



Healthy Land and Water
and the
Queensland Fire and Biodiversity Consortium

Response to:
*The Royal Commission into
National Natural Disaster Arrangements*

April 2020



Disclaimer

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Traditional Owner Acknowledgement

We acknowledge that the place we now live in has been nurtured by Australia's First Peoples for tens of thousands of years. We believe the spiritual, cultural and physical consciousness gained through this custodianship is vital to maintaining the future of our region.

Authorship and Acknowledgements

This document has been compiled and prepared by Dr Samantha Lloyd, Manager of the Queensland Fire and Biodiversity Consortium (a program of Healthy Land and Water), in collaboration with Healthy Land and Water staff and Executive, and the Queensland Fire and Biodiversity Consortium Steering Committee. The author acknowledges and thanks all those involved for their expert contributions. Please cite as:

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Foreword

The Royal Commission into *National Natural Disaster* Arrangements, also known as the *Royal Commission into Bushfires*, was established on 20 February 2020, in response to the extreme bushfire season of 2019-20 resulting in loss of life, property, wildlife and natural assets. The purpose of the Royal Commission is to “*inquire into Australia’s preparedness for, and response to, natural disasters with the intention to draw on what many Australians experienced during the 2019-20 bushfire season*”. <https://naturaldisaster.royalcommission.gov.au/>

The Commission will examine:

- coordination, preparedness for, response to and recovery from disasters,
- improving resilience and adapting to changing climatic conditions,
- mitigating the impact of natural disasters; and
- the legal framework for Commonwealth involvement in responding to national emergencies.

The online submissions process (<https://rcndasubmissions.lawinorder.com.au/>) asks the following **four Key Questions** in relation to the Australian bushfire season 2019-20’:

1. In your experience, what areas of the bushfire emergency response worked well?
2. In your experience, what areas of the bushfire emergency response didn’t work well?
3. In your experience, what needs to change to improve arrangements for preparation, mitigation, response and recovery coordination for national natural disaster arrangements in Australia?
4. Is there anything else you would like to tell the Royal Commission?

In addition to these questions, the Royal Commission Committee has provided **Terms of Reference**, which outline the scope of the inquiry and the issues the Royal Commission will consider. The **Terms of Reference** are included in the **Letters Patent**, the official document used to establish the Royal Commission, appoint the Commissioners and set out how the Royal Commission will operate (Attachment 1).

Healthy Land and Water

For almost two decades, Healthy Land and Water has applied its evidence-based knowledge, innovative tools and community networks to achieve vital improvements for the landscapes and waterways of South East Queensland (SEQ).

Healthy Land and Water has extensive experience in delivering a broad range of projects aimed at improving and protecting the natural assets of the region and delivering economic and social benefits to the community. Healthy Land and Water is the regional delivery body for the Federal Governments’ National Regional Land Partnerships program. Healthy Land and Water delivers several federal government funded initiatives to support and manage threats to federally listed threatened species and ecological communities, refer below to Figure 1. Key outcomes of Healthy Land and Water.

Healthy Land and Water’s collaborative approach has been studied by researchers and policy-makers around the world – including government representatives from China, the Philippines and Indonesia. Healthy Land and Water’s work has attracted formal commendations from the Wentworth Group of Concerned Scientists and the Australian House of Representatives.



Healthy Land and Water's purpose is to provide solutions through valuable collaboration with others to protect and improve the natural assets of SEQ.

Healthy Land and Water has been working in close partnership with the Queensland (Qld) Fire and Biodiversity Consortium since 2010, supporting the Qld Fire and Biodiversity Consortium to deliver programs that provide the stakeholders and community with information on best-practice recommendations for fire management and fire ecology. Some examples of this collaborative approach are the *2020 Recovery Action Plan, South East Queensland: Ecological Recovery of Bushfire Impacted Communities* (Attachment 2) and the Quandamooka Yoolooburabee Aboriginal Corporation Township Fire Management Plan for Minjerribah (North Stradbroke Island) (Attachment 3).

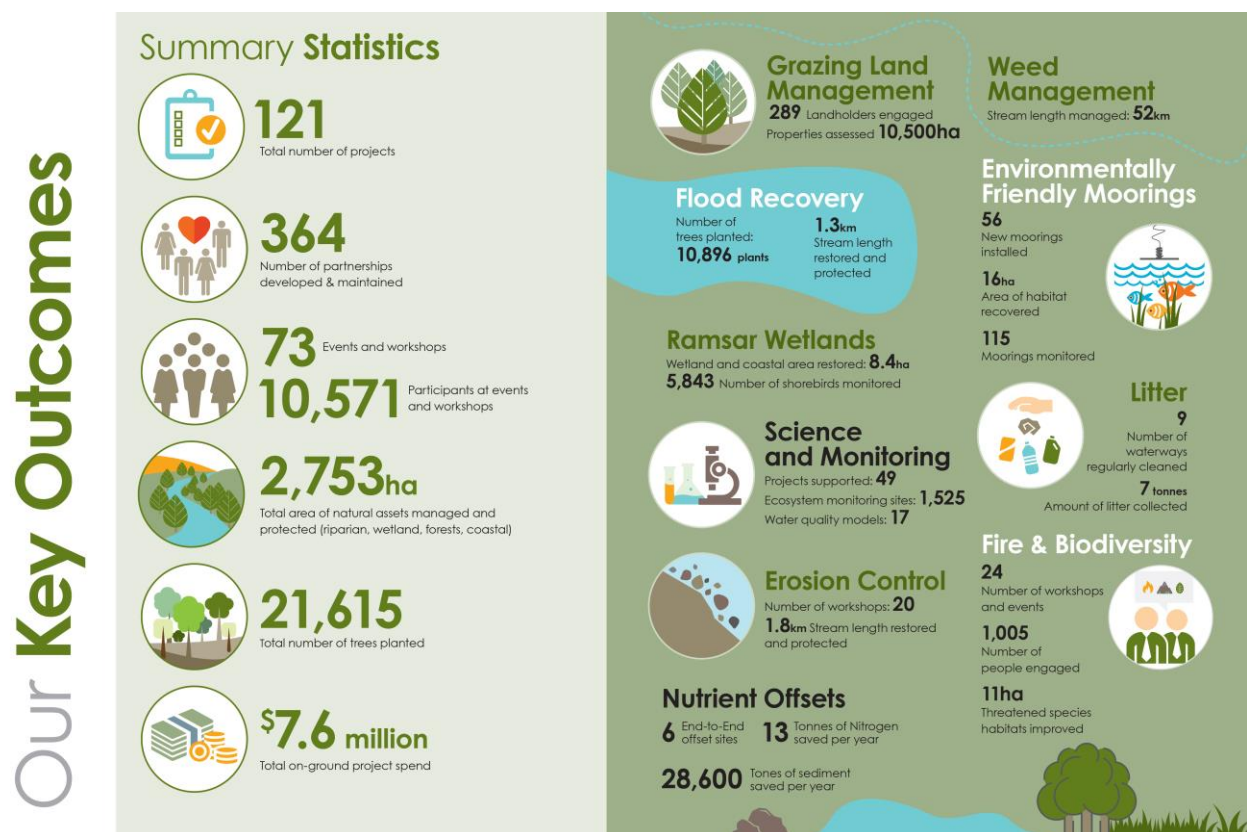


Figure 1: Key outcomes of Healthy Land and Water (*Statistics from July 2018 to June 2019).

Queensland Fire and Biodiversity Consortium

Established in 1998, the Qld Fire and Biodiversity Consortium, is a network of land managers and stakeholders committed to improving fire and biodiversity management outcomes, supporting and disseminating fire ecology research, facilitating partnerships between key stakeholders and building the capacity of land managers and private land owners to address issues of fire management and biodiversity in the SEQ region and more broadly across Queensland.

The Qld Fire and Biodiversity Consortium is administered and coordinated by Healthy Land and Water and guided by a Steering Committee, independently chaired by Brisbane City Council and comprising representatives from partner organisations. One of the key strengths of the Qld Fire and Biodiversity



Consortium is the number and diversity of partners. A current total of 18 partner organisations contribute financially and in-kind, reflecting the extensive support for the Qld Fire and Biodiversity Consortium. Partner organisations comprise representatives of local and state governments, state land management agencies and services and utility service providers (Attachment 4).

Formerly operating exclusively in South East Queensland (as the South East Queensland Fire and Biodiversity Consortium) and after 20 years of operation, the program recently broadened its delivery to become the Qld Fire and Biodiversity Consortium. The high-quality products and services generated by the program are keenly sought after by stakeholders and community across the state and provide opportunity for other stakeholders to collaborate and engage on improved fire management outcomes. NB: Some of the products listed as Attachments, and on the website, will be labelled as South East Qld Fire and Biodiversity Consortium, rather than Qld Fire and Biodiversity Consortium, depending on time of production.

The Qld Fire and Biodiversity Consortium offers a range of resources and services including (but not limited to) community fire information events, fire management planning workshops (Attachment 5), training, resources, research support and an annual Fire Science Forum. For more information, refer to Attachments 4 - 7, and visit: www.fireandbiodiversity.org.au.



1.0 Key Recommendation Summary

Healthy Land and Water and the Qld Fire and Biodiversity Consortium recognise that fire has long been a part of the Australian landscape – an essential process for ecological health and species survival in fire-prone vegetation. In particular, Traditional Owners cultural burning practices are acknowledged as having played a critical role in structuring Australia's ecology over many tens of thousands of years. However, uncontrolled fires pose significant risk to Traditional Owner cultural heritage values and the lives and wellbeing of many Australians, both in the bush and the city. This duality provides for a complex risk environment and one that is a challenge to manage, not only in terms of mitigating bushfire risk, but also in facilitating engagement and comprehension from community and stakeholders.

The following comprises a summary of the key recommendations provided in response to the Royal Commission into *National Natural Disaster* Arrangements. Recommendations are provided in alphabetical order, *not* in order of significance or value. Each recommendation is expanded upon in Section 2 and linked to the relevant fire management measure (Question 3) and Term/s of Reference in Table 1.

1. **Applied fire science research:** Comprehensive resourcing of, and support for applied fire research, including fire management, fire ecology and fire climatology is vital to further improving fire management and risk mitigation efforts. This submission supports:
 - a. increased resourcing for CSIRO, the Bushfire and Natural Hazards CRC, the university sector and other collaborative fire research programs, with an increased focus on the northern states and territories and the involvement of Traditional Owners; and
 - b. the provision of funding that supports the development of cross tenure decision support tools that better allow land managers to plan and implement fire management planning and mitigation activities.
2. **Collaborative and long-term engagement model:** This submission recommends that post-fire funding resources include opportunities for well-established capacity building programs, like the Qld Fire and Biodiversity Consortium, to engage with stakeholders and community to support recovery efforts, revise planning frameworks and build resilience. Long-term collaborative programs, such as the Qld Fire and Biodiversity Consortium and the NSW Hotspots Project, provide respected and targeted capacity building services to landholders and stakeholders, facilitating partnerships and collaborations that build resilience and support active engagement in fire planning to reduce risk and improve fire management and biodiversity outcomes. The Qld Fire and Biodiversity Consortium provides an essential brokering role – providing education and training outcomes, and facilitating relationships between agencies and freehold landholders/managers. For example, Qld Fire and Biodiversity Consortium coordination of the Australian Fire and Emergency Services Authority Council Natural Burning Project Sub-tropics workshops in 2015 successfully attracted more attendees and representative organisations than any other workshop in Australia, including those in NSW and Victoria.
3. **Cross tenure fire management planning:** Significant bushfires, as with other natural disasters, affect landscapes and communities, not arbitrary lines constructed on maps. Land management agencies need to collaborate more with each other *and* with private landholders (including NGOs, Traditional Owners, business, utility providers and individual landholders) to develop tenure blind bushfire preparedness, response and recovery activities. Regional NRM organisations are well placed to



facilitate these aspirations via their well-established networks, which support and facilitate landscape level, tenure-blind planning, essential for resilient and prepared communities. This submission recommends:

- a. comprehensive resourcing of cross-tenure planning processes and programs that are inclusive of private landholders, facilitate collaborative fire planning and build capacity and resilience;
 - b. legislation accommodate, enable and support this approach so that preparedness and recovery activities are not hindered by conflicting legislation or restrictions that inhibit the delivery of outcomes;
 - c. resourcing for coordinated sub-catchment/catchment fire management planning through NRM groups across Australia, who can utilize their already trusted networks, including Traditional Owner entities, emergency services, local government, state agencies and farming/agricultural organisations;
 - d. the construction of, and maintenance of fire trails and fire lines be cross tenure to ensure consideration as part of planned burns and other land management activities for ecological, cultural heritage, and community safety benefits; and
 - e. power transmission lines be recognised as critical infrastructure in state and local government planning instruments in order to be formally considered as part of planned burns and other land management activities for ecological, cultural heritage, electrical and community safety benefits.
4. **Education and engagement:** This submission recommends providing comprehensive resourcing for well-established engagement programs (such as the Qld Fire and Biodiversity Consortium and Grazing Best Management Practice programs) to increase the awareness and capacity of private landholders and public land managers in the role of fire in the Australian bush and the use of fire as a land management tool. Private landholders, public land managers and other stakeholders require tools and support to enable them to balance fire safety, property productivity and land management with the conservation of bushland plants and animals. In particular, private landholders are often lacking in the skills, resources and confidence to plan and implement active fire management, especially planned burning. As evidenced in a recent Qld Fire and Biodiversity Consortium landholder survey, which found that “a lack of relevant or adequate knowledge” was the most common reason for *not* undertaking planned burning (63% respondents, June 2019).
5. **Fuel management:** Bushfire risk is influenced by the fuel availability, which in turn influences bushfire behaviour and the severity of bushfires. Having a greater understanding of fuel types throughout the environment can enhance planning (i.e. fuel modelling), response capacity and assist in the application of planned burning. However, fuel management and hazard reduction measures are not just limited to burning. There are other activities that are part of the risk reduction suite, including fire trail construction and maintenance, mechanical and chemical fuel reduction (e.g. grazing and herbicide treatment for weeds) and community engagement. This submission supports:
- a. investment in further research and investigation projects that improve the assessment and mapping of fuel load, including the interpretation and provision of fuel load data for improved fire management planning and the treatment of weeds to reduce fuel load in high risk areas; and



- b. greater resourcing to eliminate or reduce the volume and extent of invasive weeds within the natural environment, specifically targeting woody weeds, canopy transforming introduced vines and invasive grasses growing on the forest edge, within creeks and along road verges.
- 6. **Indigenous fire management:** Traditional Owners have undertaken dynamic and sophisticated fire management practices for tens of thousands of years, these practices served to conserve and support the productive biodiversity of flora, fauna and fungi in fire-prone ecosystems, whilst maintaining the health of the broader landscape. However, for cultural burning to be reintroduced and appropriately led by Traditional Owners, there needs to be greater resourcing of these approaches including promoting the beneficial outcomes for highly constrained environments (i.e. high-risk areas). This submission recommends comprehensive resourcing for Traditional Owners and Indigenous organisations to lead the implementation of cultural fire management on Country, including Indigenous Protected Areas (IPA) and landscapes with recognised Native Title. Specifically, this submission recommends:
 - a. empowering and upskilling Traditional Owners in the training necessary to undertake cultural fire management;
 - b. the development of indigenous led Township Fire Strategy Planning (Attachment 3);
 - c. the implementation of traditional landscape restoration;
 - d. the inclusion of cultural heritage considerations and cultural burning practices in burning permit allowances, planning frameworks and policy; and
 - e. communication and liaison with Traditional Owners with regards to advice on the protection of culturally sensitive sites or assets during a wildfire response.
- 7. **National reporting framework and fire history data resource:** This submission recommends resourcing a national reporting framework, that in turn underpins the development of a national, cross agency data sharing mapping resource. Improved data collation, sharing and coordination of fire mapping and post-fire recovery information is critical to understanding landscape scale risk and planning risk mitigation strategies. Data sharing arrangements are vital but often laborious to set up, difficult to maintain, and may exclude private landholders, Traditional Owner groups and NGOs. A national framework could build upon existing tools, such as the Northern Australia Fire Information website, but operate at a national level. To best provide continuity of data, private landholders would be supported to upload information, under a review process or template provision.
- 8. **Planning decisions and permits:** The purpose of systematic planning, development constraints and building codes in bushfire-prone areas is to reduce risk to life and property (COAG, 2004). This submission recommends:
 - a. greater cooperation between levels of government in the facilitation and implementation of fire management planning including consistency in legislation to avoid confusion, conflicts, and barriers to implementation and adoption of best practice;
 - b. comprehensive resourcing for state-wide systematic updating of natural hazard mapping to reflect current data sets and ensure consistency;
 - c. more comprehensive and robust requirements and conditions governing development and building in fire-prone landscapes;



- d. support, in the form of resources and consistent advice, for property owners in bushfire prone areas to retrofit their structures to improve resilience;
 - e. greater flexibility around the implementation of planned burns issued with a permit, including consideration of timing with a changing climate and options for ecological and cultural burning;
 - f. review of the FFDI for Queensland; and
 - g. resourcing a cross-tenure approach that supports roadside burning for private property owners (refer to the Coordinated Agency Model for Roadside Burning, Section 2.3).
9. **Planned burning:** Planned or prescribed burning is one of the most important fire, landscape and risk management tools available. However, in recent times there has been a reduction (or reluctance) in the capacity of private landholders to manage fire risk on their properties and at the same time, increased pressure on public land managers to better manage risk to their land, in line with increased community and government expectations and aspirations. To successfully navigate a way through this complex environment, cross-tenure fire management planning must be embraced (see Section 2.3). This submission recommends:
- a. resourcing a review of recommended fire regimes for each state and territory;
 - b. resourcing established programs (such as the QFBC and NSW Hotspots project) to engage with stakeholders and community to improve understanding and inclusion of recommended fire regimes into planned burning;
 - c. greater resourcing and support be made available to assist freehold landholders to undertake fire management planning and implement planned burns on their property;
 - d. provision of advice on risk and risk mitigation, including clarification regarding legislative compliance to private landholders; and
 - e. resourcing collaborative programs between Traditional Owners, land managers and stakeholders to develop recommended fire regimes sensitive to cultural burning priorities and fauna requirements (Section 2.6).
10. **Resourcing:** This submission recommends greater resourcing is provided to public land managers, so they can not only manage their own estates more effectively, but so they also have the capacity to collaborate with neighbours on cross-tenure fire management, including private land holders. Despite the best efforts of relevant staff on the ground, the systematic lack of resources can hinder the implementation of fire management plans, at both a local government and state level. This includes the maintenance of infrastructure (including fire trails and fire mitigation zones) and undertaking planned burning over large tracts of land, especially when the seasonal window of optimal conditions for planned burns are short and becoming more variable and limited with climate change. Recent events have (again) focused legitimate community concerns on the need for more planned and proactive hazard reduction activities across the landscape, particularly on crown lands. In many areas of Queensland, including SEQ, there has been a substantial expansion of crown land and corresponding tenure management changes to state forests and forest reserves over recent years. Without adequate resourcing for fire management and other land management activities, there are and will continue to be increased risks in and around these protected areas.
11. **Smart Tools:** This submission recommends resourcing the development of smart mapping, assessment and decision support tools for the collection and assessment of high-quality data to improve data



synthesis and interpretation for fire management planning and post fire recovery and reporting requirements. Effective bushfire risk mitigation requires detailed knowledge of the key inputs and landscape influences that underpin and elevate bushfire hazard. This submission articulates several smart tools, including decision support tool development (Section 2.1), fuel load verification and modelling (Section 2.5) and Healthy Land and Water's Rapid Landscape Assessment Tool (Section 2.11). Rapid ecological and landscape mapping assessments can be utilised to evaluate natural assets and the built environment potentially affected by bushfires. The Healthy Land and Water Rapid Landscape Assessment Tool can be used to review actual and potential fire impacts to natural assets, greatly facilitating the efficiency of a recovery response post fire and better informing resilience planning to mitigate future risk.

12. Threatened species and high value natural areas: The recent bushfire season led to the loss of an unprecedented number of animals and plants, many already highly threatened species. The Queensland Government estimates 343 threatened species, including 165 listed nationally, known to occur in southern Queensland had habitat impacted by recent fires (TSO 2020). Healthy Land and Water analysis identified impact on three nationally listed endangered ecological communities as well as many areas of State-listed threatened ecosystems (Attachment 2). Approximately 50% of the Gondwana Rainforests of Australia World Heritage Area (the Gondwana Rainforests WHA) was burnt, with extensive and severe impact on Queensland sections, and impacts on the Moreton Bay Ramsar Site. This submission recommends:

- a. responsible government agencies, Traditional Owner entities, and appropriate NGOs are resourced to collect baseline information relevant to threatened species in fire prone areas;
- b. regional NRM organisations and collaborative fire management networks, such as Queensland Fire and Biodiversity Consortium, are resourced to improve landholder/manager management of threatened species and their habitats and high value landscapes;
- c. resourcing threatened species and ecological community management via an integrated management framework, which includes consideration of fire, cultural heritage and broader ecological values; and
- d. that the Commonwealth Government lead a coordinated response to the impact of recent wildfires on World Heritage Areas.

Table 1: Key recommendations, as aligned with the relevant Question 3 bushfire management measure (i.e. preparation, mitigation, response and recovery) and the relevant Term/s of Reference (as detailed in the *Commonwealth Letters Patent, 20 February 2020*) and linked to relevant Attachments.

Key Recommendation	Question 3 Bushfire Management Measure				Term/s of Reference	Attachment
	Preparation	Mitigation	Response	Recovery		
1. Applied Fire Science Research	*	*	*	*	b, f ii	-
2. Collaborative and long-term engagement model	*	*	*	*	a	4 and 5
3. Cross tenure fire management planning	*	*			a	3 and 7
4. Education and engagement	*	*			a, b, f	5
5. Fuel management	*	*			f i	-
6. Indigenous fire management	*	*	*	*	g	3
7. National reporting framework and fire history data resource	*	*	*	*	b	-
8. Planning decisions and permits	*	*			b, f iii	-
9. Planned Burning	*	*				5 and 6
10. Resourcing	*	*	*	*	a, f i	-
11. Smart Tools	*	*	*	*	b	2
12. Threatened species habitat management	*	*		*	f ii	2



2.0 Key Recommendation Responses

2.1 Applied Fire Science Research

Comprehensive resourcing of, and support for applied fire research, including fire management, fire ecology and fire climatology is vital to further improving fire management and risk mitigation efforts. This submission supports:

- a) increased resourcing for CSIRO, the Bushfire and Natural Hazards CRC, the university sector and other collaborative fire research programs, with an increased focus on the northern states and territories and the involvement of Traditional Owners; and
- b) the provision of funding that supports the development of cross tenure decision support tools that better allow land managers to plan and implement fire management planning and mitigation activities.

Decision Support Tools for Fire Management in Mixed-use Subtropical Landscapes

Healthy Land and Water/Qld Fire and Biodiversity Consortium, Brisbane City Council, City of Gold Coast, Queensland Parks and Wildlife Service (QPWS) and Queensland Fire and Emergency Services (QFES) have partnered with the University of Queensland, to submit a Linkage Grant application to the Australian Research Council, to develop a quantitative fire management tool for SEQ. The situation in SEQ is particularly complex, as it comprises a lattice of towns and suburbs, intermixed with increasingly fire-prone vegetation and economically valuable agricultural areas. There is an urgent need for decision support tools to predict the outcomes of different fire management strategies given the uncertainties faced by people and natural ecosystems.

The aim of this project is to develop a decision support tool for fire management agencies that is flexible enough for use across different agencies, with different management objectives (e.g. asset protection vs biodiversity conservation; cost- vs time-restricted). The project team of multi-agency stakeholders and researchers – leveraging broad-reaching expertise in fire modelling, decision theory, ecology and fire management – will create a quantitative fire management tool for SEQ that is robust to uncertainties arising from the stochastic nature of bushfire and climate change. If successfully funded, this new alliance of researchers and practitioners will go on to provide training and access to the decision support tool to all partner organisations of the Qld Fire and Biodiversity Consortium.

2.2 Collaborative and Long-term Engagement Model

This submission recommends that post-fire funding resources include opportunities for well-established capacity building programs, like the Qld Fire and Biodiversity Consortium, to engage with stakeholders and community to support recovery efforts, revise planning frameworks and build resilience. The Qld Fire and Biodiversity Consortium provides an essential brokering role, providing education, training and facilitating outcomes and relationships between agencies and freehold landholders/managers. For example, Qld Fire and Biodiversity Consortium coordination of the Australian Fire and Emergency Services Authority Council (AFAC) Natural Burning Project Sub-tropics workshops in 2015 successfully attracted more attendees and representative organisations than any other workshop in Australia, including those in NSW and Victoria. Long-term collaborative programs, such as the Qld Fire and Biodiversity Consortium and the NSW Hotspots Project, provide respected and targeted capacity building services to landholders and stakeholders, facilitating partnerships and collaborations that build resilience and support active engagement in fire planning to reduce risk and improve fire management outcomes.



Queensland Fire and Biodiversity Consortium Model

A flagship program of Healthy Land and Water, the Qld Fire and Biodiversity Consortium, offers a long-term collaborative engagement model that could be expanded and repeated in other regions. One of the key strengths of the Qld Fire and Biodiversity Consortium collaborative model, is the number and diversity of partners. Currently, a total of 18 organisations contribute financially and in-kind to the program, reflecting the extensive support for the Qld Fire and Biodiversity Consortium. Partner organisations comprise representatives of local and state governments, state land management agencies and services and utility service providers (Attachment 4). The high-quality products and services generated by the program are keenly sought after by stakeholders and community across the state and provide opportunity for other stakeholders to collaborate and engage on improved fire management outcomes. Qld Fire and Biodiversity Consortium offer a range of engagement resources and services including (but not limited to) community fire information events, fire management planning workshops (Attachment 5), training, resources, research support and an annual Fire Science Forum.

Over the past 20 years, the Qld Fire and Biodiversity Consortium has successfully built a highly successful and respected program, offering a diverse range of targeted services and resources. The Qld Fire and Biodiversity Consortium are recognised regionally and nationally as a lead player across the bushfire sector, successfully coordinating a national conference (Bushfire 2016) and with the Qld Fire and Biodiversity Consortium Manager recently appointed as a member of the Practitioner Engagement Working Group of the Ecological Society of Australia (ESA). The Qld Fire and Biodiversity Consortium's eNews service is nationally recognised as key information source, by organisations, including the AFAC and the Bushfire and Natural Hazards CRC. The Qld Fire and Biodiversity Consortium was recognized in the recent Inspector General Emergency Management *2018 Queensland Bushfires Review*, as good practice in improved education and advice around bushfire risk and mitigations strategies. (IGEM, 2019 *The 2018 Queensland Bushfires Review – A climate for good neighbours* Page 79). <https://www.igem.qld.gov.au/2018-queensland-bushfires-review>

2.3 Cross Tenure Fire Management Planning

Significant bushfires, as with other natural disasters, affect landscapes and communities, not arbitrary lines constructed on maps. Improved coordination and cooperative planning across all tenures at the appropriate landscape level, is required to ensure improved preparedness, response, resilience and recovery. Land management agencies need to collaborate more with each other *and* with private landholders (including NGOs, Traditional Owners, business, utility providers and individual landholders) to develop tenure blind bushfire preparedness, response and recovery activities. This submission recommends

- a) comprehensive resourcing of cross-tenure planning processes and programs that are inclusive of private landholders, facilitate collaborative fire planning and build capacity and resilience;
- b) legislation accommodate, enable and support this approach so that preparedness and recovery activities are not hindered by conflicting legislation or restrictions that inhibit the delivery of outcomes;
- c) resourcing for coordinated sub-catchment fire management planning through NRM groups across Australia, who can utilize their already trusted networks, including emergency services, local government, state agencies and farming/agricultural organisations;
- d) the construction of, and maintenance of fire trails and fire lines be cross tenure to ensure consideration as part of planned burns and other land management activities for ecological, and community safety benefits; and



- e) power transmission lines be recognised as critical infrastructure in state and local government planning instruments in order to be formally considered as part of planned burns and other land management activities for ecological, electrical and community safety benefits.

Regional NRM organisations are well placed to facilitate such processes via programs like the Qld Fire and Biodiversity Consortium and their well-established networks, which support and facilitate tenure-blind, landscape planning, essential for resilient and prepared communities. Successful examples facilitated by Healthy Land and Water and the Qld Fire and Biodiversity Consortium include sub-catchment fire management planning and the Coordinated Agency Model for Roadside Burning (see below).

Healthy Land and Water also supports cross tenure fire management planning led by Traditional Owner groups, such as the highly successful Township Fire Management Strategy for Minjerribah (North Stradbroke Island), led and developed by Quandamooka Yoolooburrabee Aboriginal Corporation, in partnership with Healthy Land and Water and the Queensland Government (Section 2.6; Attachment 3).

Sub-catchment Fire Management Planning

Sub-catchment Fire Management planning assists landholders across a geographically bounded fire area to create a coordinated fire management plan that considers fire safety, primary production, the environment and cultural values. This process identifies the capacity of private landholders to carry out mitigation activities on private land (with considerations for adjoining or nearby public management land) and planning for future events. Landholders discuss and identify preferences for fire management, map existing fire infrastructure, identify gaps, plan and construct necessary fire infrastructure, and prioritise and implement planned burns. There are several examples across SEQ where this process has been successfully implemented, including Cunningham's Gap. This submission recommends resourcing for coordinated sub-catchment fire management planning through NRM groups across Australia, who can utilize their already trusted networks, including emergency services, local government, state agencies and farming/agricultural organisations.

Coordinated Agency Model for Roadside Burning

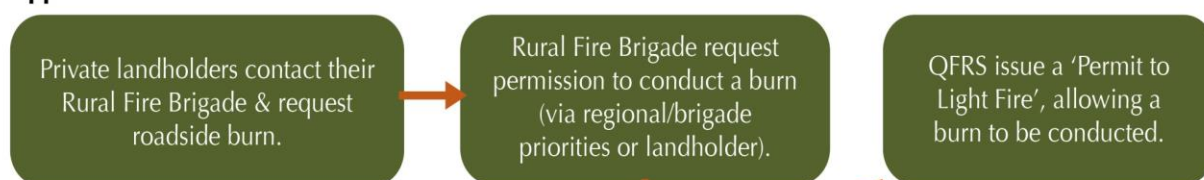
In 2012, in response to growing community concern around the lack of a formal process for private landholders to undertake planned roadside burning, the Qld Fire and Biodiversity Consortium was invited to coordinate the SEQ Roadside Burning Project. The aims were to engage with land managers and stakeholders, to identify key issues, investigate existing procedures and encourage adoption of any relevant processes. Qld Fire and Biodiversity Consortium identified that the southwest region was already implementing a successful model for roadside burning that comprised coordination from key agencies and engagement with private landholders. This is now referred to as the Coordinated Agency Model and comprises key officers from the QFES, QPWS, the Department of Transport and Main Roads and Toowoomba Regional Council (Figure 2).

As part of the Coordinated Agency Model, Toowoomba Regional Council issue the QFES with an annual permit to "*Undertake works within the road reserve*", allowing the relevant Rural Fire Brigade to conduct a roadside burn once a Fire Management Plan has been written and '*Permit to Light Fire*' has been issued. Importantly, the Coordinated Agency Model allows private landholders to approach their local Rural Fire Brigade and make a request for a hazard reduction burn to be conducted on the roadside corridor adjoining their property. In any one year there may be multiple areas identified as being a priority for roadside burns, however, resourcing, weather and geography will all influence what sites receive a roadside burn. The clear advantage of this collaborative approach includes the development of an efficient and relatively simple process for the assessment of requests to conduct roadside burns, where otherwise no such process existed, the

inclusion of private landholders and consideration of all relevant risks (including traffic, environmental values and smoke).

Coordinated Agency Model Flow Chart: Summary of Process

Application



Assessment



Enabling Process

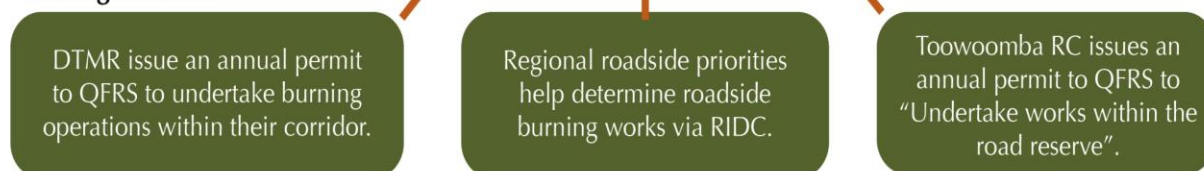


Figure 2: Flow chart illustrating the Coordinated Agency Model for roadside burning.

Fire Trails and Fuel Mitigation Zones

Fire trails and fuel mitigation zone are critical tools to both reduce risk and manage fires. Essential to their effectiveness is their strategic location in the landscape, particularly in areas with multiple small properties, which are often found in highly populated localities with substantial infrastructure. This submission recommends that the construction of, and maintenance of fire trails and fire lines be cross tenure to ensure consideration as part of planned burns and other land management activities for ecological, and community safety benefits.

Transmission and Powerline Easements

Queensland's high voltage electricity transmission network is owned, developed, operated and maintained by Powerlink Queensland, a State Government owned Corporation and long-term partner of the Qld Fire and Biodiversity Consortium. Powerlink's network extends 1,700 km north of Cairns to the New South Wales border, comprising more than 15,000 km circuit of transmission lines. In addition to controlling activities near a transmission line to ensure public safety and the security of electricity supply, powerline easements can perform a strategic fire mitigation function in the landscape to the broader benefit of the community and the



environment. As articulated in the Qld Fire and Biodiversity Consortium and Powerlink joint publication: *Powerline Easements, Fire and Biodiversity Supplement* (Attachment 7) <http://www.fireandbiodiversity.org.au/publications.html>).

Two percent (1,100 ha) of Powerlink managed land has been identified as strategic and critical from a fire risk management perspective (Table 2.). These areas and surrounds should be targeted to reduce both fuel loads and the likelihood of fire induced electrical events, which can have power quality, electricity market and community safety impacts. The remainder of land around transmission lines should be managed in a manner compatible with the surrounding land use, while maintaining land and transmission assets appropriately to mitigate the impacts of bushfires. Management of this essential asset and strategically valuable land requires a cross-tenure, collaborative approach – as evidenced by Powerlink's participation in the Qld Fire and Biodiversity Consortium.

This submission recommends that power transmission lines be recognised as critical infrastructure in state and local government planning instruments in order to be formally considered as part of planned burns and other land management activities for ecological, electrical and community safety benefits.

Table 2. Critical areas of Powerlink Transmission network from a fire risk perspective.

Benefit from bushfire mitigation works	Location of Powerlink Infrastructure in Qld	Area (ha)
Power quality	Gladstone feeders - Mount Maurice State Forest	200
Power quality	Gold Coast feeders - Wongawallan	130
Market benefits	Calvale-Halys - Allies Creek State Forest	240
Market benefits	QNI - White Stone State Forest	280
Electrical safety (from cane fires)	Burdekin Cane Growing area	250

2.4 Education and Engagement

Private landholders, public land managers and other stakeholders require tools and support to enable them to balance fire safety, property productivity and land management with the conservation of bushland plants and animals. In particular, private landholders are often lacking in the skills, resources and confidence to plan and implement active fire management, especially planned burning (as evidenced in a recent Qld Fire and Biodiversity Consortium landholder survey, see below). This submission recommends providing comprehensive resourcing for well-established engagement programs (such as the Qld Fire and Biodiversity Consortium Fire Management Planning workshop series and Grazing Best Management Practice) to increase the awareness and capacity of private landholders and public land managers in the role of fire in the Australian bush and appropriate use of fire as a land management tool.

Qld Fire and Biodiversity Consortium Fire Management Planning Workshops

Planned burning is a tool that landholders can use to reduce bushfire risk, improve property resilience and ecosystem health. Landholder understanding of fire in the Australian landscape and the use of fire as a land management tool is essential for effective on-ground implementation and bushfire risk mitigation. The Qld Fire and Biodiversity Consortium has been delivering Fire Management Planning Workshops across south east Queensland for over 20 years. Workshops comprise an introductory Fire Information Night, followed by a one-



day Fire Management Planning Workshop (one to two weeks later). The workshop series aims to educate and engage participants in best practice fire management planning, including the opportunity to develop a Fire Management Plan. Workshops are coordinated by the Qld Fire and Biodiversity Consortium and delivered in partnership with key stakeholders, including QFES, local government, QPWS, officers from other relevant departments (e.g. Transport and Main Roads) and stakeholders (e.g. utility providers).

Fire Information Nights are an introductory community engagement event, held in partnership with the host local government and a Rural Fire Brigade. The nights comprise presentations from the Qld Fire and Biodiversity Consortium and key stakeholders and the purpose of the event is to reach as many community members as possible, introduce concepts relevant to the upcoming workshop and promote the upcoming workshop. Workshops are designed to build skills and resilience in private landholders and facilitate a balance between risk mitigation, property values and ecosystem health. Workshop topics include, the role of fire in the landscape, recommended fire regimes, plant and animal responses to fire, fire and soil erosion, fire trails and mitigation zones, fire preparedness and mapping.

Workshops utilize the newly revised Qld Fire and Biodiversity Consortium "*Property Fire Management Planning Kit – Part A User Manual*" (Attachment 5) and "*Part B Workbook*" to develop a property fire management plan comprising a series of maps (e.g. property map, vegetation map) and a fire management action plan. These plans build landholder capacity to balance property priorities (i.e. pasture, water infrastructure), fire safety, weed management and biodiversity. For example, between January and June 2019, the Qld Fire and Biodiversity Consortium facilitated the development of 48 property Fire Management Plans covering a total of 927 hectares and delivered five Fire Management Information Nights to 161 people.

Surveys of workshop attendees (January – June 2019) revealed the most common reasons preventing attendees from conducting fire management actions on their property were a lack of relevant or adequate knowledge (62.5%) and a lack of relevant or adequate skills (41.7%). Results also found that pre the workshop, only 14.8% of attendees reported having "good" general knowledge of fire management, with no one reporting "very good". Post the workshops, 48.4% of people reported having a "good" to "very good" general knowledge of fire management.

Grazing Best Practice Management in SEQ

Grazing is the dominant land use in SEQ (over 65% of the area of SEQ), making a significant contribution to the region's agricultural production. This extensive area also maintains a range of essential ecosystem services for the region including supporting significant native vegetation and protecting waterways from erosion and sediment and nutrient runoff. It is essential that these areas are well managed, including via appropriate fire management, to ensure pasture health for grazing and the maintenance of biodiversity values and good water quality in waterways, including principal drinking water catchments and downstream to the internationally recognised Ramsar Wetland of Moreton Bay. In fact, the SEQ drinking water supply catchments are largely (~95%) in private ownership. There is therefore a real risk of the impact of fire on the regions drinking water supply (if private land is not managed/maintained)

Over the last fifteen years, Healthy Land and Water have worked with the Australian Government, Queensland Department of Agriculture and Fisheries, and industry partners, to successfully deliver grazing land management programs including Grazing BMP (Best Management Practice), with over 300 landholders in SEQ currently engaged in the program (current arrangements are funded by the Qld Department of Natural Resources Mines and Energy). The program aims to enhance the resilience of grazing businesses and improve soil health, land condition, native vegetation and water quality in the grazed landscapes of SEQ, including consideration of climate change impacts. Fire management is an essential part of property planning



for grazing properties, with implications for pasture management, ecosystem health and soil erosion. Through the delivery of a series of workshops, field days, establishment of demonstration sites and property visits, landholders are engaged and supported to build their knowledge, skills and capacity to implement best management practices on their properties – including the role of fire in landscape health and as a land management tool. The program helps to improve landholders' capacity and confidence to improve grazing and fire management practices, manage erosion risks and develop property plans.

2.5 Fuel Management and Hazard Reduction

Bushfire risk is influenced by the fuel availability, which in turn influences bushfire behaviour and the severity of bushfires. Having a greater understanding of fuel types throughout the environment can enhance planning (i.e. fuel modelling), response capacity and assist in the applications of planned burning. However, fuel management and hazard reduction measures are not just limited to burning. There are other activities that are part of the risk reduction suite, including fire trail construction and maintenance, mechanical and chemical fuel reduction (e.g. grazing and herbicide treatment for weeds) and community engagement. This submission supports:

- a) investment in further research and investigation projects that improve the assessment and mapping of fuel load, including the interpretation and provision of fuel load data for improved fire management planning and the treatment of weeds to reduce fuel load in high risk areas; and
- b) greater resourcing to eliminate or reduce the volume and extent of invasive weeds within the natural environment, specifically targeting woody weeds, canopy transforming introduced vines and invasive grasses growing on the forest edge, within creeks and along road verges.

Fuel Load Verification and Mapping

Government agencies utilise predictive modeling tools to support planning and management decisions relevant to fire and response actions during a bushfire event. For example, the Queensland Department of Natural Resources, Mines and Energy utilise the Redi-portal hazard mapping and QFES use Spark, Phoenix and Sabre predictive models. The effectiveness of these tools to accurately predict the on-ground impact of fire is dependent on the availability of high-quality fuel load data collected in a consistent, systematic format. Fuel data in Queensland is limited both in geographic spread and diversity of key species. The Queensland Fuel Load Verification Project¹ is investigating the fuel load accumulation and retention rates within vegetation associations within SEQ. The aim is to increase the level of confidence in the equations that underpin fuel accumulation and retention rates. Preliminary results were met with high variability and therefore Phase 1 of the project focused collating a robust data set on one Broad Vegetation Group (BVG), representing *Corymbia citriodora* (spotted gum) dominated open forests to woodlands (10b). Results found a trend in fuel accumulation, however, within a broader range of forest types within SEQ, the fuel loads and accumulation rates are likely to differ. Therefore, Phase 2 proposes further research focusing on the fuel load accumulation and retention rates in additional forest types across SEQ: (1) wet eucalypt tall open forest; and (2) moist to dry eucalypt open forests to woodlands with eucalyptus dominated forest on drainage line and alluvial plains.

This project also aims to interrogate fuel structure and composition in these forest types in more detail, in order to enhance fuel profiles in SEQ and ultimately drive the refinement of a fuel hazard guide for SEQ. As per Phase 1, the area of interest will be within the SEQ bioregion, ranging from the Qld/NSW border, west to the Great Dividing Range and as far north as the Bundaberg council region. These vegetation ecosystems are well represented across the bioregion and are associated with areas of higher bushfire risk.

¹ Coordinated by the Ten Rivers Consulting Group



Weed Management

Weed control is a very important fuel management mechanism to reduce plant density within the environment by the systematic removal of invasive species, such as annual grasses that greatly contribute to the fuel load and are extremely good ignition points. This submission supports greater resourcing to eliminate or reduce volume and extent of invasive weeds within the natural environment. Works would specifically target woody weeds, canopy transforming introduced vines and invasive grasses growing on the forest edge, within creeks and along road verges. Weeds in these locations dominate native vegetation resulting in monocultures which increase ignition risk and rate of fire spread. Invasive and destructive vine weeds are a particular issue in riparian zones where they kill deep rooted native vegetation. Intact riparian vegetation free of vine weeds will slow the spread of a bushfire, remain unburnt in a planned burn and provide refuge for fauna.

Control of invasive woody and grass weeds that form dense stands in open woodlands (i.e. lantana, *Lantana camara* or leucaena, *Leucaena leucocephala*) would significantly reduce available fuel loads, particularly during drought periods. The manner in which these weeds grow contributes to wildfire severity. Most weeds tend to colonise and form thick stands at the edge of intact bush land, particularly along roadsides and bush tracks and along waterways where disturbance has occurred. This creates the perfect environment for fire ignition and support the rapid spread of fire. The same could be said for weedy grasses that colonise roadsides. Once dried off, the remaining thatch provides ample fuel (e.g. Johnson grass, *Sorghum halepense* or grader grass, *Themeda quadrivalvis*). Collaborative and systematic management, through strategic planned burns, physical removal, herbicide application or release of available biological control agents should be further resourced to reduce this risk.

2.6 Indigenous Fire Management

Traditional Owners have undertaken dynamic and sophisticated fire management practices for tens of thousands of years, these practices served to conserve and support the productive biodiversity of flora, fauna and fungi in fire-prone ecosystems, whilst maintaining the health of the broader landscape. However, for cultural burning to be reintroduced and appropriately led by Traditional Owners, there needs to be greater resourcing of these approaches including promoting the beneficial outcomes for highly constrained environments (i.e. high-risk areas). This submission recommends comprehensive resourcing for Traditional Owners to lead the implementation of cultural fire management on Country, including IPAs and landscapes where Native Title has been recognized. Specifically:

- a) empowering and up-skilling Traditional Owners to deliver the training necessary to undertake cultural fire management;
- b) the development of Traditional Owner led Township Fire Strategy Planning (Attachment 3);
- c) the implementation of traditional landscape restoration;
- d) the inclusion of cultural heritage considerations and cultural burning practices in burning permit allowances, planning frameworks and policy; and
- e) communication and liaison with Traditional Owners with regards to advice on the protection of culturally sensitive sites or assets during a wildfire response.

Reintroduction of Indigenous Burning Practices

The circumstances and capacity of First Nations family groups across Australia varies greatly, from those that have remained on Country, to those that have been forcibly removed and lost much of their cultural memory



with the passing of their elders. For example, the reintroduction of cultural burning practices by the Kabi Kabi people of the Sunshine Coast, Qld (descended from those who were removed to missions and those who remained hidden in Kanaka camps) has been a process of historical analysis and knowledge gathering of the central role fire played in their landscape management and regaining the confidence to read Country and implement cultural burns accordingly.

For the past five years, Healthy Land and Water has partnered with Kabi Kabi to plan and undertake burns in conjunction with state and local agencies and corporate landholders. Training alongside local Rural Fire Brigades and QFES, together with the development of a fire and seasons calendar, has built knowledge and confidence. However, progress has been hampered by three consecutive years (2017-2019) of late Autumn rains and early Winter winds that closed the burn window. With the changing climate, agility is essential to ensure the most can be made of limited burn opportunities. A concerted effort from all levels of government is required to support groups like Kabi Kabi to fulfil their aspirations, including flexibility with permits and support to undertake burns. Last summer has renewed attention on the value of Indigenous fire practices and provided great impetus to focus resources on making regular cultural fire management at scale on the Sunshine Coast a reality. A lack of resources to enable Traditional Owners and land management agencies to deliver or facilitate these programs is a key barrier to achieving these aspirations and outcomes and the provision of these resources is recommended in this submission.

Sunshine Coast Council have recently been awarded funding for engaging two Traditional Owner groups to contribute to cultural heritage planning and data collection across the Sunshine Coast Council's open space network. This project will seek to establish a partnership and shared learning opportunities that serve to protect and promote First Nation cultural heritage.

Township Fire Management Strategies

Quandamooka Yoolooburrabee Aboriginal Corporation (QYAC), in partnership with Healthy Land and Water and the Qld Government, have developed Township Bushfire Management Strategies for the three northern townships on Minjerribah (North Stradbroke Island) off the coast of SEQ (Attachment 3). Native Title was awarded to Quandamooka people in 2011 over a substantial area of the island, much of which is jointly managed as National Park by QYAC and the QPWS.

The Bushfire Management Strategies complement the fire management strategy prepared for Naree Budjong Djara National Park and focus on the management of fire in areas outside the National Park, that adjoin the three townships of Mooloomba (Point Lookout), Goompi (Dunwich), and Pulan Pulan (Amity Point). The Bushfire Management Strategies apply fire management concepts based on contemporary and traditional knowledge to achieve shared objectives. The reinstatement of planned regular low intensity burning around the townships, led by Quandamooka people is a key outcome. The plans provide risk mitigation, planned burning, hazard reduction and bushfire suppression strategies. The shared objectives of the plans are to:

1. Improve community safety and protect life and property;
2. Realise the aspirations of the Quandamooka people; and
3. Protect and maintain natural and cultural heritage values.

Traditional Landscape Restoration

Traditional landscape restoration is the restoration of native bushland and landscapes to a traditional structure, as would have been managed by Traditional Owners prior to European settlement. Traditional Owners and Indigenous peoples assess the landscape and implement structural works to reinstate a vegetation structure commensurate with Traditional Owner led fire management. This may include such measures as vegetation



thinning, mulching, fire and weed management. Through the Minjerribah Township Fire Management Strategies this is being implemented on a large scale on North Stradbroke Island and has involved the construction and restoration of several hundred kilometres of fire trails alongside the most comprehensive vegetation management and burn regimes being implemented since European settlement of the Island. During the 2018 and 2019 wildfire events, these works were credited by disaster management agencies and local government as being pivotal to operational success in containing the fire extent, despite catastrophic fire weather conditions. This submission supports piloting of these approaches in mainland landscape.

Inclusive Burning Frameworks and Practices

Many land management agencies and organisations are supportive and interested in learning more about Traditional Owner cultural burning philosophies and practices. However, there are many barriers, including resourcing, permit restrictions, policy lacking in cultural relevance and planning frameworks that do not represent or reference cultural burning practices. Understanding the philosophy of cultural burning practices and historical vegetation structures is extremely valuable and can provide insight into how resilience (both ecological and community) can be improved. If Traditional Owners are to be supported to lead fire management on Country *and* have the capacity to collaborate and be included in fire planning for publicly managed land (to the benefit of all) – then meaningful, long-term resourcing needs to be committed and provided.

Education and Training

There is a great need for better education, awareness and resourcing of cultural burning practices and historical vegetation structures, both in terms of engagement with land managers and other stakeholders, but also with regards to collaborative bushfire planning that compliments Traditional Owner cultural practices. There is renewed community support for Traditional Owner led burning practices and some enthusiasm from land management agencies – however resources and proper understanding is lacking. Traditional Owner cultural burning practices and understanding the historical landscape provide opportunities to better manage risks, but if the potential is to be realized, resources and support must be provided to Traditional Owners and appropriate organisations to collaborate and provide leadership in training, bushfire planning, and vegetation management implementation.

2.7 National Reporting Framework and Fire History Data Resource

Resourcing is required to create a national reporting framework, that in turn underpins the development of a national, cross agency data sharing mapping resource. Improved data collation, sharing and coordination of fire mapping and post-fire recovery information is critical to understanding landscape scale risk and planning risk mitigation strategies. Data sharing arrangements are vital but often laborious to set up, difficult to maintain, and may exclude private landholders, Traditional Owner groups and NGOs. A national framework could build upon existing tools, such as the Northern Australia Fire Information website, but operate at a national level. This submission recommends identification and support of existing, reliable, robust tools such as Healthy Land and Water's Rapid Landscape Assessment Tool (2.11) and Northern Australia Fire Information website (firenorth.org.au) to operate and inform a national framework.

A national data resource would comprise fire history, vegetation structure history, fire event and post-fire recovery information in a flexible mapping format. It could also assist with the development of standards for prescribed burning, fire line maintenance and the extension of burning performance measures, as they apply to freehold and other tenures (such as main roads, shire roads, Commonwealth lands including military training areas, and nature reserves). Furthermore, to best provide continuity of data private landholders could be



supported to upload information, under a review process or template provision, and be able to access data on an agreed usage agreement.

2.8 Planning Decisions and Permits

The purpose of systematic planning, development constraints and building codes in bushfire-prone areas is to reduce risk to life and property (COAG, 2004). This submission recommends:

- a) greater cooperation between levels of government in the facilitation and implementation of fire management planning, including consistency in legislation to avoid confusion, conflicts, and barriers to implementation and adoption of best practice;
- b) comprehensive resourcing for state-wide systematic updating of natural hazard mapping to reflect current data sets and ensure consistency;
- b) more robust requirements and conditions governing development and building in fire-prone landscapes;
- c) support, in the form of resources and consistent advice, for property owners in bushfire prone areas to retrofit their structures to improve resilience;
- d) greater flexibility around the implementation of planned burns issued with a permit, including consideration of timing with a changing climate and options for ecological and cultural burning;
- e) review of the FFDI for Queensland; and
- f) resourcing a cross-tenure approach that supports roadside burning for private property owners (refer to the Coordinated Agency Model for Roadside Burning, Section 2.3).

Planning

Mitigating impacts is about making good planning decisions now, based on the best available science and an understanding of how changing climatic conditions will affect risk. Planning and development assessment frameworks need to be more robust with respect to where infrastructure can be built (or rebuilt) and how Asset Protection Zones are applied and observed. If infrastructure is poorly located in the landscape, then more recognition of the risk needs to occur – in some locations no amount of preparedness will offer adequate protection and no amount of reporting or accountability will recover losses. There is also a great need for all levels of Government to ensure consistency in legislation relating to fire, vegetation and land management, to avoid confusion, conflicts, and barriers to implementation and adoption of best practice landscape actions to prepare for, manage and respond to bushfires. This submission supports greater cooperation between levels of government in the facilitation and implementation of fire management planning and stronger requirements and conditions governing development and building in fire-prone landscapes. This does not mean ecological, cultural or environmental values are not considered, they must be part of the planning process and this is possible if planning is undertaken in a cross tenure, collaborative fashion, as articulated in Section 2.3.

Changing climatic conditions are pointing towards an increasing number of occurrences where it will not be possible to protect all lives and infrastructure if they continue to be placed in high risk locations. Reconstruction during recovery should consider future climatic conditions and what this means for the resilience of infrastructure. In locations where there are legacy infrastructure developments, consideration needs to be given to whether it is more effective to retrofit the infrastructure, to provide it with better resilience against natural disasters or undertake large scale, and potentially ineffective, risk mitigation activities.



In Queensland, local government planning schemes contain natural hazard mapping (e.g. flooding and inundation, bushfire hazard). This mapping is used to apply additional planning and building requirements in the assessment of development proposals. It also serves as a general information source for the broader community. Natural hazard mapping is prepared using computer modelling techniques. The technology available to undertake such modelling is always evolving, enabling the production of more sophisticated hazard mapping. The differences between a newer and older hazard map can be significant, with a newer map potentially impacting thousands of previously unaffected properties, which can have huge impacts not only for private landholders, but for local government engagement on this issue. Moreover, there can ambiguity over natural hazard mapping published outside of planning schemes, which can create conflict over Development Applications or other bushfire planning matters. This submission recommends comprehensive resourcing for state-wide systematic updating of natural hazard mapping to reflect current data sets and ensure consistency.

Forest Fire Danger Index Ratings for Queensland

It is widely acknowledged that stringent building standards, accurately reflective of bushfire risk, are an effective strategy for mitigating against house loss in the event of a fire. Moreover, an increase in house loss is associated with an increase in the loss of human life (Blanchi *et al.*, 2012). The use of different Forest Fire Danger Index (FFDI) for both State Planning Policy (SPP) planning matters and AS3959-2018 building matters can result in a significant difference between the approved radiant heat flux level of a development and a building certifier's Bushfire Attack Level (BAL) assessment. The SPP adopts a site specific FFDI value that reflects a 5% Annual Exceedance Probability (AEP), whereas Queensland's adoption of AS3959-2018 uses a single FFDI value for all of Queensland (FFDI of 40). The greater the variance in the SPP FFDI to the AS3959-2018 FDI 40 value, the greater the likelihood of discrepancies between planning and building outcomes. For example, the SPP could require a site-specific FFDI of 60, when calculated based on the Asset Protection Zone width, whereas the AS3959-2018 Method 1 calculation would require an FFDI of 40.

After consultation with stakeholders in SEQ, and based on evidence and values in neighbouring states, the Qld Fire and Biodiversity Consortium believes that the current FFDI for SEQ is too low and does not accurately reflect the conditions specific to SEQ or the associated risk. The FFDI for the neighbouring Northern Rivers region of NSW, is 80 FFDI (more than double that of SEQ), but the vegetation and weather conditions in northern NSW greatly overlap with those of SEQ. An increased FFDI, would more accurately reflect the conditions and risk in SEQ allowing for higher building standards and providing greater protection of homes and related infrastructure for homeowners. Consideration could also be given to the initiation of a mapping layer which identifies and records BAL ratings of individual structures to better inform interface management in residential and commercial estates in urban areas, as well as similar applications relevant to rural landscapes. This submission recommends a review of the FFDI for Queensland, as supported by Douglas and Yaping (2017), who also recommend that the value be higher than those listed by the AS3959.

Retrofitting of Structures in Bushfire Prone Areas

Landholders in high risk bushfire areas should be facilitated with increased support from government for improved risk mitigation, planning and preparedness, in particular with regards to retrofitting of structures. Property owners in bushfire prone areas who wish to retrofit their home/structures to improve the resilience of their property to bushfire, often face disjointed information and prohibitive cost. The Victorian Building Commission and Country Fire Authority have joined together to provide practical advice to those wishing to upgrade their existing homes to be better protected from bushfires (www.cfa.vic.gov.au/documents/20143/70643/bushfire_home_retrofit.pdf). This submission recommends resourcing the development of retrofit guides relevant to each state and territory. Grants, such as those



available to assist property owners to meet building standards in cyclone prone zones, should be made available to owners of structures in bushfire prone areas to increase their bushfire attack level.

Permits

Conflicting local, state and sometimes federal level laws and burning permit restrictions can provide confusion, conflict and hamper essential planned burning efforts. Queensland's permit to burn system provides greater flexibility than some of the southern states, in allowing planned burns. In particular, it is essential that permits for planned burns consider timing with regards to a changing climate and are open to the inclusion of cultural and ecological burns, which provide important biodiversity value for fire-adapted communities, as well as fuel management and risk mitigation outcomes. This submission recommends greater flexibility around the implementation of planned burns issued with a permit, including greater flexibility with regards to timing (in response to a changing climate) and options for ecological and cultural burning.

This submission supports a system of permits for roadside burns for private landholders and rural fire brigades, and private fire services acting on behalf of the owner/occupier for the adjoining crown land. There has been much work in this area in SEQ and currently there is a discourse in the use of fire in roadside areas that are managed or owned by local government that adjoin private property. This submission recommends resourcing a cross-tenure approach that supports roadside burning for private property owners (refer to the Coordinated Agency Model for Roadside Burning, Section 2.3).

2.9 Planned Burning

Planned, or prescribed burning is one of the most important fire, landscape and risk management tools available. However, in recent times there has been a reduction in the capacity (and increasing reluctance due to perceived litigation risk) of private landholders to manage fire risk on their properties and at the same time, increased pressure on public land managers to better manage the risk to their land, in line with increased community expectations and government aspirations. To successfully navigate a way through this complex environment, cross-tenure fire management planning must be embraced (see Section 2.3).

This submission recommends:

- (1) resourcing a review of recommended fire regimes for each state and territory;
- (2) resourcing established programs (such as the QFBC and NSW Hotspots project) to engage with stakeholders and community to improve understanding and inclusion of recommended fire regimes into planned burning;
- (3) greater resourcing and support be made available to assist freehold landholders to undertake fire management planning and implement planned burns on their property;
- (4) provision of advice on risk and risk mitigation, including clarification regarding legislative compliance to private landholders; and
- (5) resourcing collaborative programs between Traditional Owners, land managers and stakeholders to develop recommended fire regimes sensitive to cultural burning priorities and fauna requirements (Section 2.6).



Recommended Fire Regimes

Recommended fire regimes have an important role to play in implementing appropriate fire in the landscape. Much of the Australian bush has evolved with fire and appropriate fire is essential for many species survival. However, too much or too little fire can lead to species decline and eventual local extinction. Recommended fire regimes are important, because they are driven by key flora species within a vegetation community and can be used to guide the timing, season, extent, intensity and frequency of planned fire. The Qld Fire and Biodiversity Consortium includes information on recommended fire regimes in its Fire Management Planning workshop series (and other relevant activities). This understanding is crucial for private landholders to successfully implement a fire management plan that balances risk and environmental values (Attachment 6). Utilisation of landscape-based planned burn guides (e.g. QPWS regionally based Planned Burn Guidelines <https://parks.des.qld.gov.au/managing/planned-burn-guidelines.html>), facilitated by experienced operators can also be used to support implementation of planned burning.

A lack of burning and associated vegetation thickening is a great ecological and cultural heritage risk, facilitating the transition of grass-dominated vegetation communities into woodland, and in some areas, rainforest (Baker and Catterall, 2015; Baker *et al.*, 2020). More frequent mosaic burning, consistent with Traditional Owner cultural burning practices is recommended as well as analysis of historical vegetation structures that supported these burn regimes. There is no suggestion that sensitive habitat must also be burned (i.e. brigalow, dry rainforest, coastal dunes), this is primarily of concern for open eucalypt and grasslands. The transition of these vegetation types into communities with a shrubby/mesic (wetter) understory creates both species and biodiversity decline and increases wildfire hazard and impact. This submission recommends resourcing established programs (such as the QFBC and NSW Hotspots project) to engage with stakeholders and community to improve understanding and inclusion of recommended fire regimes and vegetation structures into planned burning.

Training and Planned Burning on Private Land

An often difficult and forgotten issue is how to improve burning on private (freehold/leasehold) land, especially considering the significant proportion of Australian land in private ownership or leasehold arrangements. A participant survey (June 2019) by the Qld Fire and Biodiversity Consortium identified that the most common reasons preventing landholders from conducting fire management actions were a lack of relevant or adequate knowledge (62.5%), a lack of relevant or adequate skills (41.7%), a lack of time (37.5%) and fear of litigation (29.2%) (Figure 3). As described in Sections 2.2 – 2.4 and supported in Figure 3, there is clearly a need to continue extension and support for landholders to improve understanding, skills and capacity to plan and implement fire on their properties.

Fire management training builds understanding and reduces the '*fear of fire*'. Landscape specific, specialised training focused on hazard reduction and ecological burns, taught by qualified people with ecological knowledge, needs to be available to private landholders (and public land managers) who manage high value assets (size and or quality). It is recommended that greater resourcing and support be made available to assist private landholders, through established programs like the Qld Fire and Biodiversity Consortium, to undertake fire management planning and assist in facilitating planned burning. A nationally recognised bushfire training and engagement program utilizing regionally developed codes of practice that identify basic guidelines and recommended fire regimes (similar to training and resources currently provided by the Qld Fire and Biodiversity Consortium) would facilitate understanding and increase capacity, confidence and willingness to undertake planned burns.

The Qld Fire and Biodiversity Consortium and Hotspots Project currently play a key role in providing workshops and training in private property fire management planning, in SEQ and NSW respectively. The opportunity to

broker the relationship between fire management agencies and landholders is an essential part of these programs. Healthy Land and Water and Qld Fire and Biodiversity Consortium have considerable experience in providing relevant practical information and training through recognised collaborative planning, extension and continuous improvement programs (Sections 2.3 and 2.4). These programs have been very successful and could be expanded to cover more landholders over a broader area with greater resourcing. This submission supports resourcing the Qld Fire and Biodiversity Consortium to provide its Fire Management Planning program throughout regional Queensland (Section 2.4; Attachment 5).

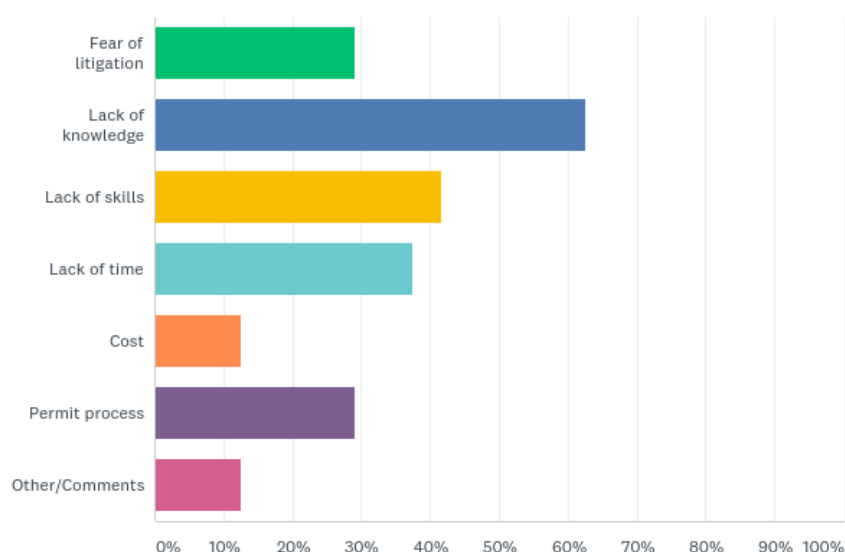


Figure 3: Reasons preventing Qld Fire and Biodiversity Consortium Fire Management Planning Workshop attendees from conducting fire management actions on their property, including prescribed burning (survey of workshop attendees January – June 2019).

Risk and Risk Mitigation Advice

Private landholders require advice on risk and risk mitigation, including clarification regarding legislative compliance. Fear of litigation is a legitimate concern for private landholders and acts as a significant deterrent to the planning and application of fire on private land. In particular, all levels of government must try to ensure that legislation and permitting around planned burning is complementary, rather than conflicting. There are examples where, at a local government level, it is necessary to negotiate through 15+ different types of legislation as well as regulations, codes, etc before activities that protect species and habitats can be undertaken. There are times when conflicting requirements of different legislation create confusion, resulting in no mitigation work being undertaken. This difficulty is further amplified for private landholders who generally do not have the resources available to them to unravel complicated and conflicting policy and regulation.

Guidelines from relevant agencies, or regional workshops for landholders would improve understanding. For instance, in Queensland, recent amendments to exempt clearing for bushfire mitigation under planning regulations have contributed to a lack of clarity on what constitutes "infrastructure" and therefore, what is allowable under the Qld *Vegetation Management Act 1999*. Vegetation clearing for fire mitigation zones and/or firelines can potentially give inexperienced people a false sense of security with regards to their perceived reduction in bushfire risk. This submission recommends the development of an online *one stop shop* for



private landholders to seek advice about risk and risk mitigation (including genuine advice about legislative compliances).

The Impact of a Reduced Planned Burning Season

Many regions in Queensland have reported a change in their available planned burn season. In the SEQ coastal area, this season is typically in the cooler, drier part of the year (between the months of March and July/August). Over the past decade there has been a noticeable shift in suitable planned burn season, with the traditional period often being either too wet, too dry and or too hot for burning to be conducted. For many agencies and land managers, this has led to a need to change policies and procedures in order to operate with the changed conditions. For coastal SEQ, to manage the reduced window to undertake both hazard reduction and ecological burning requires more flexible planning and earlier permit provision to burn earlier in the season, including weekend resourcing and varied delivery models. For some regions, all year-round planned burning opportunities that allow land management agencies to conduct planned burns at any time, except during, or prior to days of high (or above) FDI is recommended.

2.10 Resourcing

Recent events have (again) focused legitimate community concerns on the need for more planned and proactive hazard reduction activities across the landscape, particularly on crown lands. In many areas of Queensland, including SEQ, there has been a substantial expansion of crown land and corresponding tenure management changes to state forests and forest reserves over recent years. Without adequate resourcing for fire management and other land management activities, there are and will continue to be increased risks in and around these protected areas.

Despite the best efforts of relevant staff on the ground, the systematic lack of resources can hinder the implementation of fire management plans, at both a local government and state level. This includes the maintenance of infrastructure (including fire trails and mitigation zone) and undertaking planned burning over large tracts of land, especially when the seasonal window of optimal conditions for planned burns are short and becoming more variable and limited with a changing climate. As such, resource limitation is a key barrier to improved preparedness, management of ecological values (including threatened species habitat) and effective fire management. However, this barrier can be addressed by increasing resourcing for on-ground management activities (including planned burns) and improving flexibility and cooperation with adjoining private landholders, to ensure natural and built assets in peri-urban zones, and surrounding landscapes, are supported with effective bushfire risk mitigation. This submission recommends greater resourcing is provided to public land managers, so they can not only manage their own estates more effectively, but so they also have the capacity to collaborate with neighbours on cross-tenure fire management.

2.11 Smart Tools

Effective bushfire risk mitigation requires detailed knowledge of the key inputs and landscape influences that underpin and elevate bushfire hazard. This submission recommends resourcing the development of smart mapping, assessment and decision support tools for the collection and assessment of high-quality data to improve data synthesis and interpretation for fire management planning and post fire recovery and reporting requirements. This submission articulates several smart tools, including decision support tool development (Section 2.1), fuel load verification and modelling (Section 2.5) and Healthy Land and Water's Rapid Landscape Assessment Tool.



Rapid Landscape Assessment Tool

Rapid ecological and landscape mapping assessments can be utilised to evaluate natural assets and the built environment potentially affected by bushfires. The Healthy Land and Water Rapid Landscape Assessment Tool can be used to review actual and potential fire impacts to natural assets, greatly facilitating the efficiency of a recovery response post fire and better informing resilience planning to mitigate future risk as described below.

During September to December 2019, over ten bushfires affected some of SEQ's highest valued forests and natural areas including the Border Ranges and Main Range, Crows Nest, Noosa, Peregrine, Amity (Minjerribah), Bribie Island, Mulgumpin, and Jimna, covering a combined area of over 100,000 ha. This includes impacts to ecotourism, food supply (primarily grazing and cropping areas), forestry, water supply, wetland function and fisheries. These bushfires were mapped on public and private land during and post the SEQ bushfire season. The mapping involved imagery analysis utilising real time satellite imagery from the Sentinel Hub developed by Sinergise in partnership with the European Space Agency, and the European Union including atmospheric filters and short wave infra-red bands. Additional imagery was sourced through the Queensland Government State-wide Imagery Subscription Plan and Nearmap, as multiple imagery inputs allows for more accurate mapping of bushfire impacted areas. Data is applied to assess fire impacts against statutory and non-statutory matters and targets, across all tenures, and whole of landscape, with the recent Healthy Land and Water SEQ Bushfire Extent mapping undertaken at 1:10,000 (large property scale) (Figure 4). This mapping was used to inform the *2020 Recovery Action Plan, South East Queensland: Ecological Recovery of Bushfire Impacted Communities* (Attachment 2), the purpose of which is to provide a coordinated program of delivery to fund efficient and effective recovery actions.

Key strengths of this approach include a cross-tenure, extensive and comprehensive database of information, sourced from all levels of government and non-government providers (including research and universities, community citizen science, industry and utilities and Aboriginal and Torres Strait Island groups). Most fire agencies do not have access to mapping from such a broad range of organisations, thereby potentially limiting their capacity.

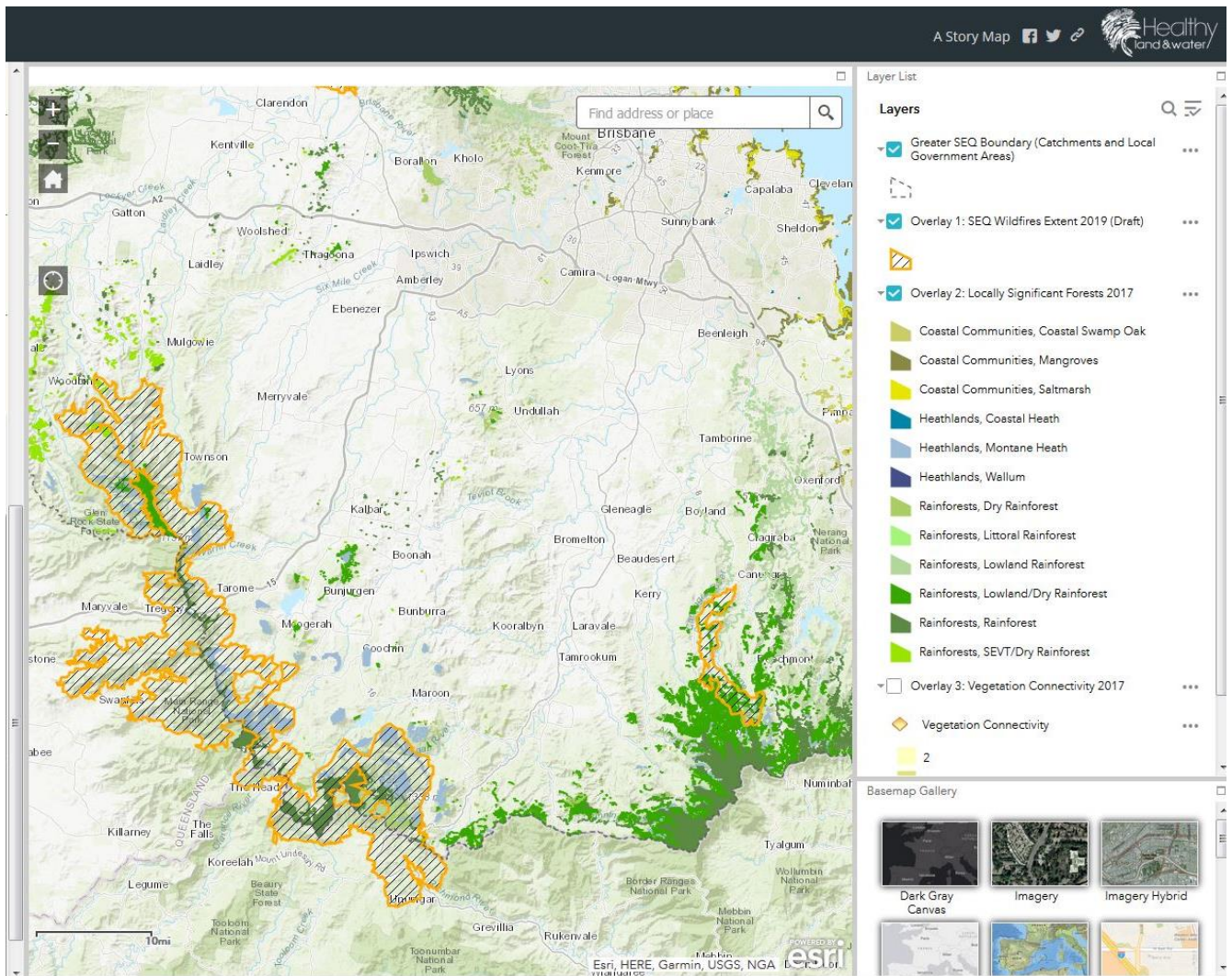


Figure 4: Online map output resulting from the Healthy Land and Water Rapid Landscape Assessment of wildfire extent in the Border Ranges, post the 2019 bushfire season. Map shows the extent of 2019 bushfires in the Border Ranges, locally significant forest and vegetation connectivity. A suite of other overlays can also be applied including (but not limited to) local government area, matters of national significance, protected areas or fire history.

2.12 Threatened Species and High Value Natural Areas

The recent bushfire season led to the loss of an unprecedented number of animals and plants, many already highly threatened species; the Queensland Government estimates 343 threatened species, including 165 listed nationally, known to occur in southern Queensland had habitat impacted by recent fires (TSO 2020). Healthy Land and Water analysis (Attachment 2) identified impact on three nationally listed endangered ecological communities as well as many areas of State-listed threatened ecosystems. Approximately 50% of the Gondwana Rainforests of Australia World Heritage Area (the Gondwana Rainforests WHA) was burnt, with extensive and severe impact on Queensland sections, and impacts on the Moreton Bay Ramsar Site.



This submission recommends:

- a) responsible government agencies and NGOs are resourced to collect baseline information relevant to threatened species in fire prone areas;
- b) regional NRM organisations (e.g., Healthy Land and Water) and collaborative fire management networks, such as Qld Fire and Biodiversity Consortium, are resourced to improve landholder/manager management of threatened species and their habitats and high value landscapes;
- c) resourcing threatened species and ecological community management via an integrated management framework, which includes consideration of fire, cultural heritage and broader ecological values; and
- d) that the Commonwealth Government lead a coordinated response to the impact of recent wildfires on World Heritage Areas.

Threatened species

A lack of quantitative data on population sizes in fire-affected locations made it difficult to calculate the initial fire impact on many species, and especially threatened species. For most threatened species, limited knowledge of habitats, distribution, population dynamics and threatening activities; is an existing serious threat to our capacity to affect species recovery; this is further compounded by lack of understanding of the impact natural disasters, such as the recent unplanned fires. Resources for dedicated agencies and NGO's to collect essential information on threatened species are limited. A key activity of Healthy Land and Water is to work with partners to improve knowledge of threatened species, their habitat requirements and known and potential threats, and to assist land managers, particularly private landholders, to undertake recovery actions.

By working with local Traditional Owner Groups, fire management guidelines can be developed for cultural landscapes while still providing information on appropriate fire regimes (season, intensity, extent) for broad vegetation types, succession post fire, the fire response of structural species within these habitats (many of which are highly valued elements of local cultural heritage²), and strategies to facilitate the persistence of rare species.

High Value Natural Areas

Large tracts of the Gondwana Rainforests World Heritage Area (WHA) burnt during the 2019/20 fires including approximately 17,000 ha of rainforest, including the critically endangered Lowland Rainforests of Subtropical Australia ecological community. For many rainforests, this season represented their first recorded fire. The Gondwana Rainforests WHA contains numerous listed species and ecological communities amidst a mosaic of flammable *Eucalyptus sp.* forest types. Rainforests lack many of the fire tolerant traits of *Eucalyptus sp.* forest types, and their immediate response to wildfire and long-term recovery trajectory is poorly known and challenging to predict. To coordinate an effective response to this impact, the extent and severity of damage must be verified and qualified by on-ground scientific assessments. Without these on-ground scientific assessments, recovery actions will not be targeted, prioritized or informed by timely or accurate knowledge. Targeted interventions such as feral pest and weed control, potentially vine thinning, and enrichment planting will be required in more heavily fragmented and disturbed rainforest. This submission recommends that the Australian Government lead a coordinated response to the impact of recent wildfires on World Heritage Areas. This is particularly critical for the Gondwana Rainforests WHA which is a serial property extending across two State jurisdictions and with portions separated from each other by private land; coordinated cross tenure conservation connectivity is essential to maintaining the WHA's Outstanding Universal Values (OUV). There

² Take for example, the retention of large remnant bloodwoods, Blue Gums and Cypress pine on Moreton Bay sand islands. These individual trees provide strong cultural connections to country and represent a structural frame that can be used as a basis for restoring a fire-damaged landscape to a cultural landscape.



is now a unique opportunity for cross-jurisdictional learning and knowledge-sharing, and the chance to establish a property-wide research and monitoring program targeting OUV based on knowledge of the increasing threats to the conservation of these OUV, including wildfire. Prior implementation of such a program would have significantly informed the current post fire recovery response, however, implementation now will improve future outcomes.

Three critically Endangered Ecological Communities (Littoral Rainforest and Coastal Vine Thickets of Eastern Australia, Subtropical and Temperate Coastal Saltmarsh and Lowland Rainforests of Subtropical Australia) have been impacted by recent fires. Whilst the burned area of each is small, assessment of the cumulative and direct impact is required given the vulnerable condition and fragmented distribution of these communities. Similarly, portions of the Moreton Bay Ramsar Site were burnt and a substantial portion of its headwater catchments. Whilst the Ecosystem Health Monitoring Program implemented across SEQ by Healthy Land and Water will assist to understand impacts on water quality, immediate assessment of direct fire impacts and longer-term monitoring of other biophysical features is essential to understanding impact on the ecological character of the Ramsar Site.

Climate Change

The subtropics of SEQ are predicted to be one of the most climate change affected regions within Australia and are predicted to be subject to a significant increase in the Forest Fire Danger Index (Dutta *et al.* 2016; Jones 2019). Understanding how climate exacerbated fire may impact our natural areas and threatened species is an important factor in mitigating this risk. Developing recommendations, guidelines and maps for emergency response agencies during a fire is an important decision support mechanism. If more accurate data is provided on the location and risk to threatened species and high value natural areas, that information can be used to help inform risk mitigation, planning and on-ground decisions for the protection of life, infrastructure and biodiversity values.

Existing Tools that Improve Species Conservation

The Queensland Fire and Biodiversity Consortium Property Fire Management Planning Kit has a significant flora and fauna focus, aiming to build awareness in landholders for the need to consider vegetation type and threatened species when developing a bushfire plan (Section 2.4). During workshops, threatened species and ecological communities are identified and recovery plan actions incorporated into the planning process. For example, invasive species have a major impact on Australia's environment, threatening its unique biodiversity and reducing overall species abundance and diversity³. Browsing and grazing habits of invasive animals such as deer and pig populations encourage the distribution and growth of invasive plants better adapted to herbivory than native flora. The increase in weeds contributes to the general fuel load and increased risk to habitat from fire (see section 2.5, Fuel Management). A property Fire Management Plan that includes invasive species management and fire management planning can improve species conservation, habitat protection and restoration.

To coordinate an effective response to the impacts of bushfire, the extent and severity of damage must be verified and qualified by on-ground scientific assessments. Without these on-ground scientific assessments, recovery actions will not be targeted, prioritized or informed by timely or accurate knowledge. In response to the recent extreme bushfires, Healthy Land and Water has developed a recovery action plan, *2020 Recovery Action Plan, South East Queensland: Ecological Recovery of Bushfire Impacted Communities*. Having

³ Note that particular weeds and feral animals are considered Key Threatening Processes under the EPBC Act and are the subject of specific Threat Abatement Plans.



identified bushfire extent, the Recovery Plan maps and articulates priority areas for recovery in SEQ, with a focus on Endangered Ecological Communities and threatened species. This tool can direct funds to the most effective recovery actions. For more information refer to Section 2.11, Figure 4 and Attachment 2.

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Attachment 1: Bushfire Royal Commission Terms of Reference

Extract from the Commonwealth Letters Patent, 20 February 2020.

<https://naturaldisaster.royalcommission.gov.au/publications/commonwealth-letters-patent-20-february-2020>

The Royal Commission has been requested to inquire into the following matters:

- a. the responsibilities of, and coordination between, the Commonwealth and State, Territory and local Governments relating to preparedness for, response to, resilience to, and recovery from, natural disasters, and what should be done to improve these arrangements, including with respect to resource sharing;
- b. Australia's arrangements for improving resilience and adapting to changing climatic conditions, what actions should be taken to mitigate the impacts of natural disasters, and whether accountability for natural disaster risk management, preparedness, resilience and recovery should be enhanced, including through a nationally consistent accountability and reporting framework and national standards;
- c. whether changes are needed to Australia's legal framework for the involvement of the Commonwealth in responding to national emergencies, including in relation to the following - :
 - i. thresholds for, and any obstacles to, State or Territory requests for Commonwealth assistance;
 - ii. whether the Commonwealth Government should have the power to declare a state of national emergency;
 - iii. how any such national declaration would interact with State and Territory emergency management frameworks;
 - iv. whether, in the circumstances of such a national declaration, the Commonwealth Government should have clearer authority to take action (including, but without limitation, through the deployment of the Australian Defence Force) in the national interest;
- d. any relevant matter reasonably incidental to a matter referred to in paragraphs (a) to (c)
- e. the findings and recommendations (including any assessment of the adequacy and extent of their implementation) of other reports and inquiries that you consider relevant, including any available State or Territory inquiries relating to the 2019-2020 bushfire season, to avoid duplication wherever possible;
- f. ways in which Australia could achieve greater national coordination and accountability — through common national standards, rule-making, reporting and data-sharing — with respect to key preparedness and resilience responsibilities, including for the following:
 - i. land management, including hazard reduction measures;
 - ii. wildlife management and species conservation, including biodiversity, habitat protection and restoration;
 - iii. land-use planning, zoning and development approval (including building standards), urban safety, construction of public infrastructure, and the incorporation of natural disaster considerations;
- g. any ways in which the traditional land and fire management practices of Indigenous Australians could improve Australia's resilience to natural disasters.



**Attachment 2: Healthy Land and Water - 2020 Recovery Action Plan, South East Queensland:
Ecological Recovery of Bushfire Impacted Communities**

See document attached separately

**Attachment 3: Quandamooka Yoolooburrabee Aboriginal Corporation Township Fire
Management Plan for Minjerribah (North Stradbroke Island)**

See document attached separately



Attachment 4: Qld Fire and Biodiversity Consortium - Partners and Steering Committee

Partner Organisations

One of the key strengths of the Qld Fire and Biodiversity Consortium (QFBC) is the number and diversity of partners. Each partner organisation contributes financially and in-kind and these contributions increase significantly the value, networking reach, influence, skills and knowledge potential of the program. The QFBC gratefully acknowledges support from the following partners: Brisbane City Council, The City of Gold Coast, Gympie Regional Council, Ipswich City Council, Lockyer Valley Regional Council, Logan City Council, Moreton Bay Regional Council, Redlands City Council, Scenic Rim Regional Council, Somerset Regional Council, South Burnett Regional Council, Sunshine Coast Council, Toowoomba Regional Council, Powerlink, Queensland Fire and Emergency Services (including the Rural Fire Service Queensland), Queensland Parks and Wildlife Service, Department of Transport and Main Roads – Darling Downs District and SEQ Water.

Steering Committee

The QFBC Steering Committee meets approximately four times a year to guide and support effective delivery of a high-quality program. The QFBC gratefully acknowledges the contribution and commitment of previous Steering Committee members and the following current partner organisation Steering Committee members:

- Brisbane City Council;
- City of Gold Coast;
- Healthy Land and Water;
- Ipswich City Council;
- Logan City Council;
- Moreton Bay Regional Council;
- Powerlink;
- Queensland Fire and Emergency Services;
- Queensland Parks and Wildlife Service;
- Sunshine Coast Council;
- Toowoomba Regional Council; and
- Two independent representatives.



Attachment 5: Qld Fire and Biodiversity Consortium - Fire Management Planning Kit (Part A), Manual

See document attached separately

Attachment 6: Qld Fire and Biodiversity Consortium – Recommended Fire Regimes (Information Booklet 2)

See document attached separately

Attachment 7: Qld Fire and Biodiversity Consortium – Powerline Easements, Fire and Biodiversity Supplement

See document attached separately