



National Prescribed Burning Capability

NAFM Forum Townsville
June 2024

Trevor Howard
National Manager
Prescribed Burning Strategy



1. Australasian Fire and Emergency Service Authorities Council (AFAC)
2. Land Use Changes and Declining Capability in Using Fire
3. FFMG-AFAC National Burning Project (2011-2017)
4. Rebuilding Capability: A Masterclass Program in Using Fire
5. The Bigger Picture: What Else is Needed?
6. How is this Relevant to Northern Australia and the NAFM Network?

**Australasian Fire and Emergency Service Authorities Council
(AFAC)**

Australasian Institute for Disaster Resilience (AIDR)

- National Disaster Risk Reduction Framework, and Handbooks
- Australian Disaster Resilience Knowledge Hub
- Australian Journal of Emergency Management
- Professional Development program – webinars, master classes
- Major Incidents Reports – annual, all hazards
- Lessons learned, knowledge management, and continuous improvement
- Involvement of NGOs – e.g. Red Cross

National Aviation Firefighting Centre (NAFC)

- Procurement of aircraft, and sharing between states/territories through NRSC
- 160+ aircraft services for 2023-24 season, including Large Air Tankers
- LATs based in several jurisdiction, plus mobile National LAT and lead plane
- International arrangements and coordination with other countries
- Development of protocols and systems, including ARENA (roots of heavy plant version)
- Current projects – resource to risk; costs/benefits; retardant impacts/effectiveness

National Resource Sharing Centre (NRSC)

- Commissioners and Chief Officers Strategic Committee (CCOSC)
- National Capability Statement – all hazards, including aviation
- Interstate and international arrangements and agreements – NZ, USA, Canada
- 10 Standard Operating Procedures, and other doctrine
- Development of systems and tools for resource tracking and reporting
- Duty Officers, Duty Managers and Deployment Managers

Australasian Fire and Emergency Service Authorities Council

- AFAC Council (34 members) and Board
- Collaboration Model – working *with* agencies, and *through* them with the community
- AFAC Collaboration Groups – e.g. Rural and Land Management Group
- Doctrine at various levels (currently 100+ pieces), plus AIIMS 2017
- Research utilisation and relationship with NHRA
- Emergency Management Professionalisation Scheme (EMPS) – includes PB?

Land Use Changes and Declining Capability in Using Fire

Land Use, Rural Industry and Agency Changes

- Declining influence of forestry and foresters in Australian bushfire management and research over several decades
- Declining use of fire in agriculture – land clearing, stubble burning, cane burning, grazing land management, woody weed control etc. – and research by ag scientists
- Fewer workers in rural Australia, and fewer workers with bush skills as well as fire knowledge
- Agency changes, workforce demographics and succession issues
- Victoria 1939, Dwellingup 1961, Victoria 2009, Productivity Commission 2015

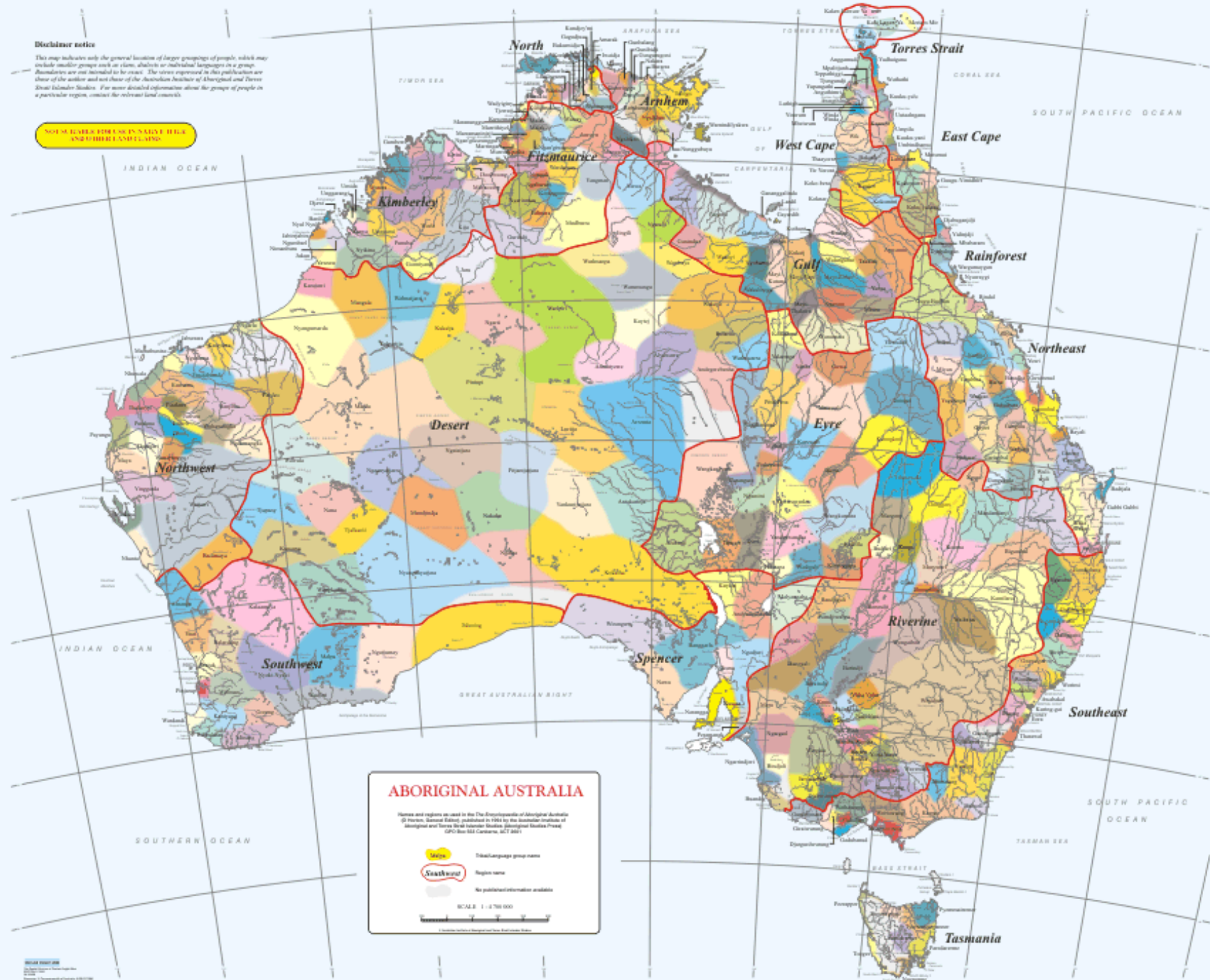
Land Use and Land Management Contrasts: South and North

- Southern Australia – mainly AFAC member agencies, minimal broadscale private burning
- Urbanisation, smoke, traffic, environment, land use conflicts, desktop science
- Indigenous cultural burning – small steps, needs more support and time
- Northern Australia – TOs, pastoralists, conservation land managers etc.
- Northern Australia – ALRA 1976, Native Title Act 1993, carbon farming legislation, Aboriginal ranger programs, aerial ignition, GLM courses

Disclaimer notice

This map indicates only the general location of larger groupings of people, which may include smaller groups such as clans, dialects or individual languages in a group. Boundaries are not intended to be exact. The sources reported in this publication are those of the author and not those of the Australian Institute of Aboriginal and Torres Strait Islander Studies. For more detailed information about the groups of people in a particular region, contact the relevant land councils.

NO SCALE INFORMATION AVAILABLE
AND OTHER DETAILS



ABORIGINAL AUSTRALIA

Names and regions shown in this The Encyclopedia of Aboriginal Australia © Pearson, General Editor, published in 1984 by the Australian Institute of Aboriginal and Torres Strait Islander Studies (Aboriginal Studies Press) GPO Box 543 Canberra, ACT 2601

-  Tribal/language group names
-  Region names
-  No published information available

SCALE 1 : 4 750 000



Smoke on the Horizon: Emerging Issues and Challenges

- PB programs, priorities and scales – rings of confidence vs landscape scale
- PhDs and university studies – competing science, simulations vs evidence
- LATs, resource sharing vs PB, backburning, land management
- Cultural burning – enabling, supporting, self-determination, other agendas
- Smoke and human health – PB and/or bushfires, management responses, NT
- Beyond AFAC – Aboriginal corporations, TOs and rangers, conservation NGOs, MLA, Ag Depts and pastoralists, carbon projects, aerial ignition, non-agency personnel, local governments, mining companies, private contractors ...

**FFMG-AFAC National Burning Project
(2011-2017)**

The FFMG-AFAC National Burning Project

- 2009 Victorian bushfires, 2010 Royal Commission report
- Need to expand prescribed burning programs in Victoria and elsewhere
- Previous reviews and inquiries had also recommended (e.g. Ellis *et al.* 2004)
- Workforce requirements – skills, knowledge, capacity, capability, management
- National Burning Project 2011-17, with Commonwealth and agency support
- A valuable body of knowledge documented, but capability decline continues

Workshops across Australia

Analysis of procedures and practices

Case studies



Frameworks, Guidelines, Principles

To bring together inter-related aspects of prescribed burning across Australasia to design guiding frameworks and principles for a more holistic and consistent approach to prescribed burning

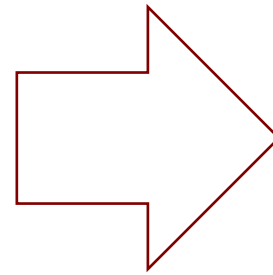


Figure 1 | The four phases of prescribed burn planning and implementation



National Guidelines for Prescribed Burning Strategic and Program Planning

National Burning Project: Sub-Project 4

JUNE 2017



An Australian Government Initiative



National Guidelines for Prescribed Burning Operations

National Burning Project: Sub-Project 4

JANUARY 2016



Table 1 | Risk dimensions against phases of prescribed burning

REF.	RISK DIMENSION	STRATEGIC PLANNING PHASE	PROGRAM PLANNING PHASE	OPERATIONAL PLANNING PHASE	IMPLEMENTATION PHASE
Figure 4	Fuel	Models/simulators, hazard/risk assessments, strategies/zones	Fire history, fuels, targets, staging	Prescriptions, fuel reduction measurable objectives	Ignition strategies, post fire assessment of measurable objectives
Figure 5	Ecology/ environment	Knowledge, systems, strategies	Prioritisation trade-offs, fire intervals and seasons	Prescriptions, specific risk controls	Ignition strategies, specific risk controls, post fire evaluation
Figure 6	Smoke	Pollutions standards	Cumulative smoke issues, scheduling	Prescriptions and constraints (e.g. wind direction)	Smoke dispersal models/simulators, forecasts, ignition strategies
Figure 7: Operational risks	Burn containment	Systems, procedures, standards	Scheduling of burn and works, cumulative impact on resourcing	Planning suitable boundaries, resources and contingencies	Assessing control lines, adjusting ignition patterns, monitoring fire and conditions
	Crew safety	Systems, procedures, standards, training	Allocation of suitable resources and staff, being realistic when programming burns	Burn complexity matched to crews/ burn manager, contingencies, identify safety hazards	Safety and site checks, briefings, equipment, command structure, debriefs
	Public safety	Regulation, policies and procedures	Burn area selection	Prescriptions, risk controls, traffic control contingencies	Signage and notifications, site checks and resources to manage public and traffic
	Impact on values	Knowledge, guidelines, systems, strategies	Seasons, scheduling, timing requirements	Prescriptions, boundaries, risk controls	Ignition strategies, monitoring fire and conditions, post fire evaluation



A Risk Framework for Operational Risks Associated with Prescribed Burning

National Burning Project: Sub-Project 3

OCTOBER 2016



An Australian Government Initiative



A Risk Framework for Ecological Risks Associated with Prescribed Burning

National Burning Project: Sub-Project 3

MAY 2016



Australasian Fire and Emergency
Service Authorities Council



An Australian Government Initiative



Risk Management Framework – Smoke Hazard and Greenhouse Gas Emissions

Report for National Burning Project: Sub-Project 3

MARCH 2015



Australasian Fire and Emergency
Service Authorities Council



An Australian Government Initiative





National Guidelines for Prescribed Burning Operations:

Case Study 3 – Low intensity burning in tall moist karri forests in Western Australia

National Burning Project: Sub-Project 4



National Guidelines for Prescribed Burning Operations:

Case Study 8 – Burning of spinifex grasslands in the arid interior of Western Australia

National Burning Project: Sub-Project 4

National Guidelines for Prescribed Burning Operations:

Case Study 7 – Burning for greenhouse gas abatement in Northern Australia

National Burning Project: Sub-Project 4



Objectives, Monitoring and Evaluation Framework for Prescribed Burning





PRESCRIBED BURNING IN AUSTRALASIA

The science, practice and politics
of burning the bush

EDITORS Adam Leaverley, Mike Wouters and Richard Thornton

Fire and grazing land management

In the northern rangelands, prescribed fire can be important for managing grazing pressure, pasture composition, weed control, optimising the grass/tree balance and maintaining overall land condition. In the absence of fire on some land types, grazing productivity may decline through woody thickening and weed encroachment. Using fire can also have some constraints, costs and risks, particularly in areas with variable rainfall, so good information to manage uncertainty and to support decision making is critical. Bushfires can have a direct economic impact on pastoral production through lost feed, infrastructure and stock, as well as time and equipment diverted to firefighting, so strategies and actions are also needed to minimise potential losses.



— Centre of Excellence —

**PRESCRIBED
BURNING**

National Position on Prescribed Burning



Rebuilding Capability: A Masterclass Program in Using Fire

A National Master Class Program in the Use of Fire

1. Building on previous investment in the National Burning Project and subsequent extension activities, as well as revision of the frameworks and guidelines to reflect new knowledge and approaches – e.g. weather, risk management, climate change, active program management, northern Australia
2. Drawing heavily on the best available expertise in the country, both government and non-government, for program design, curriculum development, implementation and review
3. Incorporating traditional, contemporary and scientific knowledge as well as lessons learned from case studies and experienced practitioners

A National Master Class Program in the Use of Fire

4. Including a combination of fieldwork and classroom-based activities, with a strong focus on knowledge sharing between participants as well as facilitated experiential learning
5. Selecting initial participants who are already highly experienced and trained in prescribed burning in diverse and challenging operating environments
6. Having highly respected group leaders and experienced facilitators for each program who have credibility in prescribed burning and land management

A National Master Class Program in the Use of Fire

7. Commencing the program with a week of intensive learning (see table) followed by week-long blocks in the south west, south east and north of Australia
8. Providing opportunities for each group to collectively spend time planning and managing burns in diverse contexts and acquiring knowledge of different agency cultures and procedures
9. Providing opportunities for jurisdictions and agencies to have experienced personnel available to contribute to burn planning, operations, learning and continual improvement

A National Master Class Program in the Use of Fire

10. Giving appropriate recognition to those who complete the program to acknowledge their expertise and leadership role in using fire in the landscape
11. Involving Master Class graduates in developing and mentoring the next cohort as well as providing leadership in future program reviews and continual improvement
12. Expanding the initial program beyond highly experienced agency land managers, to run future programs that will include a broader range of people from local governments, rural fire services, Indigenous organisations, conservation NGOs and other backgrounds who are developing their knowledge and experience and aspire to learn and achieve more

A National Master Class Program in the Use of Fire

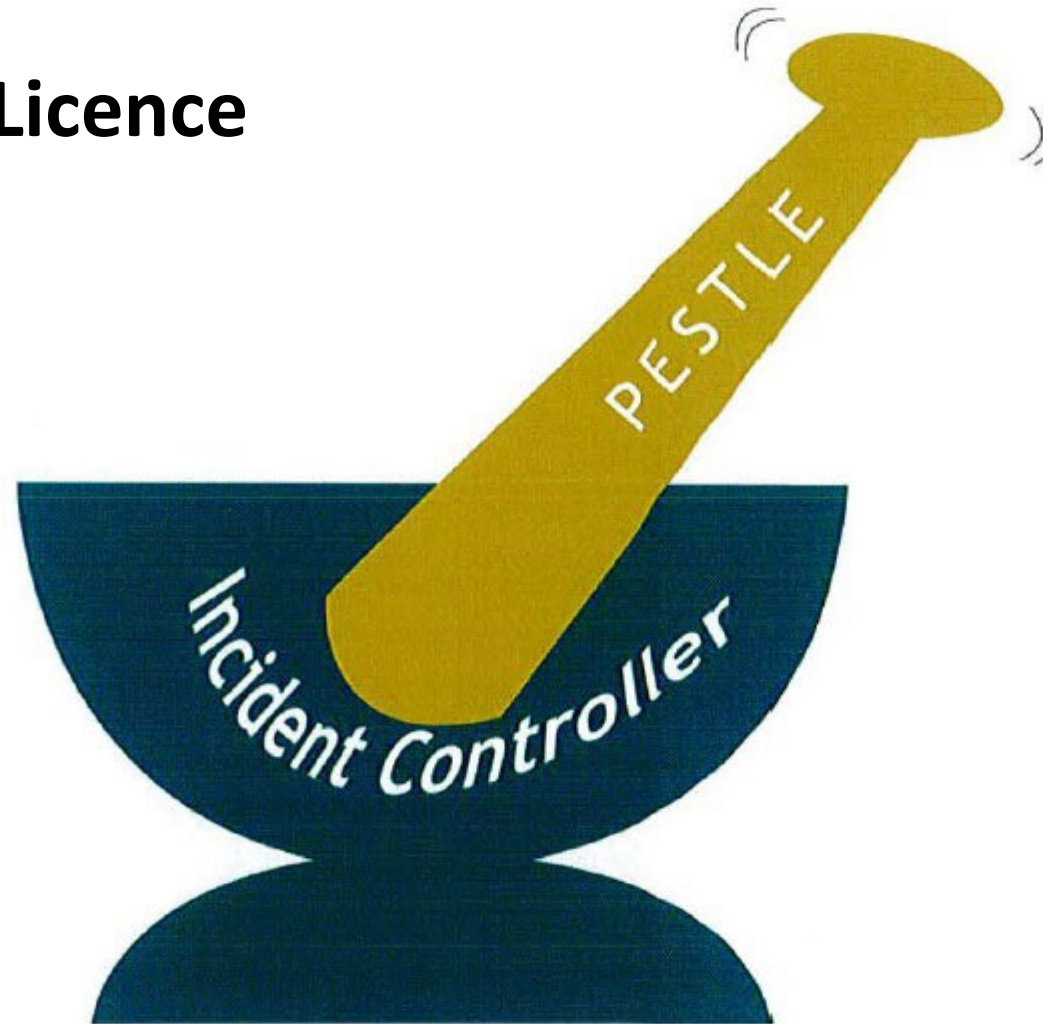
13. Ensuring that the different needs of burn planners, burn controllers, burn practitioners and burn program managers are considered
14. Having sufficient program intakes each year to build capability across Australia in the use of fire as a management tool, both for prescribed burning at a landscape scale, and for backburning as a legitimate and essential bushfire suppression strategy
15. Positioning the skilful use of fire in the landscape as a professional endeavour supported by a body of knowledge, that attracts, develops and retains people in careers, communities of practice, and leadership roles

Indicative Curriculum in Addition to Field-based Activities

Fire Science for PB	Burn Program Management	Human and Cultural Factors
<ul style="list-style-type: none">• Climate change scenarios, weather, fuels and fire behaviour models• New and emerging technologies and tools• Fire ecology principles for prescribed burning• Adaptive management• Research utilisation	<ul style="list-style-type: none">• Fire regimes and burn program design• Complex burn planning, implementation and management• Active (live) burn program management• Managing communication and social licence• Burn program monitoring, evaluation and reporting• Case studies and scenarios	<ul style="list-style-type: none">• Community engagement• Supporting Indigenous cultural burning• Risk assessment, risk management and risk communication• Human factors and decision making• High Reliability Organisations• Research utilisation



Risk and Social Licence



If an IC does not pay attention to the PESTLE environment it is likely that the components of PESTLE will grind the IC to dust.

(Dept of Environment and Conservation, 2010)

Program Governance Framework

Program Board

Membership: senior leaders from AFAC, RLMG, FFMG, land management agencies, rural fire services, northern Australia, Indigenous representation

Expert Advisory Panel

Membership: subject matter experts in meteorology, fire behavior, fire ecology, Indigenous knowledge, operations, risk management, northern Australia, professional development, communications

Candidate Selection Panel

Membership: AFAC, RLMG, NPBN, FFMG, SE RCG (see below), SW RCG, NA RCG, diversity

Regional Coordination Groups (3)

- Southeast agencies – to plan and coordinate fieldwork, contingency planning, risk management etc.
- Southwest agencies – DBCA and DFES
- Northern agencies + other stakeholders – Indigenous, conservation, pastoral, carbon, NAFMN

The Bigger Picture: What Else is Needed?

Building National Capability: 2024 and Beyond?

- Prescribed burning
 - Different realities, minorities, ideology and influence
 - Social licence
 - Capacity and capability within agencies
 - Attraction, recruitment and retention – new sources?
 - Supporting non-agency stakeholders – Indigenous, private conservation, pastoral, local government etc.
- Bushfire suppression
 - Backburning knowledge and skills
 - Aerial ignition – AFAC doctrine, but limited adoption
- National Master Class Program + what other initiatives?



Karla Katitjin

Bushfire Centre of Excellence



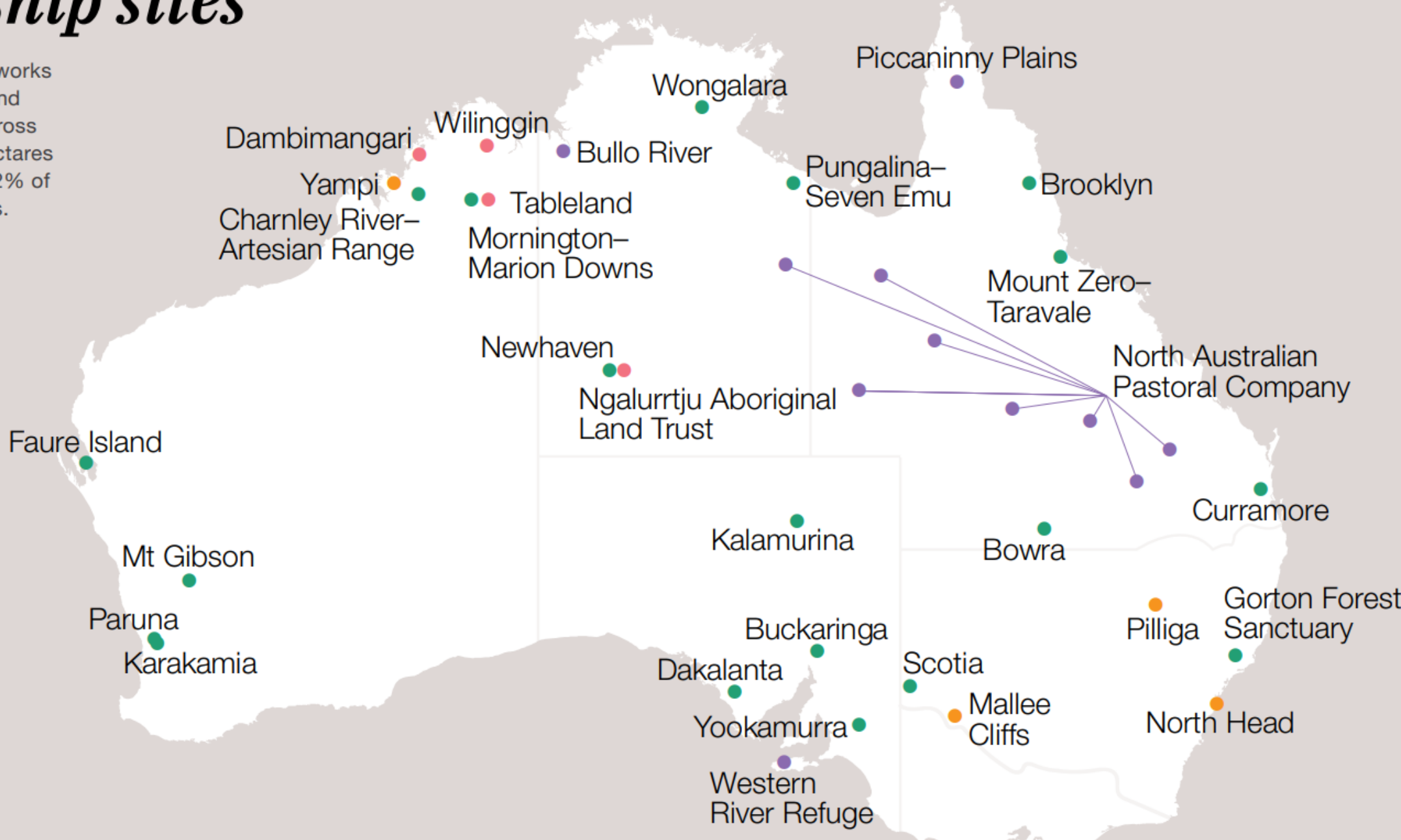
Kaya, the Bindjareb people have embraced the establishment of the Bushfire Centre of Excellence on our Bindjareb boodja, as we share old traditional and new fire practices and beliefs to create a stronger future.

May all visitors to this region on which they stand have a safe visit and may they care for country and in turn it will take care of them. Boorda.

Karrie-Anne Kearing Salmon, traditional owner of Bindjareb Nyungar Boodja

Sanctuaries & Partnership sites

AWC owns, manages, or works in partnership to deliver and influence conservation across more than 12.9 million hectares – for scale, that’s almost 2% of Australia’s total land mass.



The IDA is proud to work with ranger teams across Australia's desert country. Together, these diverse ranger groups are delivering major regional collaborative land management projects.



1. Communications and advocacy to strengthen social licence
2. Multi-level professional development for managers and decision makers
3. A multi-week masterclass program for experienced practitioners
4. Communities of practice, sharing of knowledge and lessons learned, and support for research utilisation
5. National doctrine and best practice guidelines, tailored for new and emerging audiences
6. Engagement and extension activities with agencies, national NGOs, the carbon sector, aerial ignition providers and users, etc.
7. Assurance services including program reviews and support for continuous improvement





Knowledge and Skills Transfer

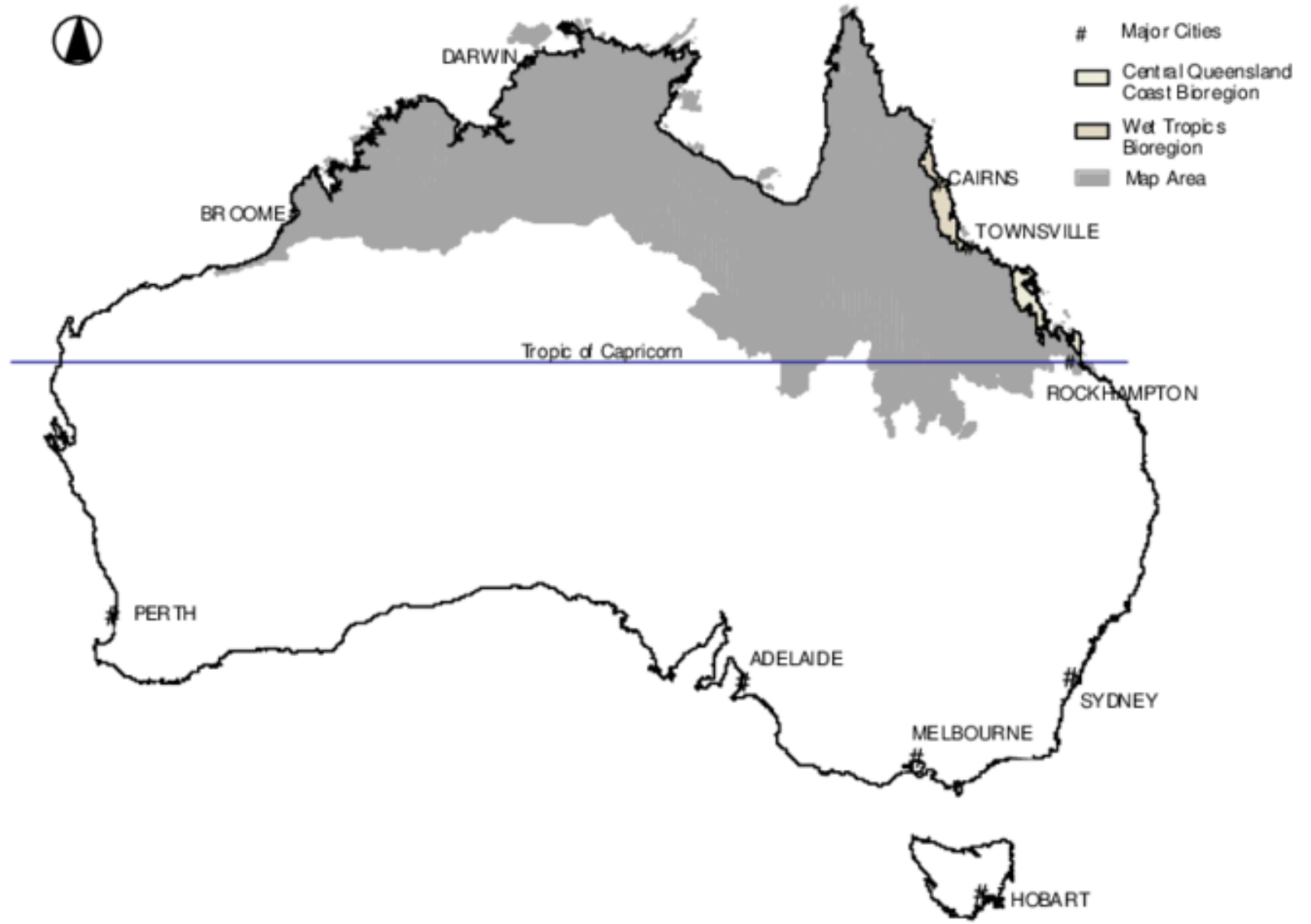
Facilitation

Co-ordination

Extension

Training

How is this Relevant to Northern Australia and the NAFM Network?



Continuity and Change in Northern Australia

- Land ownership – ALRA 1976, Native Title Act 1993, ILUAs etc.
- Traditional owners, communities, outstations, Aboriginal rangers
- Cultural purposes, biodiversity conservation, grazing land management
- Greenhouse gas abatement and carbon projects – WALFA in 2006, ICIN in 2018
- Science and technology – aerial ignition, I-tracker, NAFI, benchmarking, CDU
- Program support personnel, diverse backgrounds, non-traditional pathways
- Pastoral skills – industry changes, fire, GLM, woody thickening, rubbervine etc.











FIGHTING FIRE WITH FIRE

LEARN HOW OUR ANCESTORS USED
FIRE TO REDUCE BUSH FIRES AND
MAINTAIN ECOLOGICAL DIVERSITY

[KNOW MORE](#)

[ABOUT JIGIJA](#)

[OUR COURSES](#)

[PUBLICATIONS](#)

[TRADITIONAL ECOLOGICAL
KNOWLEDGE](#)

[GANGALIDDA AND GARAWA
RANGERS](#)

[OUR LOCATION](#)

[OUR NEWS](#)

< HIDE MENU

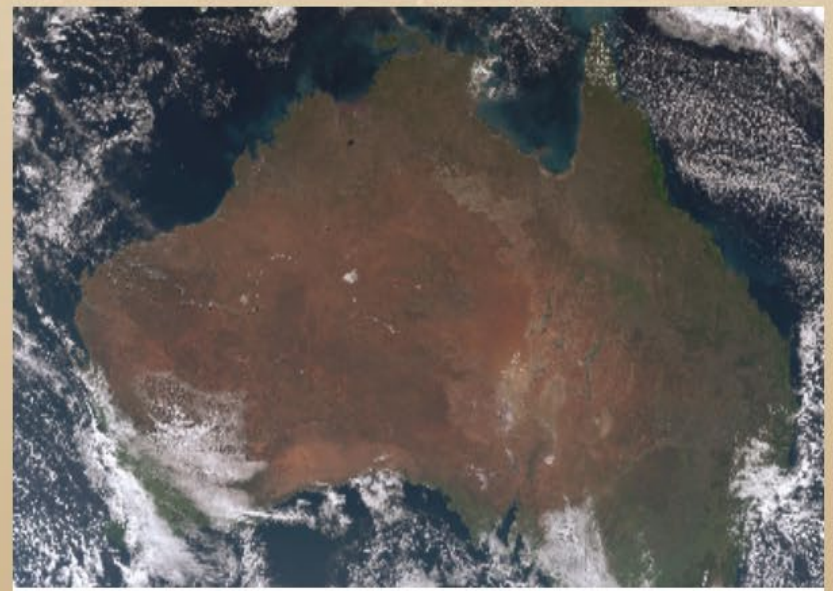
Areas ?

- Presets Areas
 - ▶ Cape York Pen'sla
 - ▶ North East Qld
 - ▶ The Gulf Qld
 - ▶ Central Qld
 - ▶ Central West Qld
 - ▶ West Qld
 - ▶ South Qld
 - ▶ NT North
 - ▶ NT Central
 - ▶ NT South
 - ▶ South Aust
 - ▶ WA Kimberley
 - ▶ WA Pilbara
 - ▶ WA Desert
 - ▶ WA Gascoyne
 - ▶ WA South



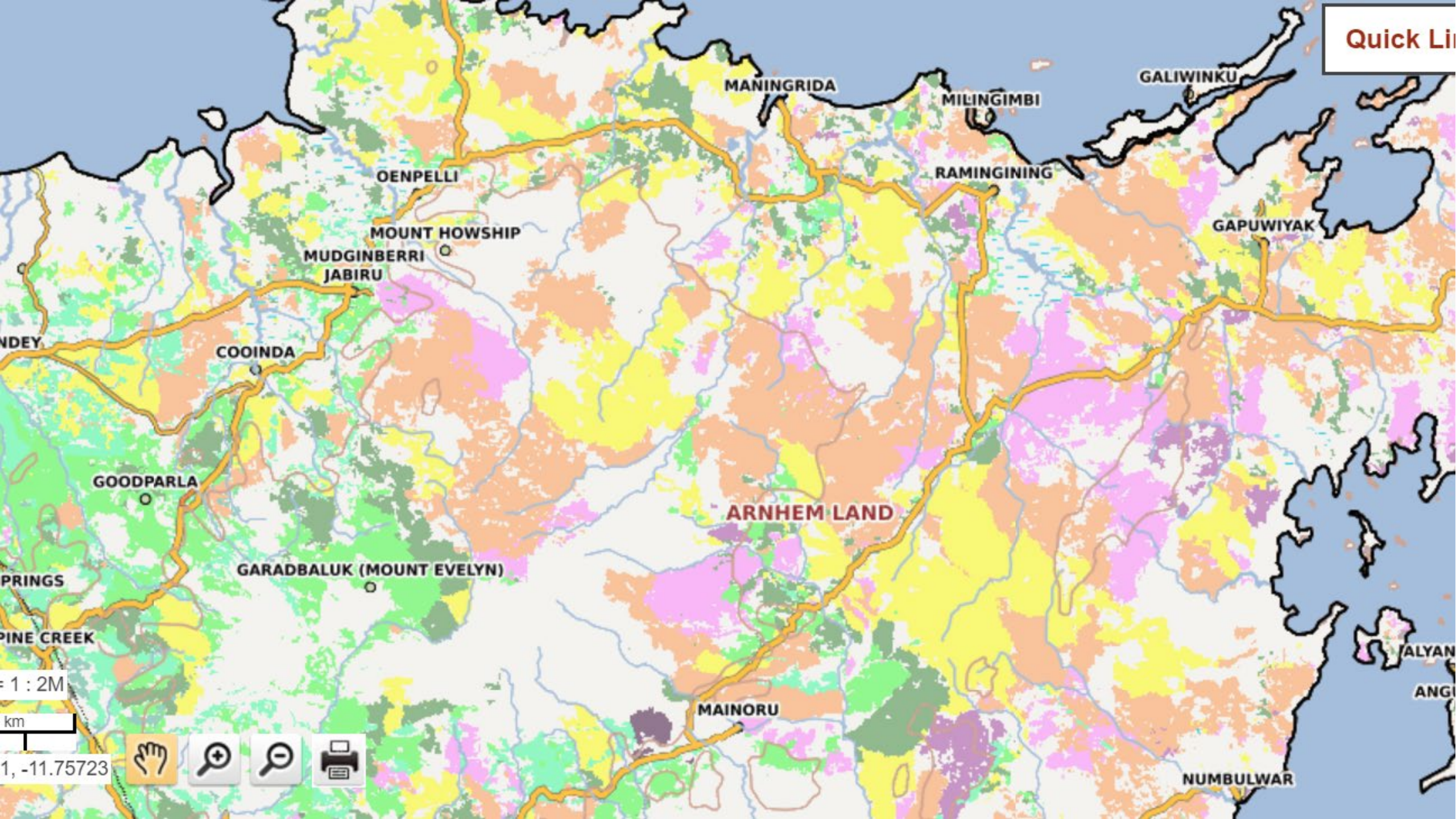
To view a fire map:
Select your region in the left menu or click on the map below.

[Get New Google Earth Links](#)



 **Latest Cloud Conditions**
Click on map to see fires in that region

- [Get Mobile App](#) →
- [What's new?](#) →
- [Help](#) →
- [Information Hub](#) →
- [NAFI on Google Earth](#) →
- [Contact us](#) →



Quick Li

MANINGRIDA

MILINGIMBI

GALIWINKU

OENPELLI

RAMINGINING

GAPUWIYAK

MOUNT HOWSHIP

MUDGINBERRI

JABIRU

COOINDA

GOODPARLA

ARNHEM LAND

GARADBALUK (MOUNT EVELYN)

MAINORU

NUMBULWAR

NDY

PRINGS

PINE CREEK

1 : 2M

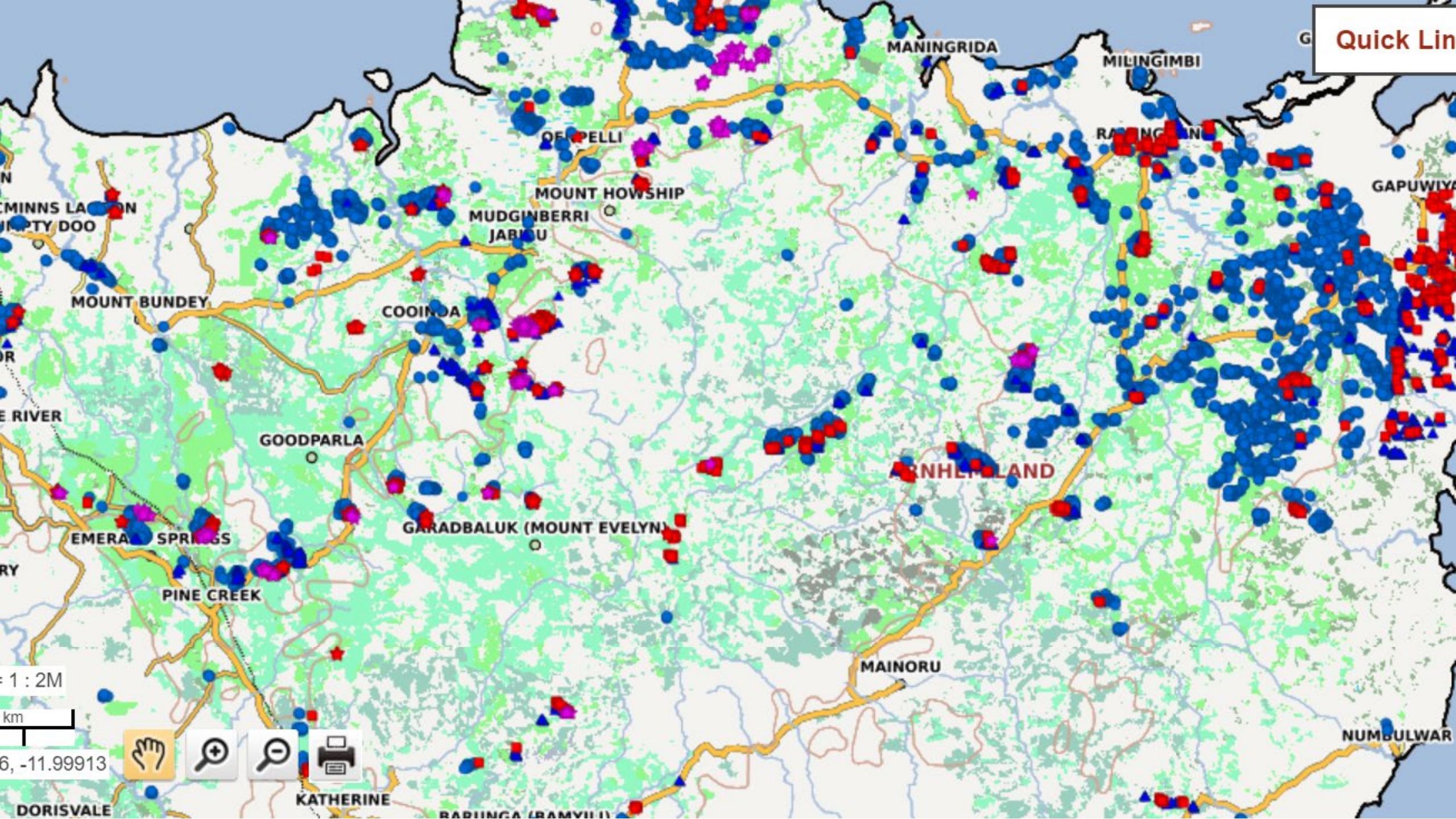
km

1, -11.75723



ALYAN

ANGI



1 : 2M

km

6, -11.99913



DORISVALE



KATHERINE

BARUNGA (RAMYILI)

NUMBULWAR



The 1986 Annaburroo experimental grassland fires: data

James S. Gould^A, Miguel G. Cruz^A  and Andrew L. Sullivan^{A,*} 

For full list of author affiliations and declarations see end of paper

***Correspondence to:**

Andrew L. Sullivan
CSIRO, GPO Box 1700, Canberra, ACT 2601,
Australia
Email: Andrew.Sullivan@csiro.au

ABSTRACT

Background. In 1986, CSIRO conducted a large program of experimental fires in grassland at Annaburroo Station, Northern Territory, Australia, with the objective of quantifying the effect of fuel condition (load and height) on fire behaviour. **Aims.** This paper provides the data collected during this program, representing a unique set of observations and measurements of large, free-burning experimental fires conducted in a multi-factor experimental design. **Methods.** Data are collated by experimental burn plot, providing detailed measurements of weather (wind speed, air temperature, relative humidity), fuel state (load, height, moisture content, curing) and fire behaviour (rate of spread, flame depth, flame height, head fire width), as well as processed information (e.g. steady-state rate of spread). **Data availability.** The data are made available for free download on the CSIRO Data Access Portal (<https://data.csiro.au/collection/csiro:58746>) and include detailed metadata descriptions of the data and their structure, also provided in this article. **Conclusions.** We have made the data available for fire behaviour researchers around the world to use in their research under the Creative Commons Attributions licence. It is hoped they will analyse these data and extract new and innovative insights to help improve our understanding of wildland fires burning in grass fuels.

Keywords: Experimental fires, fire behaviour, fuel state, grassland fire.



Kidman Springs long term fire experiment



Share



Watch on  YouTube

Final report

Wambiana: Grazing strategies and tools to improve profitability and land condition

Prepared by: Chris Chilcott

Department of Primary Industries
and Fisheries, Queensland

Date published: March 2007

ISBN: 9781741914733

PUBLISHED BY

Meat & Livestock Australia Limited

Locked Bag 991

NORTH SYDNEY NSW 2059

**Customising the Grazing Land
Management education
workshop to the Southern Gulf,
Desert Uplands and Channel
country regions in Queensland**

Prepared by: Michael Jeffery

Department of Agriculture and
Food WA

Date published: December 2009

ISBN: 9781741914160

PUBLISHED BY

Meat & Livestock Australia Limited
Locked Bag 991
NORTH SYDNEY NSW 2059

**Customising the
EDGE*network* Grazing Land
Management education
workshop to the Kimberley
region of Western Australia**

Grazing land management EDGE



Townsville: 15 – 17 March 2022

VENUE

Townsville

AFAC Prescribed Burning Master Class – Northern Australia

1. Partnerships with agencies, NGOs and subject matter experts
2. Engagement, coordination, facilitation, extension
3. Opportunities for northern learning and sharing – Indigenous burning, carbon, GLM, aerial ignition, introduced grasses ...

North Australian Fire Managers Network

1. Bring diverse northern fire management stakeholders together
2. Share diverse perspectives and lessons learned – science, traditional knowledge, practitioner experience
3. Promote north Australian fire management issues on the national agenda

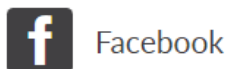


FutureBeef is an ally for the north Australian beef industry, sharing the latest practical tools, scientific insights, and relevant, timely advice.

This helps producers, pastoralists, graziers, livestock owners and landholders to make the most of good and bad times.

If you want to maximise your kilograms of beef produced while maintaining or improving your land condition and animal welfare, sign up to our monthly e-bulletin to be in the know.

[Read more](#) ▶



Facebook



Twitter



YouTube



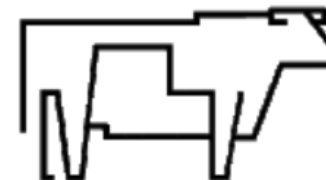
LinkedIn



FutureBeef newsletter

Subscribe to the FutureBeef's monthly newsletter to receive the latest industry news.

[Sign up](#)

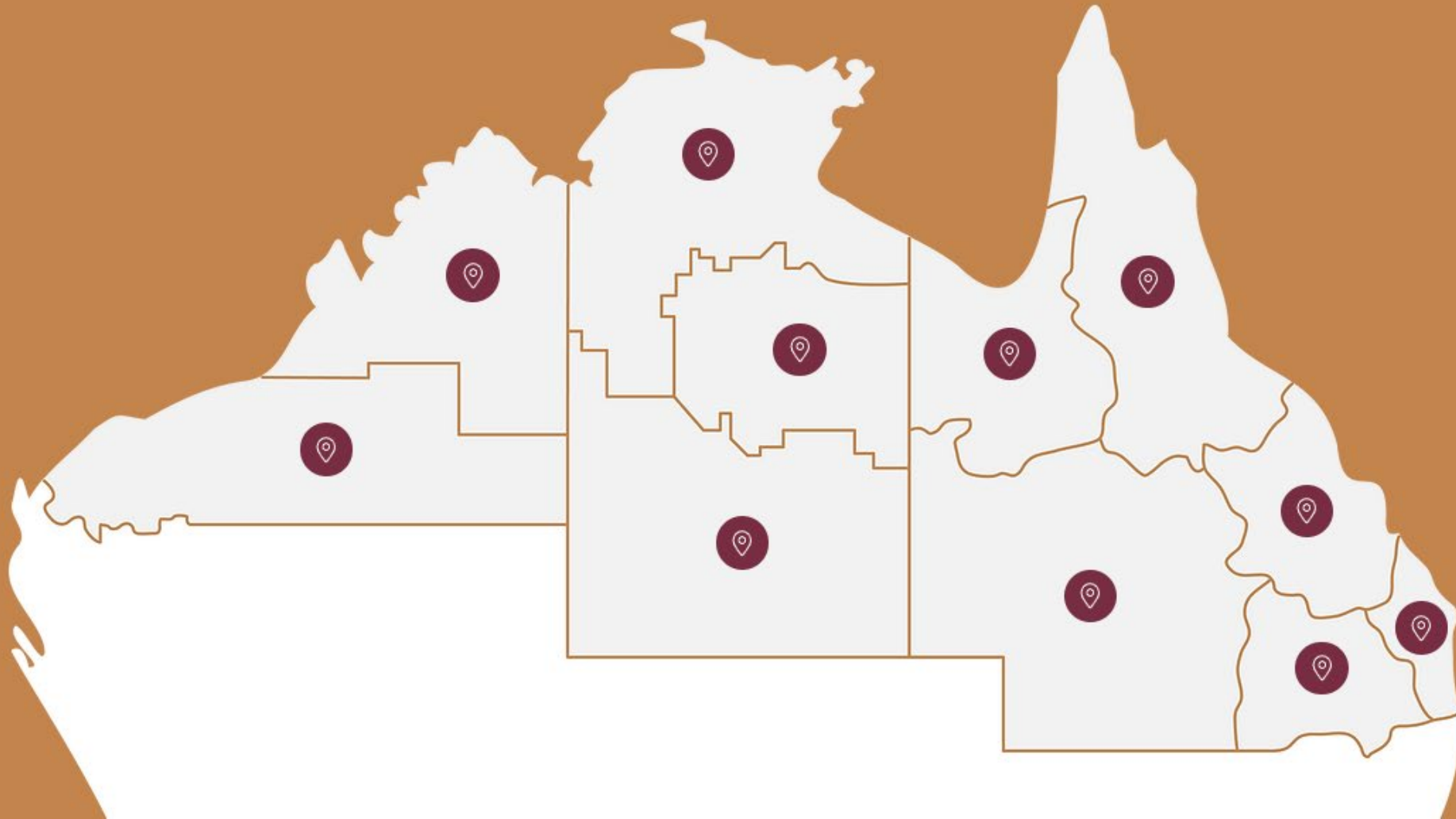


Emergency diseases: Know what to do and when

If you've seen unusual symptoms, or, if you want to know how best to prepare your business, the Emergency Livestock Disease Information eHub is the place to go.

» NABRC REGIONS

Select a region below to find our more or contact your local committee







ICIN Indigenous
Carbon
Industry
Network



OUR
STORY ▾

THE
NETWORK ▾

OUR
EVENTS ▾

RESOURCES
▾

NEWS

CONTACT
US

DONATE



Fire Art

2024 North Australia Savanna

Fire Forum

