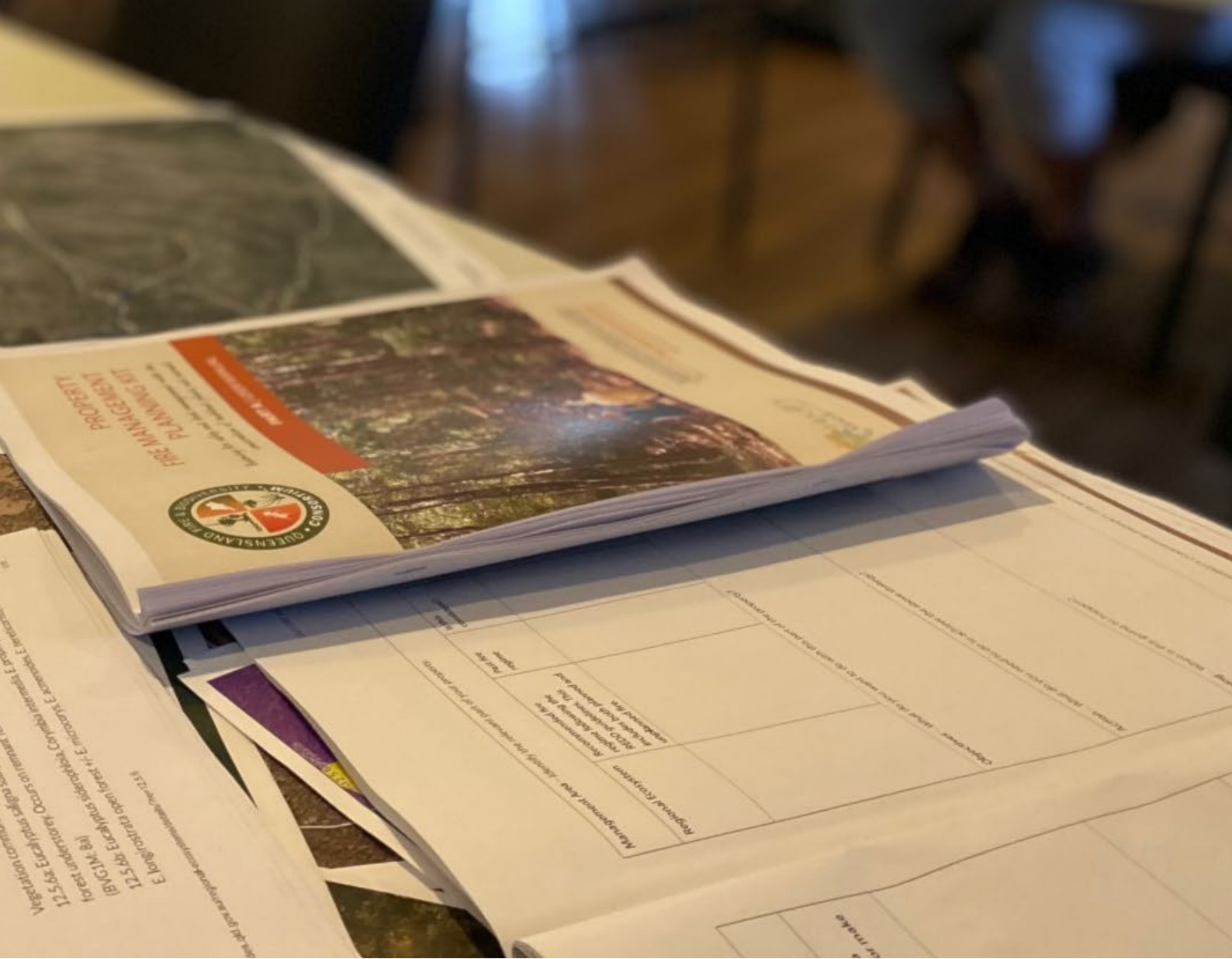




# Queensland Fire & Biodiversity Consortium | Annual Report 2021





## Citation

Queensland Fire & Biodiversity Consortium | Annual Report 2021, Healthy Land & Water

## About Healthy Land & Water

Healthy Land & Water is the **peak environmental group** for South East Queensland. For over 20 years, it has been dedicated to investing in and leading initiatives to **build the prosperity, liveability, and sustainability of our 'future region'**.

We are experts in research, monitoring, evaluation and project management. Our team has led many thousands of projects to restore waterways and landscapes, improve native habitats, manage weeds, protect native species, inform policy and educate communities on the best ways to improve and protect the environment for future generations.

Working in partnership with Traditional Owners, government, private industry, utilities and the community, Healthy Land & Water delivers innovative and science-based solutions to challenges affecting the environment. The combination of scientific expertise and on-ground management works to deliver Healthy Land and Water's mission to **lead and connect through science and actions that will preserve and enhance our natural assets and support resilient regions long into the future.**

## About the Queensland Fire and Biodiversity Consortium

Healthy Land & Water's *Queensland Fire and Biodiversity Consortium* is a network of land managers and stakeholders devoted to providing a coordinated response and best-practice recommendations for fire management, fire ecology and the conservation of biodiversity in the state of Queensland through education, community engagement and applied research.

## Disclaimer

It is the responsibility of the user to determine the suitability and appropriateness of the material contained in this publication to specific applications. No person should act or fail to act on the basis of any material contained in this publication without first obtaining specific independent professional advice. Healthy Land & Water and the participants of our network expressly disclaim any and all liability to any person in respect of anything done by any such person in reliance, whether in whole or in part, on this publication. The information contained in this publication does not necessarily represent the views of Healthy Land & Water or the participants of our network.

## 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.

## Commitment to our Reconciliation Action Plan

Reconciliation Australia has officially endorsed Healthy Land & Water's comprehensive [Reconciliation Action Plan \(RAP\)](#), which is a practical guide to how the organisation will deliver meaningful changes across the business in support of reconciliation.

## Contact details

For further information about Healthy Land & Water, please email [info@hlw.org.au](mailto:info@hlw.org.au) or telephone (07) 3177 9100.

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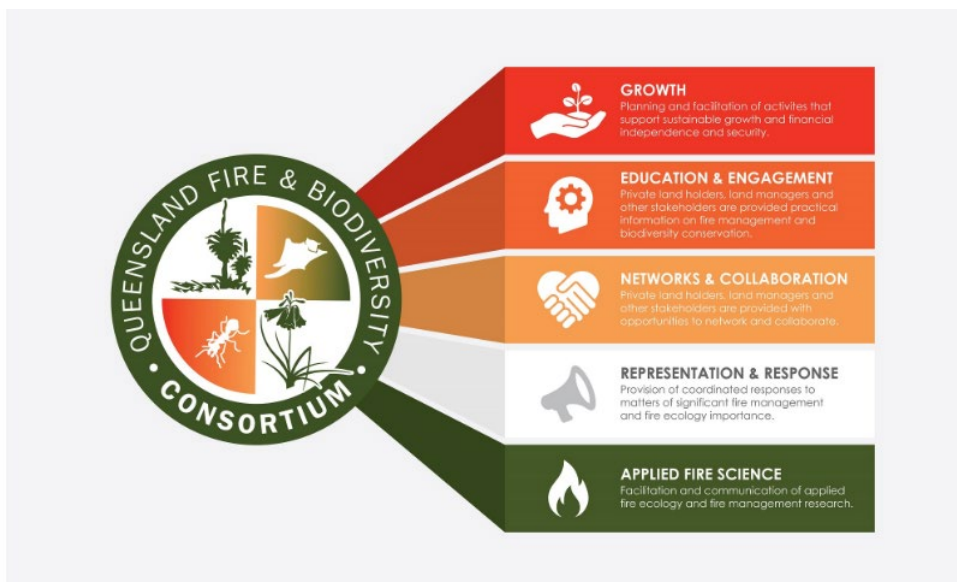
# 1 Introduction

The Queensland Fire and Biodiversity Consortium (QFBC), is a network of land managers and stakeholders committed to improving fire and biodiversity management outcomes.

Established in 1998, the Queensland Fire & Biodiversity Consortium supports and disseminates fire ecology research, facilitates partnerships between key stakeholders and builds the capacity of land managers and private landowners to address issues of fire management and biodiversity in the South East Queensland region and across Queensland.

With a focus on collaborative stakeholder engagement, land manager and landholder capacity building, applied fire research, and coordinated representation, the Queensland Fire & Biodiversity Consortium seeks to deliver improved fire management outcomes that promote biodiversity and cultural heritage enhancement and protection.

The Queensland Fire & Biodiversity Consortium has five key areas of operation and delivery:



## 1.1 Partner organisations

One of the Queensland Fire & Biodiversity Consortium's key strengths 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 Queensland Fire & Biodiversity Consortium gratefully acknowledges support from the following partners: Brisbane City Council, the City of Gold Coast, Gympie Regional Council, Ipswich City Council, Logan City Council, Moreton Bay Regional Council, Noosa 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 (QFES), Queensland Parks and Wildlife Service (QPWS), Department of Transport and Main Roads and SEQWater.

This impressive list of supporting organisations reflects the extensive support for the Queensland Fire & Biodiversity Consortium and illustrates our active and dedicated partnerships model which has been operating over the past 23 years.



## 1.2 Steering Committee

The Queensland Fire & Biodiversity Consortium is guided by a Steering Committee, which was independently chaired by Powerlink for the 2021/22 financial year. Comprising representatives from Healthy Land & Water and partner organisations, the Steering Committee meets four times a year to guide and support effective delivery of the high-quality program.

## 2 Summary deliverable list

Each year, through the support of its partner organisations, the Queensland Fire & Biodiversity Consortium delivers services and engagement activities as well as seeking out opportunities for growth. The Queensland Fire & Biodiversity Consortium provides value to partner organisations by supporting and communicating the science of fire ecology and management.

A summary of key deliverables from the 2020/2021 Financial Year is listed below:

1. New logo and new website with a modernised user experience including updating of the electronic resources, and communication with stakeholders.
2. Twelve Fire Information Nights and Talks, delivered in partnership with QFES and six local government bodies.
3. Eleven Fire Management Planning Workshops delivered in partnership with QFES and seven local government bodies.
4. Two Queensland Fire & Biodiversity Consortium coordinated training courses - *Overall Fuel Hazard Assessment (OFHA)* training delivered to 86 attendees over five sessions and *Fire in the Landscape* to 14 attendees in one session.
5. A signature event – the Queensland Fire & Biodiversity Consortium Fire Science Forum: *Facing Fire in a Changing Climate*. Due to COVID-19, this was delivered as an online seminar series over three consecutive weeks in November 2020 to over 500 virtual attendees. The program and seminar report are available on [www.fireandbiodiversity.org.au](http://www.fireandbiodiversity.org.au).
6. Coordination of the \$1.2M *SEQ Bushfire Recovery Project* funded by the Australian Government's *Bushfire Recovery Package for Wildlife and their Habitat*.
7. 16 editions of the Queensland Fire & Biodiversity Consortium eNews to over 1600 subscribers.
8. New Information Booklet *Introduction to Fire Ecology* (available from [www.fireandbiodiversity.org.au](http://www.fireandbiodiversity.org.au)) [hard copy] and Information Booklet *Recommended Fire Regime* [reprinted copies] of the to all Queensland Fire & Biodiversity Consortium partner organisations (3000 copies each).
9. Publication of a scientific paper co-authored by Queensland Fire & Biodiversity Consortium Principal Scientist, Dr Samantha Lloyd and published in the *Ecological Management and Restoration* entitled "*Facilitating Collaborations between Researchers and Practitioners in Ecosystem Management and Restoration*". The full author list is as follows: Dr Sacha Jellinek (Melbourne University), Dr Sam Lloyd (Healthy Land & Water/Queensland Fire & Biodiversity Consortium), Professor Carla Catterall (Griffith University) and Dr Chloe Sato (Deakin University).
10. Communities of Practice stakeholder engagement and Queensland Fire & Biodiversity Consortium representation, including the NSW Hotspots Project stakeholder meetings, the Interstate Alliance and representation on the State Bushfire Committee.
11. Awarded Highly Commended in the Community Stream of the Resilient Australia Awards for the Fire Management Planning workshop series.

12. Prepared a number of summaries of bushfire reviews following Black Summer, including: a summary report on the findings of the Royal Commission into *National Natural Disaster Arrangements Findings Review* (available from [www.fireandbiodiversity.org.au](http://www.fireandbiodiversity.org.au)) and a combined summary report on the *Final Report of the NSW Bushfire Inquiry*, the *Queensland Bushfire Review Report 2: 2019 – 2020* and the *Independent Review into South Australia's 2019 – 2020 Bushfire Season* (refer [www.fireandbiodiversity.org.au](http://www.fireandbiodiversity.org.au)).
13. Research student scholarship program. In January 2020, the Queensland Fire & Biodiversity Consortium launched its annual Research Student Scholarship, which was very well received and attracted seven student applications from six different institutions. The scholarships were awarded to: (1) Kate Tunstill [\$3000] – Honours student from Griffith University, supervised by Dr Laura Grogan and Dr Chantal Lanctot for her project entitled "Effects of firefighting chemicals on endangered Fleay's barred frog tadpoles" and (2) Ariane Allen [\$1500] – Honours student from Southern Cross University, supervised by Dr Andy Baker and Dr David Newell for her project entitled "Does fire exclusion influence avian communities and their habitat in Springbrook and Numinbah Valley?".
14. Intern placement student: The Queensland Fire & Biodiversity Consortium was fortunate to attract University of Queensland Environmental Management (Masters) Industry Placement Student, Lisa Boyle for Summer Semester 23/11/20 – 19/02/2021. Lisa is proactive, organised, intelligent and considered in her approach and proved herself to be a valued member of the Queensland Fire & Biodiversity Consortium team.
15. Involved in/ presented at five conferences and forums, including *National Bushfire and Climate Summit* and the *Ecological Society of Australia Annual Conference*.
16. Facilitated the completion of the name change from South East Queensland Fire & Biodiversity Consortium to Queensland Fire & Biodiversity Consortium.

### 3 State expansion

Part of moving towards a more sustainable model of funding for the Queensland Fire & Biodiversity Consortium is recognising opportunities for consolidation and growth.

The Queensland Fire & Biodiversity Consortium has recently seen a significant growth in contracts from both the Queensland and Australian Government, driven largely by the Royal Commission into National Natural Disaster Arrangements. The portfolio of projects continues to grow for the Consortium. This includes \$1.2 m of funding for Bushfire Recovery works through the Australian Government.

In recognition of a need for supporting mechanisms for the scale-up of the Queensland Fire & Biodiversity Consortium and the realisation of a state-based model, as of June 2021 the Queensland Fire & Biodiversity Consortium now sits within the Climate Adaptation team of Healthy Land & Water. This positioning provides the impetus not only for a strategic approach to expansion, but also to build the role, reach and influence of the Queensland Fire & Biodiversity Consortium in delivering outcomes related to Climate Adaptation. Furthermore, it grants a catalytic opportunity for the consortium to strive forward with an informed agenda to realise statewide opportunities whilst continuing to support regionally aligned outcomes.

## 4 Engagement and training

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 biodiversity and cultural values. In particular, the skills, resources and confidence to plan and implement active fire management are often lacking.

The Queensland Fire & Biodiversity Consortium offers a range of engagement and fire management planning services and training aimed at increasing the awareness of the role of fire in the Australian bush and the capacity to appropriately use it as a land management tool.

The Queensland Fire & Biodiversity Consortium's commitment to running engagement and training events provides contributing partner organisations, stakeholders and private landholders with educational outcomes and builds resilience.

Engagement events reached stakeholders in the South East Queensland regions, south to the NSW border, west to Toowoomba, and north to Yeppoon on the Capricorn Coast. Fire Information and Property Fire Management Planning workshops, training in Overall Fuel Hazard Assessment, Fire in the Landscape field days and engagement through forums round out the engagement and training involvement for this financial year.

### 4.1 Fire Information Sessions and Fire Management Planning Workshops

The Queensland Fire & Biodiversity Consortium's combined Fire Information Sessions and Property Fire Management Planning Workshops are a flagship service that aims to increase the awareness and capacity of private landholders and public land managers around the role and benefits of appropriate fire in the Australian bush, fire management planning and the use of fire as a land management tool. These events are designed to equip attendees with the skills, resources and confidence to plan and implement active fire management on their land.

The Fire Information Session occurs one to two weeks before the Property Fire Management Planning Workshop. The aim is to introduce attendees to a range of general bushfire topics, provide engagement opportunities and promote the upcoming workshop. The Fire Information Session is open to the public and key topics include the QFES *Prepare Act Survive* message, cultural burning, local and state vegetation management laws, local disaster arrangements, agencies roles and responsibilities, fire ecology, fire as a land management tool and bushfire mitigation activities within local land management agencies. Other topics relevant to local land use may also be included (e.g. fire and grazing, timber production etc.). Local representatives from partnering agencies and organisations may present on their respective topics, including (but not limited to) Traditional Owners, QFES, local government, QPWS, other state agencies and utility providers.

The workshop's purpose is to assist landholders and land managers to reduce the threat of bushfires/wildfires to life and assets on their property whilst protecting and enhancing the diversity and abundance of native plants and animals, with considerations for primary production. On completion of the Workshop, landholders will have developed a fire management map and action plan tailored to individual properties, priorities and circumstance.

The table below displays the Fire Information Sessions and Property Fire Management Planning Workshops and event run by the Queensland Fire & Biodiversity Consortium between May 2020 and June 2021 with the participating Local Government and number of attendees.



**Table 1.** Queensland Fire & Biodiversity Consortium run Fire Information Sessions and Property Fire Management Planning Workshops between July 2020 and June 2021.

Date	Location	Local Government Area	Event type	No. of attendees
January – June 2021				
26 June	Tarome/Boonah	Scenic Rim Regional Council	Fire Management Planning Workshop	22
20 June	Carneys Creek	Scenic Rim Regional Council	Fire Management Planning Workshop	55
17 June	Tarome	Scenic Rim Regional Council	Fire Information Night	37
12 June	Mulgowie	Lockyer Valley Regional Council	Fire and Native Vegetation Workshop	26
10 June	Mt Alford	Scenic Rim Regional Council	Fire Information Night	55
3 June	Laidley	Lockyer Valley Regional Council	Fire Information Night	45
15 May	Pomona	Noosa Shire Council	Fire Management Planning Workshop	22
6 May	Doonan	Sunshine Coast Council	Fire Information Night	43
29 April	Noosa Landcare	Noosa Shire Council	Fire Information Night	29
17 April	Ravensbourne	Toowoomba Regional Council	Fire and Native Vegetation Workshop	26
27 March	Mt Pleasant	Moreton Bay Regional Council	Fire Management Planning Workshop	26
25 March	Peak Crossing	Scenic Rim Regional Council	Fire Information Night	15
24 March	Ravensbourne	Toowoomba Regional Council	Fire and Vegetation Management Information Night	38
20 March	Runnymead	Redland City Council	Fire Management Planning Workshop	26
14 March	The Caves	Livingstone Shire Council	Fire Management Planning Workshop	15
13 March	Byfield	Livingstone Shire Council	Fire Management Planning Workshop	15
4 March	The Caves Rural Fire Brigade	Livingstone Shire Council	Fire Information Night	31
3 March	Byfield	Livingstone Shire Council	Fire Information Night	34
Sub-total number of events/attendees			18	560
July – December 2020				
25 November 2020	Noosa North Shore	Noosa Shire Council	Bushfire Community Information Evening	35
27 & 28 November 2020	Yeppoon	Livingstone Shire Council	Pre-Fire Management Planning Workshop	27
4 September	Toowoomba at Toowoomba Field Naturalists Club	Toowoomba Regional Council	Fire in the Landscape Talk	22
25 & 26 August 2020	Cypress Gardens for Millmerran Landcare and Southern Queensland Landscapes	Toowoomba Regional Council	Field Day	11
			Fire Information Night	21
			Fire Management Planning Workshop	9
Sub-total number of events/attendees			6	125
Total number of events/attendees			24	685

Due to COVID 19, some engagement events were postponed and rescheduled for the new financial year. These will be reported on in the 2022 Annual Report.

#### 4.1.1 Engagement event snapshot example 1: Rosevale-Tarome Fire Information Night and Fire Management Planning Workshop

**Aim:** The Fire Information Night provided as part of this project were an opportunity to give an overview of the Australian Government's Bushfire Recovery Project and seek interest to participate in the Property Fire Management Planning Workshop and the project more broadly. Attendees were encouraged to complete an Expression of Interest form, which facilitated assessment of applications from landholders interested in attending the Workshop.

The aim of the workshop component is to support landholders to develop a Fire Management Plan for their property. During the workshop, landholders also learnt about the impact of fire on Matters of National Environmental Significance, local threatened species and Endangered Ecological Communities.

All workshop participants are provided with a copy of the Queensland Fire & Biodiversity Consortium's Property Fire Management Planning Kit, including *Part A: Manual* and *Part B: Workbook*. On completion of the workshop, landholders have developed a fire management map and action plan tailored to individual properties and priorities. The workshop maps were digitised following the workshops.



**Image 1.** Fire Information Night at the Tarome Rural Fire Brigade, 17 June 2021. Pictured L-R: Dick Buckham (Tarome Rural Fire Brigade, landholder), Tony McKew (Scenic Rim Regional Council), Dr Samantha Lloyd (Healthy Land & Water), Mayor Greg Christensen (Scenic Rim Regional Council) and Mark O'Brien (QPWS).

Fire Information Night	
<b>Location:</b>	Tarome Rural Fire Brigade, 1013 Tarome Rd, QLD
<b>Date:</b>	17 June 2021
<b>Snapshot:</b>	<p>22 people registered on Eventbrite.</p> <p>37 attendees – 29 landholders and 8 staff - 3 x Queensland Fire &amp; Biodiversity Consortium, 2 x QPWS, 1 x QFES Rural Fire Service volunteer, 2 x Scenic Rim Regional Council (SRRC).</p> <p>Six presentations.</p> <p>Five organisations – Healthy Land &amp; Water, QFES, QPWS, SRRC and Tarome Rural Fire Brigade.</p> <p>13 Expressions of Interest received.</p>
Fire Management Planning Workshop	
<b>Location:</b>	Boonah Cultural Centre, 3 High Street, Boonah QLD
<b>Date:</b>	26 June 2021
<b>Snapshot:</b>	<p>11 landholders attended. Landholders comprised a mix of farmers and lifestyle weekend block owners.</p> <p>One organisation – Healthy Land &amp; Water (Queensland Fire &amp; Biodiversity Consortium).</p> <p>11 presentations.</p> <p>36 (nine sets of property maps) base maps were developed for the workshop.</p> <p>Nine workbooks and map overlays were collected to develop plans.</p>

#### 4.1.2 Engagement event snapshot example 2: Noosa North Shore Bushfire Community Information Evening

**Aim:** The information evening was delivered in partnership with Noosa Council. It aimed to provide an open and informative evening for community members to engage with representatives from the Noosa Shire Council, QFES, Kabi Kabi Aboriginal Corporation, QPWS, the Queensland Department of Resources (DOR) and the Queensland Fire & Biodiversity Consortium. The focus of the information evening was bushfire safety and mitigation, vegetation management, fire ecology and management, and landholder rights and responsibilities.

<b>Location:</b>	<b>Beach Road Holiday Homes, 90 Beach Road, Noosa North Shore, QLD 4565</b> <b>Open invitation to residents of the Noosa North Shore Community</b>
<b>Date:</b>	25 November 2020
<b>Snapshot:</b>	Eight presentations. Seven organisations involved. 35 attendees – ~27 landholders (including ~7 RFS volunteers) and 8 staff from Noosa Shire Council, QFES, Kabi Kabi Aboriginal Corporation, QPWS, the Queensland Department of Resources (DOR) and the Queensland Fire & Biodiversity Consortium.
<b>Media:</b>	As the event was targeted at residents of Noosa North Shore, it was not promoted outside the community of Noosa North Shore. Channel Nine Sunshine Coast interviewed QFES and Queensland Fire & Biodiversity Consortium for a segment on the nightly news that evening.

**Attend this session to:**

- learn how to prepare your home and property for bushfire
- find out how to make an evacuation plan
- learn about plant and animal responses to fire
- receive practical advice from the Rural Fire Service, QLD Fire and Emergency Service, SEQ Fire and Biodiversity Consortium, and Noosa Council

**Registration is essential. To register click [here](#) or contact Council on 5329 6231. Light supper included.**

**In partnership with:**

Proudly funded by the Australian and Queensland Governments through the Disaster Recovery Funding Arrangements (DRFA).

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**Image 2.** Noosa North Shore Bushfire Community Information Evening two-page promotional flyer.

#### 4.1.3 Engagement event snapshot example 3: Millmerran Landcare and Southern Queensland Landscapes Field Day and Fire Information Night

**Aim:** The Field Day gave attendees the opportunity to view three different approaches to property fire management. The Fire Information Night provided an open and informative evening for community members to engage with local government, natural resource management and state agency representatives with a focus on bushfire safety and mitigation, vegetation management, fire ecology and management, and landholder rights and responsibilities. The property Fire Management Planning



Workshop supported landholders in developing a Fire Management Plan (map and priority action plan) for their property.

<b>Location:</b>	<b>Cypress Gardens</b>
<b>Date:</b>	25 & 26 August 2020
<b>Snapshot:</b>	<p><i>Field Day</i></p> <ul style="list-style-type: none"> <li>One location – three management styles.</li> <li>11 people in attendance (6 landholders and 5 staff from various agencies).</li> <li>A local landholder provided an overview of the work that he and his partner have carried out in the last 10 years to improve the health of their property and provide protection from bushfires. One example was the value of keeping fallen timber to provide habitat for native fauna on his property, particularly for small reptiles.</li> </ul> <p><i>Fire Information Night</i></p> <ul style="list-style-type: none"> <li>4 presentations.</li> <li>6 organisations involved – Millmerran Landcare, SQ Landscapes, QFES, QPWS, Queensland Department of Natural Resources, Mines and Energy, Toowoomba Regional Council (TRC) and Queensland Fire &amp; Biodiversity Consortium.</li> <li>21 people in attendance – 15 landholders (including 2 RFS volunteers), 5 staff from various agencies, 1 elected member from TRC.</li> </ul> <p><i>Fire Management Planning Workshop</i></p> <ul style="list-style-type: none"> <li>Workshop facilitated by Queensland Fire &amp; Biodiversity Consortium.</li> <li>9 landholders in attendance.</li> </ul>



**Image 3.** The image here shows a landholder who has been actively using fire in the cypress dominated vegetation type. On the left shows regular fire and on the right shows long unburnt vegetation (40 years unburnt). Image courtesy Craig Welden 2020.

## 4.2 Training

In the 2020/2021 financial year, the Queensland Fire & Biodiversity Consortium provided training opportunities for partner organisations' staff, officers and volunteers (Rural Fire Service Queensland) on:

- Overall Fuel Hazard Assessment; and
- Fire in the Landscape.

#### 4.2.1 Overall Fuel Hazard Assessment

The Queensland Fire & Biodiversity Consortium has been delivering the Overall Fuel Hazard Assessment awareness course for our partners since 2010. Awareness training outcomes that are delivered as part of this course include (but are not limited to) the provision of tools for rapidly assessing fuel arrangement and its effect on the probability of controlling bushfire. Learning outcomes are enhanced through hands-on learning via field days and training in fuel assessment.

The course aims to increase the knowledge of prescribed burn practitioners, fire fighters, development assessment officers, and land managers, allowing for a rapid visual assessment of fuel arrangement and for an improved understanding of its implications in controlling a bushfire.

Francis Hines (co-author of the *Overall Fuel Hazard Assessment Guide 4<sup>th</sup> Ed.*) facilitated the training session and demonstrated practical applications in the field. The course included a full day of training in the use of the *Overall Fuel Hazard Assessment Guide*, including a site visit and practical demonstrations. Attendees also had the opportunity to liaise with fire professionals and others involved in land management.

The Queensland Fire & Biodiversity Consortium provided five training sessions. These were held at the Sunshine Coast, Redlands, Brisbane and Gold Coast, with one session held exclusively for the Queensland Department of Transport and Main Roads.

#### 4.2.2 Fire in the landscape

This course is designed to provide a basic understanding of the contemporary use of fire across the landscape, including hazard reduction for public safety and infrastructure protection, biodiversity conservation, considerations for production and cultural values, and general land management objectives. The course is tailored for each individual organisation and highlights their existing policy around fire management.

A virtual training package was developed for Environmental Management Officers from the Department of Transport and Main Roads, provided for staff across the state. This new training program included the basics of the appropriate use of fire across the landscape, fire behaviour, fire ecology, the roles and responsibilities of fire management in government and community, land use values and implications for fire management, and fire history in Australia.

**Table 2.** Overall Fuel Hazard Assessment and Fire in the Landscape Training.

Date	Local Government Area	Event Type	No. of Sessions/ Attendees
<b>April 2021</b>	Sunshine Coast, Redlands, Brisbane, Gold Coast	Overall Fuel Hazard Assessment Training Note: Dedicated session for Department of Transport and Main Roads (TMR) on the Gold Coast	5 sessions/86 attendees
<b>October – December 2020</b>	Environmental Management Officers from the Department of Transport and Main Roads	Virtual Fire in the Landscape Training	14 attendees
<b>Total number of sessions and attendees</b>			6/100





**Image 4.** Overall Fuel Hazard Assessment Training event promotional flyer.

**Image 5.** Site visit during Overall Fuel Hazard Assessment Training, Sunshine Coast, April 2021. Photo courtesy of Craig Welden.

### 4.3 Queensland Fire & Biodiversity Consortium Fire Science Forum

*Fire Science Forum: Facing Fire in a Changing Climate (10, 17 and 24 November 2020)*

The Queensland Fire & Biodiversity Consortium Fire Science Forum was delivered as an online seminar series across three consecutive Tuesdays in November 2020. It was sponsored by Fireland Consultancy (Gold Sponsor), LRM Fire and Rescue and Ausecology (Bronze Sponsors). Kestrel Meters also donated two fire meters as prizes.

Keynote speakers were Dr Owen Price and Dr Hamish Clarke (University of Wollongong Centre for Environmental Risk Management of Bushfires), Dr Annabel Smith (University of Queensland) and Dr Gary Cook (CSIRO Land and Water). The event also included 10 other presentations from 14 presenters representing 11 organisations. For a full list of speakers and presentations, please see the program on [www.fireandbiodiversity.org.au](http://www.fireandbiodiversity.org.au).

The theme for the seminar series was *Facing Fire in a Changing Climate* to reflect the changing nature of fire in our landscape. We also took a closer look at the 2019/20 bushfire season and its significance and impacts upon our land and ecological values. The top-rated presentation was *Bonye Dargan (Bunya Country) Cultural Fire - Reconnecting Fire through fire practice*, which was delivered by Paul Dawson and Damon Miri Anderson from the Bunya Peoples' Aboriginal Corporation.

Over 503 people virtually attended the three seminar sessions. The recorded presentations for each seminar can be viewed via the following links:

- Seminar 1: <https://youtu.be/FLempiw3mPo>
- Seminar 2: [https://youtu.be/832lmnz\\_6T8](https://youtu.be/832lmnz_6T8)
- Seminar 3: <https://youtu.be/I2IF0VEpXVs>



***'The online seminar format, spread over a couple of weeks was genius and made it very accessible - was also great to have a diversity of speakers from different cultures'***

- 2020 Fire Science Seminar Series attendee

**Image 6.** Queensland Fire & Biodiversity Consortium Steering Committee Chair, Chandra Wood (Brisbane City Council) chairing Seminar 1.

## 5 Projects

After the 2019/2020 bushfires, significant investment in recovery projects was announced by the Australian Government. The Queensland Fire & Biodiversity Consortium's strong and reliable demonstration of delivering high quality programs and engaging with stakeholders across all levels of government and the public, has been recognised with the *SEQ Bushfire Recovery Project* awarded to Healthy Land & Water. The \$1.2M *SEQ Bushfire Recovery Project* is funded by the Australian Government's *Bushfire Recovery Package for Wildlife and their Habitat*.

### 5.1 AG Bushfire Recovery Project

*Fire Management Planning and Implementation in Communities affected by 2019 Bushfires (Phase 2 HLW Fire Management)*

**Project timeframe:** 18 months from January 2021 (with a view to extend if required).

**Project location:** Noosa River Catchment and Scenic Rim local government areas.

**Project description:** The project will build the capacity and resilience of bushfire affected communities to protect and conserve the outstanding universal values of the Gondwana Rainforests of Australia World Heritage Area and/or priority threatened species and threatened ecological communities (under the *Environment Protection and Biodiversity Conservation Act 1999*) in the Noosa River Catchment. The project focusses on three locations, Noosa River Catchments, and Carneys Creek and the Rosevale Tarome area of the Scenic Rim.

Project deliverables include (but are not limited to):

- Ten community/stakeholder engagement events and associated communications (including Fire Information Nights, Fire Management Planning workshops and workshops to facilitate the development of the Sub-catchment Fire Management Plan).
- Engagement with more than 36 community groups, members and stakeholders (landholders, farmers, traditional owners).
- Development of at least 26 fire management plans for private landholders.

- Development of one Sub-catchment Fire Management Plan, associated with the Gondwana World Heritage Rainforests, engaging both private and public landholders.
- Fire management actions across approximately 850 ha in three locations (on-ground works directed by property-level fire management plans and associated management actions, plus landscape level benefits associated with adjacent properties, connected forests and landscapes). Fire management actions may include (but are not limited to) improved fire lines and breaks, fuel load reduction works, installation of fire control infrastructure, asset protection zones, and defined prescribed burn areas.
- Cultural heritage assessments, evaluation surveys and reporting.

**Stakeholder and partner engagement:** As with all our activities, we are seeking to engage with key fire management organisations and stakeholders for the relevant locations. This includes Traditional Owners, local government, QFES, QPWS, utility providers, Landcare groups and other relevant stakeholders. In Noosa we are partnering with Noosa Landcare to facilitate the delivery of on-ground works.

**Benefits of being involved in the project:** We are aiming to build capacity, improve fire and biodiversity management, conserve threatened species values and support critical partnerships for the benefit of private landholders and public land managers in the delivery of this project. Involvement in this project will facilitate stronger relationships between key stakeholders and support fire management planning objectives for many partnering organisations, including the delivery of on-ground works on private land and the development of a valuable sub-catchment Fire Management Plan.

**Project methodology:** The project builds the resilience and capacity of bushfire affected communities to reduce wildfire risk, improve mitigation planning and conserve Endangered Ecological Communities (EECs), threatened species and Matters of National Environmental Significance (MNES) in the Gondwana World Heritage Rainforests and Noosa River Catchment through:

1. Property fire management planning.
2. Sub-catchment fire management planning.
3. Implementation of fire management actions, in collaboration with land managers and stakeholders.

**Priority mapping:** Healthy Land & Water will utilise a suite of mapping tools, engagement activities and scientific knowledge to identify potential target properties (i.e. private land managers) and locations. Tools and strategies include Queensland Government risk mapping, Healthy Land & Water's rapid ecological and landscape mapping, threatened species mapping and key stakeholder consultation (QFES, QPWS, local governments).



### Outcome 1: Property Fire Management Planning (PFMP):

In collaboration with key stakeholders, awareness and planning events engaged target land managers, primarily via Fire Information Nights and Property Fire Management Planning Workshops. Information nights are open to the community and provide engagement opportunities to promote the planning workshop. Information nights focus on raising attendee awareness of local EECs, threatened species and MNES and the relevance to fire. Key topics include fire ecology and management, the *Prepare Act Survive* message (provided by QFES), cultural burning, vegetation management and agency roles. The Property Fire Management Planning Workshops are more intensive and assist land managers to reduce the threat of wildfire to conservation values, life and property assets, and cultural heritage. Topics include recommended fire regimes, soil erosion, fire trails, mitigation zones, fuel loads, fire preparedness and mapping. Base maps are provided to attendees, including threatened species/EECs, topography, fire risk and vegetation type. Attendees receive a Property Fire Management Planning Kit and support to complete a fire management map and action plan tailored to their property, conservation values and priorities.

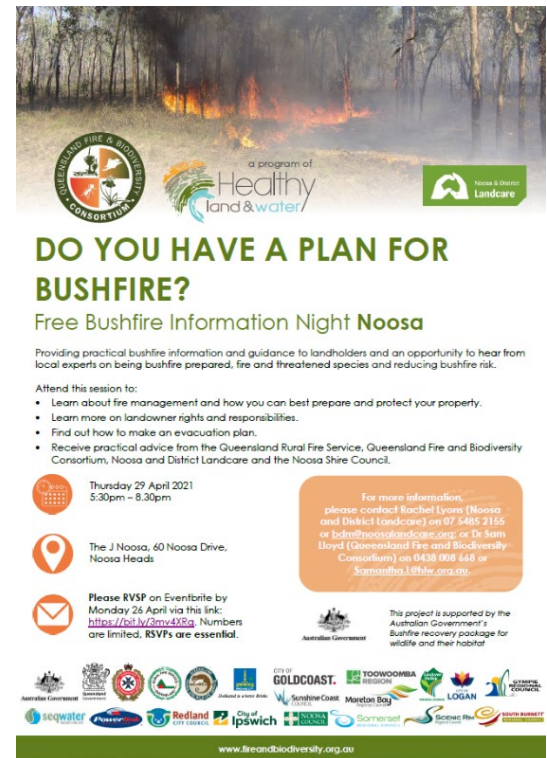


Image 7. Noosa Fire Information Night promotional flyer.

**Outcome 2: Sub-Catchment Fire Management Planning (SCFMP):** Healthy Land & Water is facilitating development of a plan for a target sub-catchment area associated with the Gondwana World Heritage Rainforests. A suite of mapping tools, engagement strategies and knowledge are utilised to identify the target sub-catchment. This is being developed in collaboration with private and public land managers including local government, QFES and QPWS. Private land managers will be engaged via the Property Fire Management Planning Workshop process and subsequent workshops will focus on sub-catchment scale mapping, prioritisation and planning.

**Outcome 3: Implementation of Fire Management Actions (FMAs):** Workshop attendees are supported to finalise Property Fire Management Plans, prioritise Fire Management Actions and develop an agreement to undertake the actions. Funding is prioritised utilising a suite of criteria, including property location, fire history, existing fire mitigation infrastructure, EECs/threatened species/MNES, proposed fire management actions, land manager engagement history and capacity. Appropriate Traditional Owner engagement is undertaken, along with cultural heritage referrals.

**Evaluation:** Private land managers are evaluated on the change in their skills and knowledge of fire and EECs/threatened species. Public land managers are evaluated on the coordination/delivery of the project, including the Sub-Catchment Fire Management Planning process. Project reporting provides review opportunities to be shared with partners and stakeholders.



**Image 8.** Post-fire property near Mowburra, Yamahra Creek (Ben Barton 2020).



**Image 9.** Post-fire Mowburra Peak rainforest gully, Yamahra Creek (Ben Barton 2020).

## 6 Communications

An important part of the Queensland Fire & Biodiversity Consortium's work is showcasing deliverables which helps to broaden knowledge across a variety of audiences. The consortium also communicates value for partner members, updates partners and non-partners on fire ecology news and extends the reach of the Queensland Fire & Biodiversity Consortium outputs. Examples of some of the consortium's communications are the QFBC e-News, information booklets, Healthy Land & Water Annual Report and scientific papers.

### 6.1 Queensland Fire & Biodiversity Consortium e-News

The Queensland Fire & Biodiversity Consortium produces an electronic newsletter "e-News", which provides an overview of international, national and regional media coverage and recent journal articles of fire and biodiversity-related issues. While it does not purport to be exhaustive, the publication is highly valued by our stakeholders. Each edition contains publications from scientific journals, universities and government departments; an "In the News" section featuring relevant fire news articles from public media outlets such as "The Conversation" and ABC News; and promotion of upcoming workshops and conferences.

**Table 3.** Distribution and subscriber numbers of the Queensland Fire & Biodiversity Consortium e-News.

Period	No. of editions	Subscribers	Open rates
January – June 2021	2	1487	<ul style="list-style-type: none"> <li>3357 opens</li> <li>1504 clicks</li> </ul>
May – December 2020	14	1641	<ul style="list-style-type: none"> <li>16,042 opens</li> <li>5451 clicks</li> </ul>



## 6.2 Publications

Over the 2020/2021 financial year, the Queensland Fire & Biodiversity Consortium published resources and a scientific paper to promote the understanding of collaboration and fire ecology.

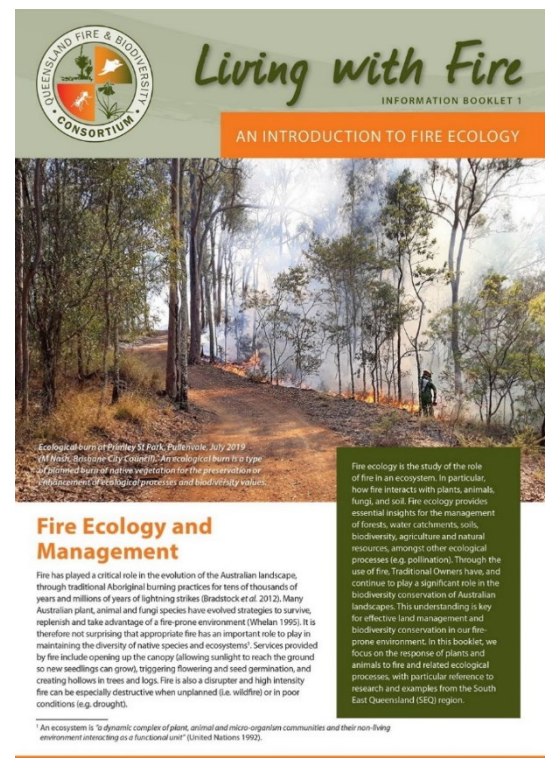
### 6.2.1 Information Booklet 1: An Introduction to Fire Ecology

Queensland Fire & Biodiversity Consortium Information Booklet 1: *An Introduction to Fire Ecology* (November 2020)

Queensland Fire & Biodiversity Consortium produced the new information booklet – *An Introduction to Fire Ecology*. This comprehensive publication is 16 pages long, with engaging and accessible information on how plants, animals, soil and fungi respond to and “live” with fire.

The booklet provides an overview of various plant and seed responses to fire, as well as recommended fire regimes for vegetation communities with examples and the ecological benefits of fire. The relationship between fauna and fire is covered with highlighted species and photos. Soil biochemistry and soil erosion complete the booklet.

Hard copies of this publication were made available for Queensland Fire & Biodiversity Consortium partner organisations. For a digital copy of the booklet, please see [www.fireandbiodiversity.org.au](http://www.fireandbiodiversity.org.au).



**Image 10.** Front cover of Information Booklet 1: An Introduction to Fire Ecology.

### 6.2.2 Healthy Land & Water Annual Report

Queensland Fire & Biodiversity Consortium extract from the Healthy Land & Water 2021 Annual Report.



**Image 11.** Queensland Fire & Biodiversity Consortium extract from the Healthy Land & Water 2021 Annual Report.

### 6.2.3 Scientific papers

Queensland Fire & Biodiversity Consortium Principal Scientist, Dr Samantha Lloyd co-authored a paper that has recently been accepted into the journal *Ecological Management and Restoration* entitled “Facilitating Collaborations between Researchers and Practitioners in Ecosystem Management and Restoration”. The full author list is as follows: Dr Sacha Jellinek (Melbourne University), Dr Sam Lloyd (Healthy Land & Water/Queensland Fire & Biodiversity Consortium), Professor Carla Catterall (Griffith University) and Dr Chloe Sato (Deakin University).

This paper was authored following a symposium at the annual conference for the Ecological Society of Australia (ESA) in 2019 entitled “Practitioner Engagement for On-ground Outcomes” and supported by the ESA Practitioner Engagement Working Group. The symposium featured 17 speakers and this paper focusses on six presentations that highlighted key enablers of effective science-practice partnerships (e.g. collaboration, communication, decision-framing context). The abstract is included below:

**Jellinek S, Lloyd S, Catterall C, & Sato C (2021) ‘Facilitating collaborations between researchers and practitioners in ecosystem management and restoration’, *Ecological Management & Restoration*, 22(2):208–213, doi:10.1111/emr.12465.**

Collaborations between researchers and practitioners are vital to ensure mutual learning to inform scientific and on-ground outcomes and government policy. Communicating outcomes from these collaborations benefits land management and restoration projects. The Ecological Society of Australia (ESA) Practitioner Engagement Working Group (PEWG) showcases and communicates applied



ecological research projects, driven by partnerships between researchers and practitioners, and promotes the value of these links to on-ground action. In December 2019, the PEWG ran the Practitioner Engagement for On-ground Outcomes symposium at the ESA annual conference in Launceston, Tasmania, to highlight key factors that enable and limit effective collaboration in ecological projects. Overall, 17 speakers from a range of government, Indigenous and non-government organisations delivered presentations on ecological issues. Here, we focus on six presentations that revealed eight key enablers of effective science-practice partnerships. Of these, six related to principles underpinning translational ecology (collaboration, commitment, communication, decision-framing context, engagement and process buy-in). Two additional enablers were highlighted – innovation and robust science, and longevity and flexible timelines. This symposium provided a streamlined approach to communicate the factors which enable successful projects to a broad audience. To enhance effective researcher-practitioner collaborations, improved practice and greater innovations in future ecosystem management projects, as well as both new and long-term funding streams, will be required.

The paper can be accessed by following this link: <https://onlinelibrary.wiley.com/doi/10.1111/emr.12465>

## 6.3 Other communications and media

Other communications and media provides a separate section for articles, press releases and social media which represent the level of ongoing engagement with stakeholders and the community.

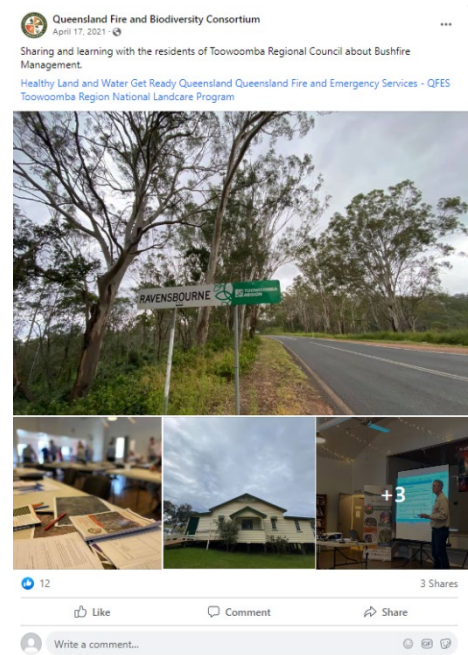
### 6.3.1 Articles and press releases

An article about the Queensland Fire & Biodiversity Consortium virtual Fire Science Forum was developed for the Healthy Land & Water online publication, *Nurture* – December 2020.

### 6.3.2 Social media

**Table 4.** Social media engagement and responses between May 2020 – June 2021.

Period	Facebook	Twitter
<b>January – June 2021</b>	<ul style="list-style-type: none"> <li>35 posts</li> <li>224 likes</li> <li>13,540 reach</li> </ul>	<ul style="list-style-type: none"> <li>9 posts</li> <li>17 likes</li> <li>1,920 impressions</li> </ul>
<b>May – December 2020</b>	<ul style="list-style-type: none"> <li>32 posts</li> <li>508 likes</li> <li>22,516 reach</li> </ul>	<ul style="list-style-type: none"> <li>81 posts</li> <li>185 likes</li> <li>29,582 impressions</li> </ul>



**Image 12.** Example of social media engagement and promotion of workshops.

## 7 Fire Ecology and Management Communities of Practice

The Queensland Fire & Biodiversity Consortium actively engages with stakeholders across the State and nationally to ensure we are keeping up to date with the latest research and applied science and to share the Queensland Fire & Biodiversity Consortium's leading work with other stakeholders.

### 7.1 NSW hotspots project

Well-informed and well-prepared communities complement the roles of land managers and fire agencies. A shared approach to fire management is critical to any form of planning. Under the guidance of the nine project partners in the Advisory Committee, Hotspots is delivered through the coordinated efforts of the [NSW Rural Fire Service](#) and the [Nature Conservation Council of NSW](#). The Queensland Fire & Biodiversity Consortium is represented on the Advisory Committee by Dr Samantha Lloyd, providing a shared understanding and learnings at a cross-border, multi-agency level. The Committee is Chaired by Rob Pallin from the Nature Conservation Council of NSW and the advisory committee meet quarterly <https://www.hotspotsfireproject.org.au/>.

### 7.2 State Bushfire Committee

The Queensland Fire & Biodiversity Consortium is privileged to hold the only Non Government Organisational seat on the State Bushfire Committee, which is evidence of the mutual trust and respect between the Healthy Land & Water and QFES. Queensland Fire & Biodiversity Consortium Scientist, Craig Welden attended the following meetings:

- 27th May 2021: State Bushfire Committee, Bushfire Mitigation Working Group.
- 23rd June 2021: State Bushfire Committee.
- September 2020: State Interdepartmental Committee for Bushfire, now called the State Bushfire Committee.

## 8 Awards

The Queensland Fire & Biodiversity Consortium was awarded Highly Commended in the Community Stream of the Resilient Australia Awards. The award was presented for the Queensland Fire & Biodiversity Consortium Property Fire Management Planning Workshop series. The award was presented by QFES Deputy Commissioner Mike Wassing who spoke very highly of the Queensland Fire & Biodiversity Consortium and the value of the Workshop series. The Resilient Australia Awards are administered by Queensland Reconstruction Authority and were awarded 14 October 2020.



**Image 13.** The Queensland Fire & Biodiversity Consortium High Commended award for Property Fire Management Planning workshops.

## 9 Submissions and reviews

The Queensland Fire & Biodiversity Consortium's long standing and involvement with stakeholders means it is well positioned to provide well informed responses and reviews to State and National inquiries and comment on recommendations. A summary of submissions can be read below.

### 9.1 Response to Royal Commission into National Natural Disaster Arrangements

The Royal Commission into National Natural Disaster Arrangements (RCNNDA) Report was released in November 2020. It comprises two parts – a summary of key points and recommendations resulting from the Inquiry (24 Chapters, 594 pages) and Appendices (25 Appendices, 387 pages) that record the way in which the Royal Commission engaged with the public throughout its Inquiry.

Overall, the Commission received extensive evidence, from more than 270 witnesses, almost 80,000 pages of tendered documents and 1,772 public submissions orally and in writing. Organisations provided 433 submissions, including a submission coordinated by the Queensland Fire & Biodiversity Consortium on behalf of its partners and Healthy Land & Water. Of those, 25 were from professional and volunteer fire brigades, associations, unions, and collectives. The other 408 were from government, non-government, private sector, peak body, community groups and associations with expertise in a range of fields relevant to the work of the Commission, including: environment, land management, forestry, fire ecology, land planning, traditional land management, climate, natural hazard modelling, emergency services, disaster response and management, radio communications, health, community welfare, wildlife conservation, resilience, building standards, and aviation.

The Queensland Fire & Biodiversity Consortium prepared a summary report on the findings, entitled *Royal Commission into National Natural Disaster Arrangements Findings Review* (available from [www.fireandbiodiversity.org.au](http://www.fireandbiodiversity.org.au))

### 9.2 State Bushfire Reviews

Following the 2019-2020 bushfire season, New South Wales, Queensland and South Australia commissioned state inquiries to make recommendations for future bushfire preparedness and response. The following provides a snapshot of the aims and key findings from each review (refer [www.fireandbiodiversity.org.au](http://www.fireandbiodiversity.org.au)).

#### 9.2.1 Final report of the NSW Bushfire Inquiry

**Aim:** To provide recommendations to assist the State of NSW improve preparedness and response systems to reduce the risk to lives, and the damage to property and the environment.

Some immediate recommendations to improve on-ground response included cross-checking and auditing procedures and processes for fire response, improving accountability and review processes, and improving safety equipment and systems for firefighters (e.g. truck cabin protection, aircraft, respiratory protection, sustenance, personal protection, etc.).

Over the longer term, the *Final Report of the NSW Bushfire Inquiry* recommended some major changes to improve response outcomes. These included (but were not limited to) utilising the most up to date technologies, especially fire science, remote sensing, data science and artificial intelligence to equip users to better understand what happens during a bushfire and respond more quickly. Further recommendations were made that many government systems also needed to be improved including: strengthening cross-agency accountability and governance; training; being more strategic in land use planning to account for bushfire; and better managing of critical infrastructure, including fire trails and roads to minimise property and asset damage.



**Findings:** The report made 76 recommendations. The two most relevant to the work of the Queensland Fire & Biodiversity Consortium are included below.

*"Recommendation 11: That, in order to strengthen the capability of local councils in future emergency events: a) Resilience NSW, in consultation with local government, develop specific training that focuses on the role, responsibilities and expected functions of the Local Emergency Management Officer (LEMO), including regular 'refresher' components; b) Councils support their staff to participate in LEMO training on an ongoing basis, and ensure that staff who are LEMOs are appropriately senior and have the authority to commit resources."*

*"Recommendation 36: Government invest in long-term ecosystem and land management monitoring, modelling, forecasting, research and evaluation, and harness citizen science in this effort. This will include, among other things: tracking and trying to forecast what is happening to ecosystems over decades under projected changes to climate extremes, including fire regime change and better understanding interaction of fire with other disturbances, e.g. drought and hydrological changes in the landscape; commissioning experiments and feasibility studies for ecosystem adaptation experiments, for example, facilitating shift of high conservation-value rainforest vegetation communities further south as climatic conditions change; and better understanding the influence of different land management practices on landscape flammability (in different landscapes) over the short; medium; and long-term, and enabling an adaptive management approach."*

### **9.2.2 Queensland Bushfires Review Report 2: 2019-20 (Inspector-General Emergency Management Queensland)**

**Aim:** This review provided observations and insights about the September 2019 bushfire events and consolidated recommendations of the 2018 review. The report summarises the bushfires around Sarabah (Scenic Rim), Stanthorpe/Applethorpe and Peregrine Springs, looking specifically at community insights, hazard mitigation and risk reduction, preparedness and planning, and response. The review report defines observations and insights and presents them as well as case studies that highlight preparedness and response activities undertaken by government entities and the wider community. At the end of each section, the review highlights how insights might apply to the broader disaster management sector.

**Findings:** The Inspector-General Emergency Management Queensland Bushfires Review Report 2: 2019-20 noted in particular that:

- *"The emergency service sector has the opportunity to capitalise on the need for clarity in warnings, acknowledging that much work is already taking place."*
- *"It would be beneficial for all responders to have access to the most appropriate radio communications for the area they are working in."*
- *"There should be universal use of liaison officers across the State."*
- *"Capability of incident commanders/controllers to prepare, plan and respond to trending conditions should be enhanced to improve community safety."*
- *"The comments regarding, and establishment of, lessons management programs across numerous disaster sector management entities suggests they are effective."*

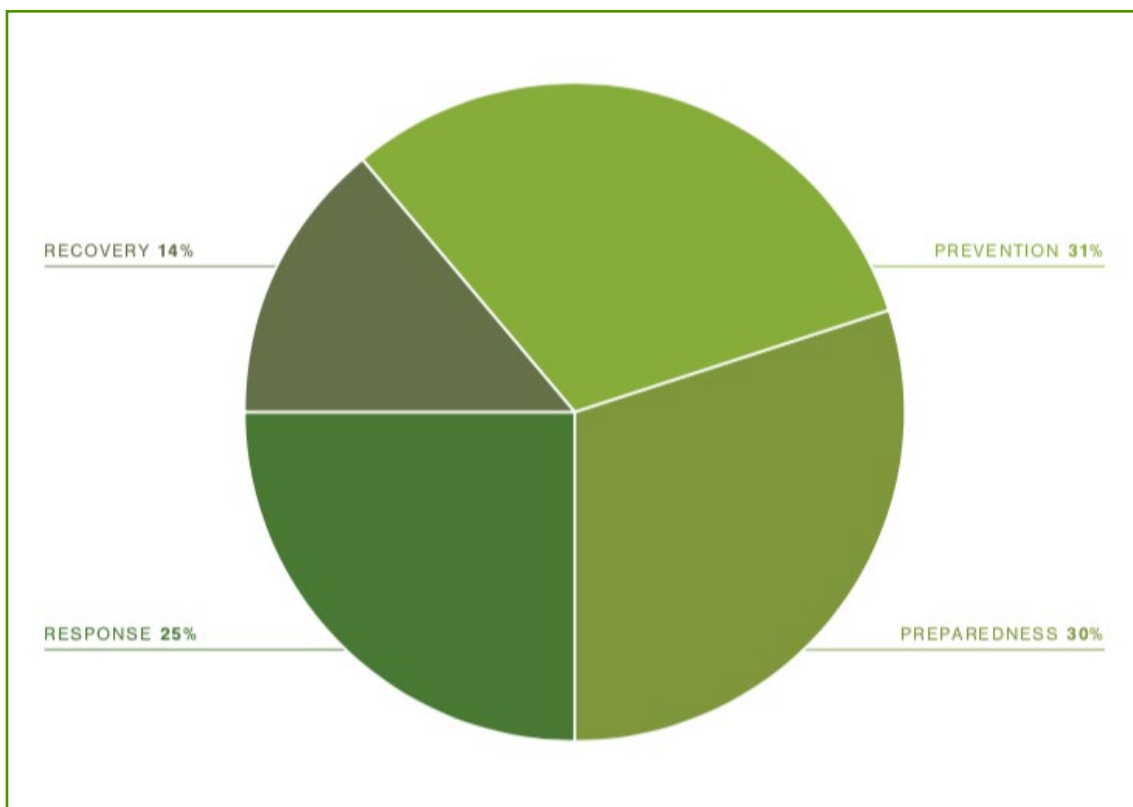
### **9.2.3 Independent Review into South Australia's 2019-2020 Bushfire Season**

**Aim:** The *Independent Review into South Australia's 2019 – 2020 Bushfire Season* (the Review) reflects a desire to produce evidence-based, practical recommendations to guide policy makers in managing future fires. It focuses on the Australian Emergency Management principles: *Planning; Preparation;*

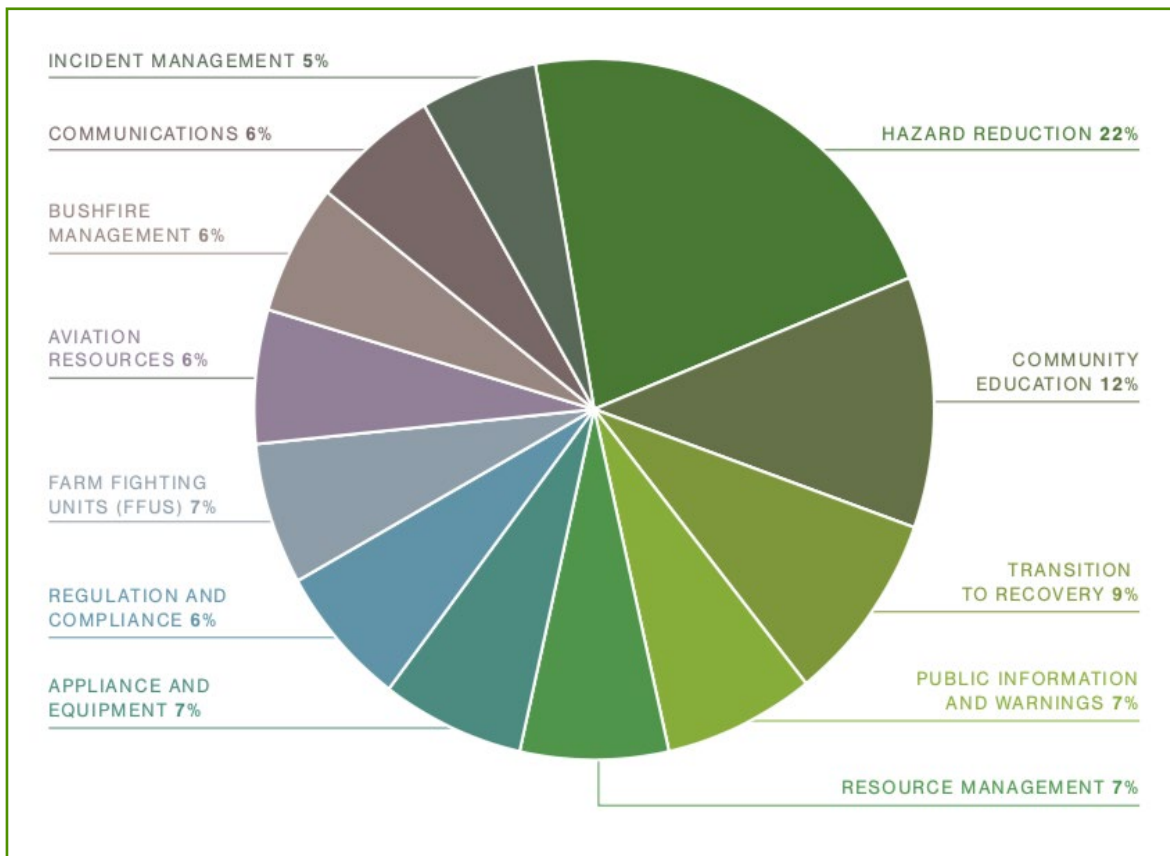
*Response and Recovery*. The review adopted a three-pronged approach around the key questions: 'what worked?'; 'what did not work?' and 'what can we fix before the next bushfire season?'

**Findings:** The review gathered information through targeted interviews and online engagement, receiving 576 submissions and 60 detailed interviews often with multiple participants. Most public focus was on *Prevention* and *Preparedness* as illustrated in Figure 1 and a breakdown of the top ten themes raised in the submissions in more detail is illustrated in Figure 2.

- "Overnight conditions did not provide the usual respite: Firefighters and decision makers faced some of their worst conditions at night." **p. 34.** "Fires burnt with at least as much ferocity at night as they did during daylight. If these types of conditions are now normal, they will force a new paradigm managing resources such as volunteers to contain bushfires overnight."
- "Review recommendations not implemented: South Australia has had 15 fire reviews since 1983 and many of the recommendations – particularly of later reviews – have not been implemented as expected."
- 24-hour State Emergency Centre (SEC) decision making: "With unprecedented conditions bringing no relief overnight, the usual strategy of having lower-level staff in the SEC at night hampered its operations as some of these staff were not sufficiently senior to make decisions on behalf of their agency." **p. 40.** "Senior staff who can speak or make decisions on behalf of their organisation need to be present in the SEC 24/7."



**Figure 1.** Public submissions by "Prevention, Preparedness, Response and Recovery" themes.



**Figure 2.** Top ten themes raised with the review based on Terms of Reference.

## 10 Student Engagement

The Queensland Fire & Biodiversity Consortium strongly supports fire science research students to bridge the gap between research and practice. Over the years, the Queensland Fire & Biodiversity Consortium has supported the scholarship program which awards grants to students undertaking research in applied fire ecology and management, to assist with associated expenses. Student reports and publications are shared with the Queensland Fire & Biodiversity Consortium and partners, supporting them with the latest in fire science research. Supporting student engagement also extends to student interns who provide help to the Queensland Fire & Biodiversity Consortium while gaining industry experience. Student engagement is a mutually beneficial arrangement.


### 10.1 Scholarship program

In January 2020, the Queensland Fire & Biodiversity Consortium launched its annual Research Student Scholarship, which was very well received attracting applications from seven students from six different institutions. The scholarships were awarded to:

#### Student Scholarship Recipient Kate Tunstill

Kate Tunstill was awarded \$3000 – Honours student from Griffith University, supervised by Dr Laura Grogan and Dr Chantal Lancot.



<b>Project title:</b>	<b>Effects of firefighting chemicals on endangered Fleay's barred frog tadpoles</b>	
<b>Aim:</b>	To examine the potential lethal and sublethal (growth, development, behaviour) effects of two well established brands of firefighting chemicals on the aquatic larval stage of a common Australian amphibian species, the striped marsh frog ( <i>Limnodynastes peronii</i> ).	
<b>Methods:</b>	Captively-reared tadpoles at Gosner stages 32-34 were exposed to either low or high concentrations of PHOS-CHeK LC95W or BlazeTamer 380 for 16 days, with an additional unexposed group as a negative control. Developmental stages and behaviour were monitored.	
<b>Results:</b>	<p>Results demonstrated that PHOS-CHeK LC95W influenced the growth and development of tadpoles through, body mass (mg), stage development and full body length (mm) over the 16 days. The body mass (mg) presented a p value of &lt;0.0001, stage development with a p value of &lt;0.0001 and full body length (mm) p value of &lt;0.0001, showing significance between treatment and time.</p> <p>The BlazeTamer treatments did not differ from the control treatments, suggesting no indication of effects on growth, development or behaviour of the tadpoles.</p> <p>The water parameters from the Phos-Chek treatments indicated high levels of ammonia (ppm) and Phosphorous (ppm) in the water.</p>	
	<p><b>Image 14.</b> Kate checking tadpoles in the lab.</p> <p>This study found that survival of tadpoles was greatly reduced by the Phos-Chek high concentration (PCH), with a survival rate of 66.67% after eight days of consistent chemical exposure, lowering to 16.67% by the end of the 16-day period.</p>	
<b>Discussion:</b>	High amounts of both chemicals have suggested implications for the health of aquatic species in previous studies, suggesting a link to the behaviour, growth and developmental effects found in this study. These results are valuable as they contribute to a largely unknown research field and providing evidence for future exploration. Because amphibians are already under threat from Chytridiomycosis and habitat disturbance, future research should focus on improving testing protocol for fire-fighting chemicals, specifically in an environmental setting. This will also shift more importance on environmental concerns in protocol and training when applying fire-fighting chemicals. Exploring the interaction between fire-fighting chemicals with Chytridiomycosis will contribute to continual conservation efforts in understanding this deadly amphibian disease.	

### Student Scholarship Recipient Ariane Allen

Ariane Allen was awarded \$1500 – Honours student from Southern Cross University, supervised by Dr Andy Baker and Dr David Newell.

<b>Project title:</b>	<b>Does fire exclusion influence avian communities and their habitat in Springbrook and Numinbah Valley?</b>
<b>Aim:</b>	To understand avian species distribution related to fire history. This study was carried out in Springbrook National Park and Numinbah Conservation Area in the subtropical Gold Coast hinterland, Queensland.
<b>Methods:</b>	18 transects. Vegetation surveys using hemispherical canopy photographs to analyse leaf area index of burnt and unburnt sites. Midstorey and ground-layer surveyed. Ecoacoustic surveys were undertaken to determine avian species distribution using passive acoustic recording devices, AudioMoths v1.1.0.


<p><b>Results:</b></p>	<p>There were clear changes in vegetation structure between the long unburnt and recently burnt sites. Significant differences between recently burnt and unburnt groups for canopy, midstorey and ground layer vegetation measures related to burn history. A loose relationship between similarity of avian species and burn history, but not a clear relationship. Both location and burn history have a relationship with avian species, rather than either location or burn history on their own.</p>	
<p><b>Discussion:</b></p>	<p>The findings from this thesis that there was no significant difference between avian species or their feeding guild with time since fire is surprising considering the strong relationship found between vegetation structure and time since fire. Although our results did not support the theory that there was a change in avian species in response to lack of fire in the landscape in our study sites, the results do add support to using prescribed burning as a land management tool as shown by no negative effect to avian species.</p>	

Image 15. Ariane conducting field work.

## 10.2 Summer intern

UQ Intern Student (23/11/20 – 19/02/2021)

The Queensland Fire & Biodiversity Consortium was fortunate to attract University of Queensland Environmental Management (Masters) Industry Placement Student, Lisa Boyle for Summer Semester 23/11/20 – 19/02/2021. Lisa is proactive, organized, intelligent and considered in her approach and proved herself to be a valued member of the Queensland Fire & Biodiversity Consortium team.

Lisa undertook the following work as part of her internship:

- Ecological Society of Australia Annual Conference 2020:** Lisa attended this conference online and prepared a summary of attended symposiums and talk, including (but not limited to) Indigenous Ecological Knowledge 10th Anniversary Symposium, Managing a cultural landscape and building resilience in a new world reality, Perspectives on a changing landscape of fire, Perspectives on a changing landscape of fire and Short-term impacts of the 2019-20 Fire Season.
- Rainforest and Fire Literature Review and Data Sets:** Rainforest and tropical savanna fires are well documented and subtropical rainforest and fire are less understood (Fensham, 2012; Ondeï, Prior, Vigilante, & Bowman, 2016; Williams, 2009). Alongside an extensive literature and research review, field observations were collected on plant responses post the 2019/20 fires.
- Independent Review into South Australia's 2019-20 Bushfire Season:** Summary report (refer [www.fireandbiodiversity.org.au](http://www.fireandbiodiversity.org.au)).
- QFBC eNews Research Student Summaries** for recipients of the 2019/20 scholarship granted to: (1) Arianne Allen, Southern Cross University – Influence of fire exclusion on fauna communities in Peachester State Forest, (2) Kate Tunstill, Griffith University – Effects of firefighting chemicals on endangered Fleay's barred frog (*Mixophyes fleayi*) tadpoles.



**Image 16.** Lisa Boyle (in blue) assisting a flora survey; eastern side Bribie Island beach access. Photo courtesy P Donatiu, 2021).

*"Placement with the Queensland Fire and Biodiversity Consortium and Healthy Land & Water has really helped to consolidate what I have learned during my Masters of Environmental Management while developing my understanding of fire ecology for environmental management, communication, field work and report writing skills and the importance of industry connections."*

On completion of her studies, Lisa commenced work as a casual employee at Healthy Land & Water and has supported Queensland Fire & Biodiversity Consortium and Healthy Land & Water's Moreton Bay Shorebirds Project.

## 11 Conference attendance

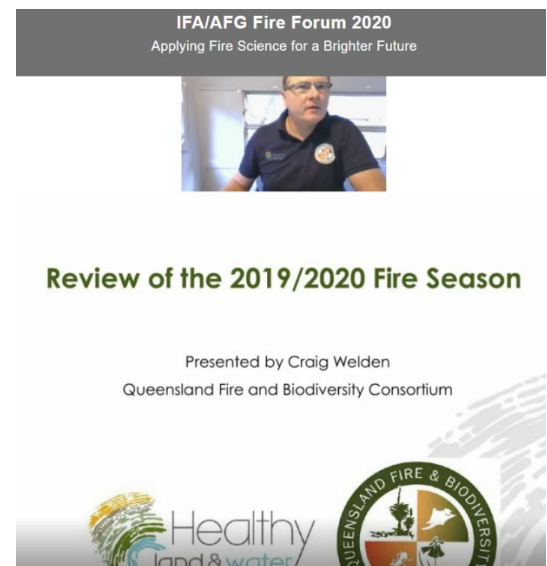
Conferences provide a valuable opportunity for the Healthy Land & Water to maintain established and build new relationships, which benefit the fire ecology community and extend the reach of the Queensland Fire & Biodiversity Consortium. The Queensland Fire & Biodiversity Consortium is actively involved in fire related conferences and forums throughout the year, including opportunities such as presenting, chairing and convening symposiums.

### 11.1 Conferences attended and presented

In the 2020 – 2021 year, the Queensland Fire & Biodiversity Consortium was involved in, or presented at the following conferences and forums:



- *Bushfire Recovery & Resilience Forum: Community Science in Practice, 15th May 2021*: Coordinated by Livingstone Shire Council and Growcom, at Yepoon Town Hall. Presentation delivered virtually by Craig Welden. Forum attended by 87 people.
- *Local Government of Australia Queensland NRM Forum, 8th June 2021*: Craig Welden presented on the Queensland Fire & Biodiversity Consortium Fire Management Workshops and the collaboration with local governments to achieve positive results.
- *National Bushfire and Climate Summit, 10 and 23 June 2020*: Craig and Sam attended and emphasised in discussion groups the importance of community engagement and the implications of a changing climate to biodiversity conservation to name a few.
- *Institute of Foresters Australia: Applying Fire Science for a Brighter Future Virtual Fire Forum, 24-25 June 2020*: Craig Welden presented on the review of the 2019/2020 Fire Season for Queensland.
- *Ecological Society of Australia Annual Conference, 30 November – 4 December 2020*: Paul Donatiu, Dr Samantha Lloyd and Craig Welden spoke on behalf of the Queensland Fire & Biodiversity Consortium and Healthy Land & Water (Section 11.2).



**Figure 17.** Craig Welden presenting at the Institute of Foresters Australia Fire Forum.

## 11.2 Annual Conference for the Ecological Society of Australia 2020

The Ecological Society of Australia (ESA) is a community of ecologists and related professionals who have been supporting and promoting ecological sciences and practices for 60 years. Alongside publications and activities, ESA hold an annual conference as an opportunity for environmental and ecological practitioners and academics to share knowledge. The 2020 conference marked the 60<sup>th</sup> anniversary of ESA and was held over five days between 30 November - 4 December. Due to COVID-19, it was held online.

The theme for the conference “*Understanding Ecological Extremes: Mechanisms of Resilience and Recovery*” was about understanding how species and ecosystems respond to and recover from disturbances such as pollution, habitat modification and fire.

Dr Samantha Lloyd chaired the first session “*Open Forum: Urban Ecology*” and session 9 “*Open Forum: Fire Impacts*”. Craig Welden gave a speed presentation entitled “*Cross-tenure Collaborative Fire Management: Building Capacity and Healthy Landscapes*” and Paul Donatiu gave a full presentation entitled “*The 19/20 Queensland Bushfire Season and Post-fire Plant Responses in the Border Rangers (Qld)*” during the conference.

Over the week, five fire symposiums were showcased:

- SYMPOSIUM: Indigenous Ecological Knowledge 10<sup>th</sup> Anniversary Symposium.

- SYMPOSIUM: Managing a cultural landscape and building resilience in a new world reality.
- SYMPOSIUM: Perspectives on a changing landscape of fire (1).
- SYMPOSIUM: Perspectives on a changing landscape of fire (2).
- SYMPOSIUM: Short-term impacts of the 2019-20 fire season.

The 19/20 Queensland Bushfire Season and Post-fire Plant Responses in the Border Ranges (Qld)	
<b>Speaker/s:</b>	Mr Paul Donatiu, Dr Samantha Lloyd, Mr Craig Welden, Queensland Fire & Biodiversity Consortium, Healthy Land & Water
<b>Aim:</b>	To undertake post-fire recovery and capacity building activities in the Border Ranges, Lamington National Park and Mount Barney National Park in South-East Queensland and in doing so, record the post-fire responses of rainforest and wet sclerophyll flora.
<b>Methods:</b>	Opportunistic field surveys to record plant response and successional status.
<b>Results:</b>	Of the 49 observed species, 39 pioneer early, secondary and mature species were seen to be resprouting, with others regenerating from seed.
<b>Discussion:</b>	Further analysis will be undertaken to compare results to existing flora response data to add to the understanding of rainforest recovery after bushfires.



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