRENT TRAINING

In conducting a review of training needs for north Australian fire and emergency management some greater specificity about the mismatches of the existing training was sought from practice practitioners. The informants were sourced from several sectors of the fire management community including agencies and ranger groups.

North Australian fire managers give a clear picture of current training out of step with current practice in the north and the desire of land manager's for improved fire and landscape outcomes.

The timing (18 June 2013) of the major workshop was targeted to coincide with the North Australian Fire Managers Forum (NAFM). The NAFM is an annual event established by the now expired Tropical Savannas Cooperative Research Centre, now hosted by the Bushfires Cooperative Research Centre. It contributes directly to the national Seasonal Bushfire Outlook, which characterises fire risk for the coming season around Australia.

The timing of the workshop was not considered ideal and a number of participants pointed out that it had been difficult to attend given that June is a very busy time in the fire management cycle of north Australia. Worse, a number of potential participants submitted apologies for much the same reason.

Despite this a good range of representation from the three north Australian jurisdictions did attend the workshop and the results are reflective of the key concerns, but also the variations to be found in the different states.

The views expressed herein encompass both workshop participants, and informants consulted in one-on-one or small groups.

THE PARAMOUNT CONCERN WITH SAFETY

First it needs to be said that the primary concern of the current training, while not expressed as an objective *per se*, is nevertheless reasonably clear; the paramount concern for human life and the safety of all participants in fire management. This paramount concern is generally accepted by all informants, many of whom specifically called for a continuation of this focus. For example, as groups emerge to re-establish control over the land management of specific areas, the neighbouring unmanaged areas present a classic interface problem where wildfire suppression is an active requirement. In these circumstances informants were adamant that attention to safe practice, personal protective equipment (PPE) and appropriate equipment needed to be in place. Those informants already dealing with wildfire, including agency representatives working at the urban/rural interface have long been on the record calling for increased investment in safety. An important addition found in this narrative however is the concern expressed by informants, and particularly those Aboriginal participants, that personal responsibility for safety,

including a strong focus on maintenance of situational awareness needed to be retained in any new training, and indeed strengthened in most circumstances.

Participants also raised another important and subtle issue regarding the current safety component of training. This is the sense that in practice the current training advocates a “one size fits all” approach. Regardless of the practice being exhibited in a given fire management task, full battle dress with PPE, helmets, gloves and boots was required. In contrast it was stated that there needs to be a graduated response to safety that was appropriate to the scale of the fire hazard present in any given fire management action. So for example, relatively cool Wet season fires, or mild early Dry season fires do not warrant the same application of safety materiel as a late Dry season wildfire. The strong emphasis on situational awareness should drive fire managers to make the right selection of appropriate safety action for the given task.

The views expressed by Aboriginal informants point to the potential to build on existing scaffolds of understanding inherent in Indigenous knowledge of fire and safety. As a culture that (still) relies on fire for maintenance of the necessities of life; cooking, warmth and light, there is an extensive repertoire of tradition regarding working and living safely with fire. This tradition compliments the western tradition of physical intervention (PPE and equipment) with attention on situational awareness and personal responsibility to apply a sophisticated and continuous analysis of the environment, wind, weather and the consequences of ones actions. The detailed understanding of the landscape and the impacts of different sorts of fire on different vegetation communities, together with experience in fire spread and the location of natural fire breaks and earlier prescribed burns has provided the basis for a safe fire management regime for millennia. While this is now in some disarray in some areas, it is also actively being re-established across large landscape areas. The incorporation of this understanding was felt to be an essential component of any new, modern fire management training for north Australia.

Apart from the positive approach to safety, most of the commentary from informants was, of necessity, framed in the negative. The issues raised separately and together by the various participants fall into four broad categories;

- material that is mis-aligned with north Australian conditions,
- material that is absent from the current training and should be covered,
- the style of training and its delivery and;
- the type(s) of assessment.

MATERIAL THAT IS MIS-ALIGNED WITH NORTH AUSTRALIAN CONDITIONS

Concern was expressed about an overwhelming emphasis on procedural safety and risk minimisation, much of which is embedded in policy rather than training. This is not to say practitioners are blasé about safety, they appreciate the value of appropriate safety equipment as indicated above. For example, it was generally accepted that anyone involved in wildfire suppression should be appropriately kitted out with personal protective equipment (PPE), but it was felt that training and policy did not address the significantly reduced personal danger found in early Dry season prescribed burning. But, in the north Australian circumstance it was felt that the strident emphasis on PPE in this circumstance was unnecessary and unhelpful.

Indeed this theme was repeated on several occasions with informants pointing out that there is a strong sliding scale of danger from early Dry season prescribed burns to late Dry season wildfires, and that this was something that was not well considered in the existing training. Further it was felt that existing training treats all fire as 'bad' and 'dangerous' and requiring extensive bureaucratic and technological preparation. Not a sentiment that is universally accepted among the participants.

Djelk rangers from Maningrida were quite adamant that this emphasis on safety was a primary consideration and something that should be continued in the training. This was particularly necessary as the well-managed country connects with the vast empty tracts of country that are unmanaged and produce massive wildfires that threaten inhabited country.

MATERIAL OMITTED FROM CURRENT TRAINING

A great deal was said about the material that should be in training and isn't.

GEOGRAPHY ECOLOGY AND HABITAT

In a variety of ways in workshops and conversations the fact that north Australian geography and ecology is fundamentally different to that of southern Australia was highlighted. The differences are not catered for in the existing training. In fact the existing training is of a distinctly generic character that almost does not require mention of ecology or vegetation.

In the current training, vegetation is fuel and its character and variation can be expressed in tonnages and structure. Little else is of concern. This view was not shared by the informants. The view they expressed was one which places the environment, specific habitats, landscape vegetation units and geographic features at the centre of fire management. In a sense they are the reason for fire management.

Informants expressed a concern that there is no overarching and clearly stated rationale for the training that is presented. If one were to seek an implied rationale it might be to promote human safety as a paramount consideration. This would be laudable and

acceptable within limits, but does not accommodate the motivations of the informants from all sectors of the fire and land management field in the north.

The reason for training in the north it was stated by one informant was to “control fire to make it do what you want it to”. This is a simple but profound re-visioning of the paradigm difference between north and south in fire management as stated earlier. It is directly relevant to the task of developing a curriculum framework for the north that caters to fire management for a savanna burning project, for enhancing biodiversity, for maintaining cultural places or for improving pastoral production, and this will be taken up later in the report.

LAND TENURE AND AGENCY RESPONSIBILITY

Another important element in fire management in the north is the varied forms of land tenure (some of which do not occur in southern Australia) and the roles and responsibilities of owners and agencies with regards those tenures. As a general rule, land owners in north Australia have statutory responsibility to manage fire on their land and are actively encouraged to engage in a proactive campaign to reduce wildfires.

Most prescribed burning is conducted by private landholders, while in southern Australia it is generally undertaken by agencies. These factors have combined to lead to the current system of procedural risk treatments to limit the liability of agencies in the event that a fire does not proceed according to plan. The procedures are set out and operated by agencies with consideration given to the devolved responsibility seen in the north.

Because they are organised by centralised agencies relatively little consideration is given to the often exacting and detailed local knowledge that both Aboriginal and non-Aboriginal land owners and fire managers may have of their estate, the impacts fire has on it and the respective consequences of early and late fire within it.

DEMOGRAPHICS

The current training provides models for fire management that assumes availability of a certain amount of human and logistical support. Developed by fire management agencies, this is an entirely sensible approach and it works well for the many thousands of volunteers and staff who valiantly work to contain fires in the southern states.

The north Australian situation however, is far from replete with resources and people and it rather relies on maximising the impact an individual or small number of people scattered over a wide area can have on the fire regime. Most commonly this impact is realised by an active program of early Dry season prescribed burning, but it also extends to wildfire suppression.

The current training provides only generic descriptions of wildfire suppression actions. Many felt they should be extended to provide skills and knowledge of the tactics for managing remote landscape scale wildfires.

CLIMATE, SEASONS AND WEATHER

While this heading sits in some sense under the previous ecological section, the degree of repetition of a concern about the lack of adequate training relating to weather, the seasons and climate change warrant its separate consideration.

The Binningj informants were perhaps the most eloquent proponents of the need for a profound understanding of the importance of the seasons and the wind and weather conditions that prevail with regard to achieving desired fire outcomes. On every occasion when asked to describe the most important things to learn about fire the Indigenous informants provided wind and seasons as the first consideration.

When pursued for further information it became clear that what was really required was a detailed understanding of the subtleties of the winds and seasons combined with knowledge of the impact those things would have on the progress and impact of fire. When questioned further to unpack how this knowledge might be transmitted, one informant stated that the knowledge was “kunkodjmaiali” or “knowledge in our minds from our ancestors” that was learnt through experience and repetition from the time a person was old enough to perceive.

Non-Aboriginal informants also expressed a passion about the need to understand the weather in detail if a person is to become competent in north Australian fire management.

COMMUNICATION

Communication is always described as a crucial consideration in developing better systems for an organisation, including rural and remote fire management. Again, the north Australian situation has some unique challenges. Huge areas and distances with limited communication infrastructure as well as significant language barriers. Language and cultural variation should not be underestimated as a matter for deep consideration. With dozens of distinct languages between Cairns and Broome and a large proportion of the community speaking English only as second or third language, the ability to deliver training that can penetrate to connect with a trainees existing schema and develop competency will be the major challenge of the program. Successfully addressing this issue will very largely be a matter of the style of delivery and assessment of training, rather than the content.

LACK OF CONSISTENCY IN COMPETENCE

The informants expressed some concern about an inability to determine the actual competence of trainees through time. In many cases across the north trainees will move away from or out of fire management roles for a period, prior to seeking to re-engage.

During this time they may have forgotten aspects of their training and the skills may have atrophied.

Given the inherent risks in fire management a concern was expressed that project managers and supervisors need some form of objective gauge of competence over time. Clearly this is not a concern restricted to north Australia, but the demographic situation as stated above makes it a more intense concern. Where few people are available to conduct fire management it is vital that their competence is understood.

Potential solutions revolving around the assessment process were recommended by informants and are discussed below.

SCALE AND REMOTENESS

The connected issues of the scale of fire management operations in north Australia and the remote nature of much of the work, needs to be addressed formally in any training package. Mechanisms to cope physically and mentally with isolation, lack of support, lack of infrastructure, enormous project extent, disaggregated communities and information sources etc. should not be expected to be resolved by individuals adapting the skills and knowledge gained from training crafted for very different circumstances. The training should be crafted to provide the framework for dealing effectively with each of these hurdles.

This applies as much to relatively 'simple' things. The current training provides for a structured process of risk assessment and management, checking and approval clearly tailored to discrete land parcels. These will usually have clearly defined boundaries and independently verifiable ownership. Some circumstances in the urban/rural interfaces of major north Australian centres will replicate this scenario, but across much of the region the situation is very different. Prescribed burning of thousands of square kilometres will be required and this will be in country with no obvious tenure boundaries or infrastructure. The conduct of this work is not feasible within the strictures of the existing processes, but some relevant process is necessary.

DIFFERENT LANDSCAPE OBJECTIVES

As indicated earlier, the north Australian approach to fire has an inherent objective of managing a landscape to achieve a particular outcome, or sometimes multiple outcomes. The knowledges underpinning the fire management tools required to achieve a particular outcome exist in a mix of academic and human storehouses, not in any single repository. There is a strong sense that the fire management savanna burning training package for north Australia has to incorporate the knowledge of the principles required to husband landscapes to desired productive outcomes.

OPERATIONAL STANDARDS

The informants repeatedly expressed concern about standards of operation across the north. In the first instance the concern was directed at the inappropriate standards from southern Australia being applied in the north. An example referred to repeatedly relates to aerial operational standards. Those established in the southern states tend to specify aircraft type (turbine engine) and operational parameters. The situation in the north is such that these aircraft are not available or are prohibitively expensive. The question is raised, can we have a standard for the north that achieves the safety objective underpinning the original, but adapts to tropical circumstances?

The second concern regarding standards referred to variations across borders. With three jurisdictions (two states and a territory) comprising north Australia there are at least three standards of operation applied. There is a degree of overlap and similarity but clear areas of inconsistency remain.

THE STYLE OF CURRENT TRAINING DELIVERY

Very significant concerns were expressed regarding the current training and its delivery, including by those conducting the actual delivery of the courses. With respect to fire management, there is a belief that trainees need to be interacting with fire and its management tools from an early stage, and in an ongoing fashion, throughout their training. Most training now takes place in a classroom arrangement with trainers presenting an illustrated talk. Depending on the course there may be practical exercises, using fire extinguishers or demonstrating pump use. These exercises tend to be highlights of the course where there is a great deal of personal interaction between all those involved in the training. The overwhelming majority of the course however is the modern version of “chalk and talk”.

Aboriginal informants held strongly to the view that training needed to be ‘on-country’ and have a large practical component. In Binninjkwok at least, the word used by informants to represent “teach” is “karribimbukan” which actually translates as ‘to show’ or ‘to demonstrate’. It is in contradistinction to the term ‘to talk to’.

The reasons for this are varied but in large part relate to time constraints on the personnel involved as well as those imposed by the course itself. Informants were strongly of the view that more time is needed to develop competence in many of the skills incorporated into the training. But more time in a classroom was not what was sought. Training for north Australian fire management needs to incorporate time in the field demonstrating and examining fire behaviour and habitat interactions, learning the right and wrong way to operate equipment and so on.

Aboriginal people were particularly interested in having training delivered ‘on-country’ and in communities. This allows access to field demonstrations of fire, but also allows for expert

fire managers and translators from the community to be involved in training. The adoption of local knowledge and the reinforcement of lessons ‘from the book’ by respected senior local people was considered a powerful enhancement of the learning environment, one that is worth investing additional time and resources in.

Aboriginal informants also expressed the same concerns as others regarding a range of issues including the time allowed to complete a course and failure to allow for adequate translation of course content into local languages. A long list of proposed enhancements to the delivery were proposed:

- Use of local people (language) and knowledge resources and team teaching
- Training should be strongly skewed toward demonstration and practice with an emphasis on repetitive training in the field incorporating drills.
- The training should be iterative, recording of training sessions (incorporating local experts) and live translation (in a variety of languages depending on situation).
- 4G Interactive learning (use the latest technology to interact with data and people through space).
- On-site training with field components scheduled first.
- Repeated training, drills.

ASSESSMENT

Informants were strongly of the view that classroom based “tick and flick” assessments were not only inappropriate; they do not establish competence. They are actually dangerous insofar as they may establish a false sense of security in trainees. What is required is a program of assessment more like a traditional apprenticeship that incorporates practical examination of skills and knowledge in a longitudinal evaluation that is aligned with the trainee’s certificate level roles and responsibilities.

Fire management is a high-risk industry and the difficulties of the north Australian situation require that every individual involved has a self-reliant capacity to make safe decisions. There is a widely held view that the current training does not provide the requisite level of security.

Besides safe operation in fire management, the other main concern was the lack of understanding about fire and its interactions with the landscape provided in the current training. This knowledge needs to be available to practitioners and linked to knowledge of the means to manipulate it to achieve a particular landscape outcome. As already discussed this is a fundamental principle in north Australian fire management and one that needs to be assessed in a comprehensive training scheme.

One mechanism recommended to aid the temporal assessment of competence is a “north Australian Fire Management Log Book”. This book could be issued to trainees in their first course and be carried through their training (or career) and used as a basis for objective review of the relevance of their experience and their currency.

There was also a strong expression of the need to ensure a clear standard is maintained and this would rely in no small part on a willingness to fail trainees who did not demonstrate competence.

INDUSTRY REPRESENTATIVES SUGGESTED IMPROVEMENTS

Overwhelmingly, informants expressed that training for emergency management and savanna burning in particular needs to change in four key ways. It requires:

- an overarching objective,
- a broadening of content,
- a fundamental change in the type of delivery and,
- a significant increase in time allocated to achieve competence.

These changes will require some major structural adjustments and the establishment of entirely new packages incorporating some existing units of competency, but developing a raft of new units to meet the demands of the industry. This means more than simply revising existing units, although there may be value in doing this to some extent.

OVERARCHING OBJECTIVE

The training needs to be brought together to achieve a single purpose. To paraphrase the informant quoted above this involves “learning how to control fire to make it do what you want”. What is wanted will vary according to the cultural, economic and safety aspirations of a community or landowners. It may include operating a savanna burning carbon abatement project, improving pasture condition to drive weight gain in cattle, provide safety to the rural/urban interface, enhance biodiversity, protect cultural sites or promote bush foods.

For emergency management the requirements for access to land vary, but there remains a requirement to be able to coordinate the resources of a remote district effectively and to respond in a timely way while taking account of local indigenous protocols. It is important that action should match cultural settings and that traditional owners are provided both procedural as well as practical respect. Emergency management teams need to work together to be effective and in remote Aboriginal communities this requires a good understanding of kinship and the obligations that are attached to specific relationships.

Whatever the particular requirement, the idea is that the principles of north Australian fire and emergency management can be learnt and so too can the means to adapt those principles to achieve any or many of the outcomes identified.

Taking the above into account, the participants in the program formed the view that a) there should be an overarching objective and that that objective should be something like: "the skills and knowledge to be competent and confident to manage fire and emergencies in the landscapes of north Australia"

CONTENT NEEDS TO BROADEN

The content of the training available to build skill, knowledge, competence and confidence to control fire and emergencies at a landscape scale is inherently broader than that currently available. For fire, in addition to practical and technical skills to enable incendiary work at a landscape scale, there needs to be a depth of knowledge of ecology, habitat and fire behaviour. Indigenous knowledge of fire principles as well as the local expression of those principles in specific habitats and locations will be fundamental to re-establishing control of the fire regime for vast tracts of country. This includes those areas that will be incorporated into Carbon Farming Initiative projects.

For emergency management; in order to accommodate the demographics and lack of infrastructure extant in the north, training will need to build a particular sort of resilience in practitioners, incorporating the ability to make decisions, lead and direct teams, interact with landowners with different languages within an adaptive management framework that drives continuous improvement of landscape fire outcomes. There will be opportunity to adapt Units of Competency from other fields in the wider training system, but the particular requirements of the north will necessitate the development of new material.

DELIVERY

Training delivery for north Australian fire and emergency management needs to move out of the classroom and into the field. There needs to be intense practical training backing up theoretical knowledge and the reiteration of the validity of theory in field situations. Course delivery needs to include cultural practice on country as well as utilising local expertise.

DEVELOPING REAL COMPETENCE TAKES REAL TIME

The inculcation of real competence in fire managers will take some time. The 'safety overhead' associated with building competence in an inherently risky business like fire warrants that individuals charged with incendiary work have a depth of understanding that can only be achieved through interaction with the subject matter over an extended period. When that training then needs to span an understanding gap driven by fundamental cultural, language, literacy and numeracy (LLN) differences, it is absolutely incumbent on the system to provide adequate time for skills and knowledge transfer. Even the opportunities that are currently in place to provide for some extra time to cope with these

constraints, (up to 50% more time in certain LLN circumstances), are reported by VET practitioners in the north to be inadequate.

Phil Cheney, one of Australia's pioneering bushfire researchers provided the following quote about training firefighters.

The process of skilling a firefighter does not come only through the legal requirement of passing training modules, but also requires experience, judgment, prudence and sagacity. They need continual monitoring and mentoring by more experienced staff while undertaking fire suppression activities. And, above all, they need frequent exposure to a considerable range of fire behaviour that can only be obtained by deliberate lighting of prescribed fire (Cheney, 2003).

Many informants concluded that what is required for the north is a program like an apprenticeship. A program of training and practical skills development that mixes field based skills with theoretical knowledge from the scientific, Indigenous and fire management realms. The program needs to be staged to allow people to progress at a pace and level that suits their interests and abilities. It should build on existing knowledge and scaffolds, particularly those of Indigenous people with an ancient fire management tradition and knowledge of the control of landscape fire.

Opportunities exist in the north to deliver comprehensive fire management savanna burning training through the communities and institutions already in place. Various informants recommended the development of the Skill Sets that chart a path for trainees who aspire to manage fire regimes in north Australia, or at a simpler level, to be involved in actual fire and emergency management projects.

The workshop worked through a DACUM (Developing a Curriculum) model to arrive at the Skill Sets. Participants identified roles fulfilled in the conduct of a fire regime management project. They then broke these into tasks that were further categorised into the skills required to conduct them.

This was then reconstructed into a suite of skill sets for the various levels of responsibility and engagement in savanna burning fire management tasks. These Skill Sets were developed with input and support by practitioners in the savanna burning and north Australian fire management field. They included representatives of the various industry sectors including the government agencies responsible for landscape fire management, conservation estate managers and Indigenous land owners and managers (see Attachment C). The results presented as four Skill Sets below represent a comprehensive approach to savanna burning fire management training for north Australia, and a significant departure from the training that is currently available.

SKILL SETS, SKILLS, KNOWLEDGE, ELEMENTS AND CRITERIA

The overarching views of the informants for this report are not easily summarised into a compact collection of short vocational courses. They include an broad and unifying objective that in itself encompasses a suite of skills and knowledge well beyond the remit of the existing training.

The key components of this broader understanding of fire are an understanding of the ecology of north Australia and its interactions with fires of all forms and a sound understanding and application of the ancient methods, traditions and philosophies underpinning Indigenous traditional fire management. The projects informants were consistent in the view that the content of the course material alone is not adequate for the purpose however.

There needs to be substantial attention given, and future investment made, in the improvement of the style of course delivery. Disconnected short courses with 'tick and flick' assessments were denigrated universally. The apprenticeship model, with longitudinal assessment, a mix of theoretical and practical knowledge and assessment, the logging of training and experience over the long term, were all recommended as profound and fundamental to the success of a comprehensive training package for north Australia.

The combination of these knowledge and skills including an intimate and high level of safe working practice and a style of delivery builds real competence over time will deliver the competence and confidence that is required for a small number of people to control fires at a landscape scale to achieve a specified outcome (or outcomes). These outcomes include savanna burning greenhouse gas abatement and sequestration, improving pasture condition, enhanced biodiversity, improved safety from tropical wildfires, protection of cultural sites, promotion of traditional bush foods and maintenance of cultural traditions.

In order to accommodate this broad charter, a Skill Sets model has been selected. This model outlines the course structure and high level skills, knowledge, elements and performance criteria required to underpin a curriculum framework for north Australian savanna burning and fire management.

The Skill Sets have been grouped into four primary groups and eight themes. The groups represent the primary roles and responsibilities necessary for the delivery of a complete program. They subsume a much larger subset of specific tasks. Each Skill Set is supported by high level skills, knowledge, elements and performance criteria. The four Skill Set groups are:

- novices or beginners working as assistants,
- practitioners,

- supervisors and
- managers and planners.

These roles are all necessary components of the industry workforce and will be required to sustain savanna burning over the next decades.

The Skill Sets were then organised by themes (see Attachment A) to ensure the capture of all relevant competencies. Eight key and interconnected themes were characterised for this purpose;

- fire,
- prescribed burning,
- workplace health and safety,
- teamwork and leadership,
- information and communications technology,
- plant and equipment,
- logistics and planning,
- policy and procedure.

Each of these themes requires an iterative and expanding understanding as participants progress through the Skills Sets and levels of complexity and responsibility in the workplace.

FIRE

The understanding of fire begins with the basic level breakdown of the fire triangle (heat, fuel, oxygen) and an introduction to fire in all its forms. This progresses through an understanding of the role of fire in north Australian ecology and the ecological systems themselves. The suppression of wildfire and the conceptual and practical requirements for understanding and dealing with fire at a landscape scale provide a platform for strategic fire management and the wider implications of fire in terms of society and politics.

PRESCRIBED BURNING

Prescribed burning is ‘artificially’ separated from fire *per se* in order to allow the development of an interactive understanding of the role humans have in the north Australian fire cycle and the opportunities available to manage fire at a local, district, landscape and regional level. It provides for the development of competency in the basic tools for starting fires and the skills necessary to control fires one starts and to maintain personal and public safety in any incendiary program. Importantly this thread or theme introduces and develops Aboriginal traditional fire management practice and concepts to allow practitioners to operationalize that knowledge. It is highly likely that many practitioners will themselves be Aboriginals working on their own land, referring to both traditional knowledge systems and non-Aboriginal approaches to burning and safety.

A tiered set of competencies relating to workplace health and safety is aimed at developing a sophisticated approach to safety that is embedded in ongoing decision making and

practice. The emphasis on maintenance of situational awareness and the development of comprehensive understanding of risk and its management will combine with the standard 'hard' interventions of protective equipment to improve standards of safety across the sector.

TEAMWORK AND LEADERSHIP

In emergency management real teamwork is essential. This program supports the notion that in order to lead, practitioners need to be able to follow first and then to interact in the workplace with individuals of varying perceptions and cultures. Particular attention is paid to the distinctly different leadership practices and strictures in Aboriginal culture. The development of leadership skills that are generic (frontline) and specific (tactical) provide competencies that underpin and inform executive leadership and understanding of governance. The remoteness, lack of infrastructure and cultural diversity that exist in the north also require leaders to be able to exercise sound judgement in situations that have little or no third party information. These situations occur frequently and are not easily resolved by a mandated decision support tool. The theme emphasises the development of personal skills and knowledge to address sub-optimal decision making situations.

INFORMATION AND COMMUNICATIONS TECHNOLOGY

Fire and emergency management in north Australia is increasingly able to utilise information and communication technology, but there remain situations and locations where information is poor or unavailable. The development of skills to allow operations in non-electronic formats, including navigation, provide the core skills and knowledge to operate effectively, but also build the platform for adoption, utilisation and manipulation of data from a range of Information and Communication Technology (ICT) sources.

PLANT AND EQUIPMENT

Plant and equipment, ranging from leaf blowers to graders and helicopters are now part of everyday fire management in north Australia, even in quite remote situations. This theme is built up through the Skill Sets to provide a comprehensive range of skills from maintenance and operation to logistical deployment and supervision.

LOGISTICS AND PLANNING

While there is often a much smaller workforce involved in emergency or fire management than would be the case in equivalent sized operations in southern Australia, successful planning and logistics nevertheless remain critical. The scale of the operations, the lack of infrastructure and the remoteness make it incumbent on fire managers to have carefully arranged personnel and materiel to sustain a management or suppression effort. These external impositions on fire mean that fire managers in north Australia need to pay special attention to redundancy in logistic planning. More often than not, 'Plan B' will be an important component in the success of a project.

POLICY AND PROCEDURE

The final theme in the Skills Sets is policy and procedure. This theme lays the groundwork by setting out the requirement for legislation and policy development to achieve all of the above outcomes. A key component of this is the explication of why policy and procedure exist in both Indigenous and non-Aboriginal contexts. It develops to the Cert IV / Diploma level with graduates having the competence to understand and develop policy in response to perceived needs on the ground.

The Skill Sets contain much that is already available in existing Units of Competency through different industry training packages. Where there is a clear and relevant current Unit of Competency this has been included in the Skill Set, however this review has not been exhaustive and further work with Industry Skills Councils.

Units of Competency that identified in the process are recommended for creation to meet the complete Skill Sets. These may either be adapted from existing courses available through Higher Education modules or non-accredited course developed in-house by agencies or organisations grappling with servicing the needs of the emerging savanna burning / north Australian fire management industry.

Some areas of development of Units of Competency are more obvious than others. The collation of Indigenous knowledges and that of fire management in particular will definitely require the establishment of entirely new Units. This project has documented material and understandings of fire that are additional to that which exist in the literature, none of which is formally captured in training packages. Attachment A discursively presents information which is directly relevant to savanna burning and north Australian fire management and indicates that further information is likely to be available in different regions and habitats across the north.

SKILL SET 1

Target Group	This Skill Set is yet to be endorsed by industry as appropriate for people who hold a relevant professional or vocational qualification or commensurate industry skills as evaluated through recognition of prior learning processes. It provides skills and knowledge required to assist in the conduct of fire management operations in a north Australian landscape fire management program that establishes or maintains a required fire regime.	
Units	TBA	Basic fire behaviour
	AHCFIR201A	Assist with Prescribed burning*
	AHCOHS101A	Work Safely*
	TBA	Introduction to Situational Awareness
	AHCOHS201A	Participate in OHS Processes*
	PUATEA001B	Work in a team*
	TBA	Provide and receive feedback
	TBA	Cross cultural awareness
	PUAOPE002B	Operate communication systems and equipment*
	FPICOT3202B	Navigate in remote or trackless areas*
	AHCMOM101A	Assist with routine maintenance of machinery and equipment*
	AHCMOM203A	Operate basic machinery and equipment*
	AHCWRK203A	Operate in isolated and remote situations*
	TBA	Follow all procedural requirements
Pathway	These units may provide credit towards a number of community sector qualifications at Certificate I level.	
Suggested words for Statement of Attainment	This Skill Set will meet industry requirements in a new TBA Savanna Burning / North Australian Fire Management Training Package that involves assisting fire management operations.	

* Units of Competency that already exist within the VET portfolio

** Courses that already exist within the Higher Education portfolio

<p>Skill Set 1: Skills</p> <p>Communication skills to:</p> <ul style="list-style-type: none"> • Understand and interpret instructions accurately • Coordinate with colleagues to assist in operational tasks • Transmit critical information, observations and feedback to colleagues and supervisor, including via radio and satellite phone • Communicate with stakeholders to ensure consistent understanding of operational requirements <p>Literacy skills to:</p> <ul style="list-style-type: none"> • Understand and apply operational plans • Understand and follow policy and procedures • Understand safety requirements and responsibilities • Read tasking instructions • Provide written reports on operations • Document observations of fire management or other features <p>Numeracy and IT skills to:</p> <ul style="list-style-type: none"> • Understand instructions for mixing chemicals • Comply with material data sheets • Read and understand maps • Understand and operate web-based fire mapping tools (eg NAFI) • Measure quantities and calculate areas • Calculate timings for operational tasks <p>Technical skills to:</p> <ul style="list-style-type: none"> • Navigate and orientate oneself in order to perform operational tasks beyond visual contact with supervisor • Safely use cleaning agents • Maintain equipment • Operate radios and equipment • Assist in applying incendiaries for prescribed burning • Identify hotspots <p>Interpersonal skills to:</p> <ul style="list-style-type: none"> • Work effectively under supervision • Work with a team with varying degrees of specified responsibilities <p>Judgement skills to:</p> <ul style="list-style-type: none"> • Reflect on the impacts of actions taken and improve as appropriate <p>Self-management skills to:</p> <ul style="list-style-type: none"> • Maintain situational awareness • Meet supervisors requirements 	<p>Skill Set 1: Knowledge</p> <p>Knowledge of:</p> <p>Basic fire behaviour</p> <p>Safe firefighting</p> <p>Basic WHS, duty of care</p> <p>Situational awareness</p> <p>Basic procedures and the reason behind them</p> <p>Navigate using maps and GPS</p> <p>Basic use of NAFI</p> <p>Identify machinery and conduct basic maintenance</p> <p>Authorisations required for conducting a burn</p> <p>High and low intensity prescribed burns</p> <p>Ignition techniques</p> <p>Use of PPE</p> <p>Basic communication requirements and equipment</p> <p>Hygiene and well-being</p> <p>Different cultural approaches to fire, teamwork and leadership</p>
---	--

<ul style="list-style-type: none"> • Minimise hazards • Comply with policy and procedural requirements <p>Organising and time-management skills to:</p> <ul style="list-style-type: none"> • Be available for work as required <p>Leadership skills to:</p> <ul style="list-style-type: none"> • Support operational task roll out through supportive engagement 	
--	--

Skill Set 1: Elements and Performance Criteria

Elements	Performance Criteria
1. Prepare to assist in a north Australian fire management project	1.1 Role, duties and team structure clarified 1.2 Nominated PPE is obtained and donned 1.3 Machinery & equipment prepared, positioned and ready to use 1.4 Communications equipment reviewed and installed. 1.5 Consumables obtained and stowed
2. Proceed to fire management activity location	2.1 Location of action confirmed with supervisor
3. Liaise with stakeholders and work team members	2.2 Access to location is obtained safely and in a timely fashion
4. Assist with the conduct of a north Australian fire management activity	2.3 Indicators of fire behaviour are observed and noted
5. Review activity and provide feedback	3.1 Arrival at location is communicated to supervisor, stakeholders and colleagues
	3.2 Confirmation of roles and responsibilities with owners, stakeholders & colleagues
	4.1 Instructions are received & implemented safely
	4.2 Communications are maintained throughout
	4.3 Situational awareness is maintained at all times
	4.4 Fire behaviour observed and reported
	5.1 Activity finalised and return to base safely
	5.2 Material recovered and stored as directed
	5.3 Observations of fire behaviour, safety and operation reported to supervisor.

SKILL SET 2

Target Group	This Skill Set is yet to be endorsed by industry as appropriate for people who hold a relevant professional or vocational qualification or commensurate industry skills as evaluated through recognition of prior learning processes. It provides skills and knowledge required to conduct of operations in a north Australian landscape fire management program that establishes or maintains a required fire regime.
--------------	--

Units	TBA	Savanna fire and ecology**
	TBA	Northern Australian climate, weather and fire interactions
	PUAFIR204B	Respond to wildfire*
	PUAFIR407B	Conduct Prescribed Burning*
	TBA	Introduction to Traditional burning Principles
	PUAFIR201B	Prevent Injury*
	TBA	Advance situational awareness and dynamic risk assessment
	TBA	Apply Standard Operating Procedures (SOPs)
	TBA	Tactical leadership
	TBA	Participate in a debrief
	TBA	Community engagement and cultural protocols
	TBA	Advanced navigation (with/without GPS)
	CPPSIS4005A	Collect basic GPS data*
	TBA	Apply web-based fire management tools
	TBA	Use ICT to monitor program delivery
	PUAEQU001B	Prepare, maintain and test response equipment*
	TBA	Safety around aircraft
	TBA	Operate aerial incendiary equipment
	TBA	Develop operational work plans
	TBA	Understand legislative basis for operations
Pathway	These units may provide credit towards a number of community sector qualifications at Certificate II level.	
Suggested words for Statement of Attainment	This Skill Set will meet industry requirements in a new TBA Savanna Burning / North Australian Fire Management Training Package that involves conducting fire management operations.	

* Units of Competency that already exist within the VET portfolio

** Courses that already exist within the Higher Education portfolio

Skill Set 2: Skills	Skill Set 2: Knowledge
<p>Communication skills to:</p> <ul style="list-style-type: none"> • Understand and transmit strategic and operational objectives • Coordinate with colleagues and assistants • Liaise with stakeholders, share information, listen and understand • Work effectively in cross cultural situations <p>Literacy skills to:</p> <ul style="list-style-type: none"> • Read, understand, transmit and implement strategic and operational plans • Complete documentation of operations and observations accurately <p>Numeracy and IT skills to:</p> <ul style="list-style-type: none"> • Interpret technical information relating to operational requirements • Access GIS information and apply in field situations • Collect basic geographic data using GPS and data loggers <p>Technical skills to:</p> <ul style="list-style-type: none"> • Conduct fire management operations and tasks in remote situations • Monitor fires and take appropriate action as situation requires • Patrol fires safely and report • Maintain and undertake minor repairs of machinery and equipment <p>Research and analytical skills to:</p> <ul style="list-style-type: none"> • Analyse information to ensure appropriateness of information in particular operational circumstances <p>Interpersonal skills to:</p> <ul style="list-style-type: none"> • Maintain rapport with stakeholders • Interact effectively with team members • Establish networks <p>Judgement skills to:</p> <ul style="list-style-type: none"> • Anticipate and organise required materiel and resources • Develop contingencies <p>Self-management skills to:</p> <ul style="list-style-type: none"> • Comply with ethical and safety procedures and legal requirements <p>Organising and time-management skills to:</p> <ul style="list-style-type: none"> • Meet operational timelines • Prioritise and schedule tasks <p>Leadership skills to:</p> <ul style="list-style-type: none"> • Contribute to the operation of an effective team • Lead team members in remote situations where 	<p>Knowledge of:</p> <p>Savanna fire and ecology</p> <p>North Australian climate, weather and fire interactions</p> <p>Basic understanding of Aboriginal traditional burning and fire management techniques</p> <p>Effects of fire on flora, fauna and fuel accumulation</p> <p>Knowledge of habitats within project area</p> <p>Safe work practices</p> <p>Tactical leadership</p> <p>Wildfire suppression</p> <p>GIS applications, including use of NAFI</p> <p>Prescribed burning strategies</p> <p>Legislative, organisational policy and procedures for conducting a prescribed burn</p> <p>Seasonal restrictions on prescribed burns</p> <p>Authorisations required for conducting a burn</p> <p>Application rates of different forms of incendiaries in different habitats</p> <p>Resource requirements for fire management tasks</p> <p>Understanding of savanna burning operational requirements</p> <p>WHS policy relevant to the maintenance, servicing, testing and using equipment</p> <p>Procedures for monitoring prescribed burns and securing burn area</p> <p>Situational awareness</p> <p>Dynamic risk assessment</p>

required	
----------	--

Skill Set 2: Elements and Performance Criteria

Elements	Performance Criteria
1. Understand and work to fire project objective	1.1 Obtain and confirm all relevant strategic and operational plans 1.2 Clarify areas of uncertainty with supervisor 1.3 Prepare action statement to implement plans 1.4 Traditional burning practices and procedures are reviewed and applied
2. Understand fire weather and ecological situation	2.1 Location of activity, fire, vegetation community and landscape type, fuel load, wind and weather are observed and noted.
3. Understand team, role and cultural requirements	2.2 Predictions of fire spread are noted 2.3 Review action plans against seasonal and weather conditions
4. Use ICT and Equipment	3.1 All personnel involved in activity noted with roles and responsibilities 3.2 All stakeholders consulted as appropriate 3.3 Traditional owners views sought, acknowledged and acted upon
5. Maintain situational awareness and conduct dynamic risk assessment	4.1 Geographic information identified and available throughout operation 4.2 Progress of operation monitored throughout 4.3 Report on operation and consistency with intent / plan objective 5.1 Personal and team safety regularly review and action taken to keep safe 5.2 Situational awareness maintained at all times.

SKILL SET 3

Target Group	This Skill Set is yet to be endorsed by industry as appropriate for people who hold a relevant professional or vocational qualification or commensurate industry skills as evaluated through recognition of prior learning processes. It provides skills and knowledge required to supervise operations in a north Australian landscape fire management program that establishes or maintains a required fire regime.	
Units	TBA	Landscape Fire
	PUAFIR303B	Suppress wildfire*
	TBA	Advanced Traditional Burning - Operationalize Traditional Knowledge
	TBA	Fire management for fire regime control (Aboriginal, pastoral, U/R interface)
	PUAFIR406B	Develop prescribed burning plans*
	BSBR5K401A	Identify risk and apply risk management processes*
	TBA	Supervise implementation of SOPs
	TBA	Frontline leadership
	TBA	Indigenous leadership
	TBA	Indigenous knowledge systems and remote Indigenous perspectives
	TBA	Conduct a debrief
	TBA	Decision making in information-poor situations
	AHCNRM507A	Manipulate and analyse data within GIS*
	AHCWRK503A	Prepare reports using ICT data*
	TBA	Task and supervise operation of plant and equipment.
	TBA	Supervise air operations
	TBA	Supervise remote area operations
	TBA	Plan logistics for savanna burning and north Australian fire management projects
	TBA	Supervise the implementation of legislation and policy: HR and Fire
	VPAU089	Manage financial resources in an organisation*
Pathway	These units may provide credit towards a number of community sector qualifications at Certificate IV or Diploma level.	
Suggested words for Statement of Attainment	This Skill Set will meet industry requirements in a new TBA Savanna Burning / North Australian Fire Management Training Package that involves assisting fire management operations.	

* Units of Competency that already exist within the VET portfolio

** Courses that already exist within the Higher Education portfolio

Skill Set 3: Skills	Skill Set 3: Knowledge
<p>Communication skills to:</p> <ul style="list-style-type: none"> • Consult with stakeholders regarding strategic and operational fire management actions • Deal effectively and respectfully with people of different cultures • Transmit strategic and operational objectives to stakeholders and team members • Share information, listen and understand • Respond empathetically to team members and others in debriefing situations <p>Literacy skills to:</p> <ul style="list-style-type: none"> • Read and interpret sophisticated scientific, technical and anthropological information • Prepare planning and operational documents • Prepare reports on operations <p>Technical skills to:</p> <ul style="list-style-type: none"> • Supervise fire management operations and tasks in remote situations • Coordinate fire monitoring and develop and implement management contingencies as demand arises • Maintain and undertake minor repairs of machinery and equipment <p>Numeracy and IT skills to:</p> <ul style="list-style-type: none"> • Analyse GIS data to develop operational plans • Prepare maps, presentations and briefing for orienting crews • Interpret financial information and monitor budget allocation <p>Research and analytical skills to:</p> <ul style="list-style-type: none"> • Assess information derived from different knowledge systems and apply as operationally appropriate • Identify pathways to improve operational effectiveness and streamline achievement of objectives <p>Interpersonal skills to:</p> <ul style="list-style-type: none"> • Interact respectfully and effectively with landowners, stakeholders and clients • Understand remote (Indigenous) perspectives and respond empathetically to resource constraints <p>Judgement skills to:</p> <ul style="list-style-type: none"> • Make safe and effective decisions in remote situations within limited or imperfect information <p>Self-management skills to:</p> <ul style="list-style-type: none"> • Maintain ethical and legal standards within a team 	<p>Knowledge of:</p> <p>Landscape fire and fire regime management</p> <p>Savanna burning methodology</p> <p>Aboriginal traditional burning and fire management philosophy and techniques</p> <p>Understanding of the behaviour of fire in different habitats, weather, topography</p> <p>Effects of fire on areas and places of cultural significance</p> <p>Knowledge of aboriginal land tenure systems, ownership and land management protocols in the project area.</p> <p>Understanding of current stakeholder views on fire and incendiary use</p> <p>Effective operation in remote areas</p> <p>Maintenance of effective communication in dispersed work teams</p> <p>WHS law and risk management standard</p> <p>GIS analysis and reporting including advance NAFI features</p> <p>Logistics and deployment of resources including tracking of personnel and equipment</p> <p>Frontline leadership</p> <p>Indigenous social organisation and implications for leadership and team formation</p> <p>Supervision of fire management crews, including aerial resources</p> <p>Implementation of policy and legislation</p> <p>Financial reporting and budget management</p>

<p>Organising and time-management skills to:</p> <ul style="list-style-type: none"> • Prioritise tasks for project teams • Meet timelines • Organise meetings and workshops • Ensure consistent effective communication across the project area <p>Leadership skills to:</p> <ul style="list-style-type: none"> • Build an effective team • Foster and encourage personal development of team members • Mentor and support Indigenous personnel 	
--	--

Skill Set 3: Elements and Performance Criteria

Elements	Performance Criteria
<p>1. Develop and implement operational fire management plans</p> <p>2. Lead and supervise north Australian fire management teams</p> <p>3. Oversight logistical activities to ensure appropriate resources are available to conduct fire management activities</p> <p>4. Implement policy actively to support project sustainability</p>	<p>1.1 Information on landscape fires, traditional fire management and fire regime control is actioned in operational plans</p> <p>1.2 Prescribed burning is sequenced in a series of nested plans for a project or regime.</p> <p>1.3 WHS and situational awareness are embedded in operational planning and implemented</p> <p>2.1 Set objectives for operations and communicate these effectively to fire management teams from varying cultural backgrounds</p> <p>2.2 Prepare and prove maps and GIS data suitable for the effective implementation of a fire management program.</p> <p>2.3 Apply understanding of Indigenous knowledges and remote community perspectives to achieve project outcomes in field situations.</p> <p>2.4 Make sound decisions in remote situations with poor or restricted access to information.</p> <p>2.5 Communicate requirements and monitor results of remote work crews</p> <p>2.6 Supervise and direct fire management operations including aerial operations</p> <p>3.1 Assess resource requirements and arrange contracts for supply</p> <p>3.2 Position resources for use in activity or project.</p> <p>3.3 Deploy and supervise plant and equipment</p> <p>3.4 Coordinate personnel and resources in remote field situations</p> <p>4.1 Supervise day to day implementation of organisational policy including WHS, HR</p> <p>4.2 Manage financial resources</p> <p>4.3 Prepare reports on project outputs, budget allocation and WHS performance</p>

	4.4 Conduct debriefs and make recommendations for continuous improvement
--	--

SKILL SET4

Target Group	This Skill Set is yet to be endorsed by industry as appropriate for people who hold a relevant professional or vocational qualification or commensurate industry skills as evaluated through recognition of prior learning processes. It provides skills and knowledge required to manage and oversight planning and operations in a north Australian landscape fire management program that establishes or maintains a required fire regime.	
Units	TBA	Strategic fire management in social and political context
	TBA	Implement a savanna burning project
	TBA	Develop and implement SOPs
	LGAGCM706A	Develop risk management systems*
	TBA	Implement continuous improvement plan
	TBA	Executive leadership and governance
	TBA	Establish community engagement process
	TBA	Plan and implement a debrief program
	TBA	Mentor and champion Indigenous leaders
	TBA	Monitor and report on fire management program.
	AHCLPW404A	Produce maps for fire management purposes*
	TBA	Budget for and program deployment of : plant and equipment, aerial operations, wildfire suppression
	TBA	Implement adaptive management plan
	TBA	Establish processes to ensure compliance with legislation and policy
	VU21230	Oversee the management of financial resources in an organisation*
Pathway	These units may provide credit towards a number of community sector qualifications at Certificate IV or Diploma level.	
Suggested words for Statement of Attainment	This Skill Set will meet industry requirements in a new TBA Savanna Burning / North Australian Fire Management Training Package that involves assisting fire management operations.	

* Units of Competency that already exist within the VET portfolio

** Courses that already exist within the Higher Education portfolio

<p>Skill Set 4: Skills</p> <p>Communication skills to:</p> <ul style="list-style-type: none"> • Consult with stakeholders, government, land councils and others to develop strategic and operational fire management actions • Establish community engagement program • Work closely and respectfully with Indigenous people (including in remote locations) to achieve land/fire management objectives • Represent projects and organisations in the media and at conferences etc to grow understanding of north Australian fire management objectives and methods. • Intercede on behalf of landholders with permit and granting bodies, providing clear information on project objectives and operations. • Share information, listen and understand • Deal empathetically to team members and others in debriefing situations <p>Literacy skills to:</p> <ul style="list-style-type: none"> • Read and interpret sophisticated scientific, technical and anthropological information • Prepare strategic and operational plans • Prepare Risk Management programs • Develop WHS procedures and policies • Prepare Standard Operating Procedures • Write submissions, permit applications and correspondence as required • Prepare high level reports on operations and achievement of strategic objectives <p>Numeracy and IT skills to:</p> <ul style="list-style-type: none"> • Undertake GIS analysis in order to establish landscape scale strategic objectives for fire regime management • Prepare maps, data, presentations and briefings to operational teams, clients, stakeholders, landholders and funding bodies • Interpret financial information • Prepare, monitor and adjust budgets to meet operational objectives • Arrange contracts and monitor progress <p>Technical skills to:</p> <ul style="list-style-type: none"> • Coordinate fire response efforts • Assess infrastructure requirements and status and implement (or recommend) improvements and repairs as necessary <p>Research and analytical skills to:</p> <ul style="list-style-type: none"> • Assess information derived from different knowledge systems and incorporate into strategic plans, policies and procedures • Maintain currency in understanding of north 	<p>Skill Set 4: Knowledge</p> <p>Knowledge of:</p> <p>Strategic fire management in social and political context</p> <p>Requirements for the initiation of a savanna burning project</p> <p>Indigenous culture and remote community perspectives</p> <p>Development and implementation of operational standards, WHS and risk management systems</p> <p>Executive leadership and governance</p> <p>Programs and approaches to fostering Indigenous leadership</p> <p>Growing team competence and fitness for task</p> <p>Monitoring and reporting requirements</p> <p>Systems for analysis and reporting of fire and operational outputs and outcomes</p> <p>Budget planning tracking and control</p> <p>Adaptive management</p> <p>Detailed understanding of legislation and policy.</p>
--	---

<p>Australian fire management</p> <ul style="list-style-type: none"> Identify strategic improvements in program delivery, communications and achievement of objectives <p>Interpersonal skills to:</p> <ul style="list-style-type: none"> Build networks with government, Indigenous organisations and individuals, researchers and landowners to encourage cooperative implementation of landscape fire management strategies Operationalise Indigenous knowledge through persuasion and influencing under the auspices of an agreed strategic objective <p>Judgement skills to:</p> <ul style="list-style-type: none"> Make safe and effective high level decisions in remote situations with limited or imperfect information Provide sound advice to stakeholders, clients and team members <p>Self-management skills to:</p> <ul style="list-style-type: none"> Establish ethical, legal and operational standards by setting an example <p>Organising and time-management skills to:</p> <ul style="list-style-type: none"> Prioritise tasks for project Meet timelines Organise meetings and workshops Ensure consistent effective communication across the project area <p>Leadership skills to:</p> <ul style="list-style-type: none"> Build an effective team Foster and encourage personal development of team members Mentor and champion Indigenous leadership 	
--	--

Skill Set 4: Elements and Performance Criteria

Elements	Performance Criteria
1. Implementation of a north Australian fire management project.	<p>1.1 Develop strategic north Australian fire management plans to achieve specific objectives.</p> <p>1.2 Integrate detailed understanding of Indigenous fire management philosophy and practice into project plans</p> <p>1.3 As appropriate, incorporate practical application of knowledge of savanna burning methodology in the plans for continuous improvement of fire management projects</p> <p>1.4 Generate risk management systems with practical application in dispersed networks in remote north Australia</p> <p>1.5 Establish standardised operating procedures that embed sound WHS practice while incorporating traditional fire management practice</p>

2. Develop, lead and inspire fire managers in remote north Australia	1.6 Ensure funding and resource support systems are in place and appropriate for delivery of project objectives
	1.7 Oversight the alignment of a north Australian fire management project with relevant legislation, regulation and policy
3. Manage a dispersed organisation with Literacy, Language and Numeracy challenges in remote north Australia.	2.1 Coordinate the deployment of training and mentoring facilities for fire management teams in remote north Australia
	2.2 Establish systems for the deployment of competent fire management crews to operate semi-autonomously in remote situations
	2.3 Provide leadership, counselling, mentoring and support for Indigenous and other personnel engaged in fire management.
	3.1 Ensure systems are in place to cater for the learning styles of personnel with diverse LLN backgrounds
	3.2 Organise for the deployment of communication systems that are effective in remote north Australia

REFERENCES

Altman, Jon. 2009. *Manwurrk* (fire drive) at Namilewohwo. In Russell-Smith, Jeremy, Peter Whitehead, and Peter Cooke, eds. *Culture, ecology and economy of fire management in North Australian savannas: rekindling the wurrk tradition*. Collingwood, Victoria. CSIRO Publishing. Pp 176-191.

Cheney, P. *Australian Forest Grower* Vol 26 no 3, Spring 2003

Garde, Murray. 2009. The language of fire. In Russell-Smith, Jeremy, Peter Whitehead, and Peter Cooke, eds. *Culture, ecology and economy of fire management in North Australian savannas: rekindling the wurrk tradition*. Collingwood, Victoria. CSIRO Publishing. Pp 95-175.

Haynes, C.D. 1985. The pattern and ecology of *munwag*: traditional Aboriginal fire regimes in north central Arnhemland. *Proceedings of the Ecological Society of Australia* 13: 203-214.

Russell-Smith, Jeremy, Peter Whitehead, and Peter Cooke, eds. 2009. *Culture, ecology and economy of fire management in North Australian savannas: rekindling the wurrk tradition*. Collingwood, Victoria. CSIRO Publishing.

PARTICIPANTS/CONTRIBUTORS

This project was only possible with the contributions of a great many people. These following people contributed the good ideas and observations included in this report and for this we are extremely grateful.

Ross Andrewartha, Greening Australia Townsville
Shaun Ansell, Indigenous Land Corporation Darwin
Mick Ayre, Director Bushfires NT
Ken Baulch, Bushfires NT
Tony Bowland, Batchelor Institute of Indigenous Tertiary Education
Nathan Connor, WA Department of Environment and Conservation
Mark Desailly, Darwin Centre for Bushfires Research
Andrew Edwards, Darwin Centre for Bushfires Research
Gavin Fryar, Qld Fire and Rescue Service
Rohan Fisher, Charles Darwin University
Nigel Gelar, Warddeken Land Management
Lester Guymala, Warddeken Land Management
StewieGuymala, Warddeken Land Management
TeraGuymala, Warddeken Land Management
Ed Hatherly, WA Department of Environment and Conservation
Chris Haynes, Anthropologist, Perth
Adrian Hendry, Charles Darwin University
David Hewitt, Northern Land Council
Michael Hicks, Charles Darwin University
Trevor Howard, WA Department of Environment and Conservation
Steve Hughes, Northern Land Council
Lee Humphris, Bushfires NT
Peter Jacklyn, Charles Darwin University
Glenn James, North Australian Indigenous Land and Sea Management Alliance
Romeo Lane, Djelk Rangers Maningrida
Joe Morrison, North Australian Indigenous Land and Sea Management Alliance
Mitchell Nabalarmbal, Warddeken Land Management
Barnabas Nabhorlbhorl, Warddeken Land Management
Joel Nabhorlbhorl, Warddeken Land Management
Rodney Nabhorlbhorl, Warddeken Land Management
Graham Namahlya, Warddeken Land Management
Ivan Naminyolk, Djelk Rangers Maningrida
Kevin Natt, Volunteer Training Brigade Bushfires NT
Jack Nawilil, Senior Traditional Owner Borlkdjam

Anna Pickworth, Kimberley Land Council
Vicki Ratliff, Department of Industry, Innovation, Climate Change, Science, Research and Tertiary Education
Natalie Rossiter, Charles Darwin University
Victor Rostron, Djelk Rangers Maningrida
Jeremy Russell-Smith, Darwin Centre for Bushfires Research
Matthew Ryan, Bawinanga Aboriginal Corporation Maningrida
Samantha Setterfield, Charles Darwin University
Dennis Tonkin, Charles Darwin University
Andrew Turner, Bushfires NT
Georgia Valance, Warddeken Land Management
John Whatley, Bushfires NT
Winston Williams, Qld Fire and Rescue Service
Jake Weigel, Warddeken Land Management
Peter Whitehead, North Australian Indigenous Land and Sea Management Alliance
Cameron Yates, Darwin Centre for Bushfires Research
Dean Yibarbuk, Warddeken Land Management