

**Australasian Fire and Emergency Services Authorities
Council (AFAC) Review of the Management of Bushfires During the 2018-19 Fire Season
(Cronstedt Review)**

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Introductory Remarks

The 2018-2019 Tasmanian bushfire season conforms to a global trend of longer duration, geographically larger, and economically, environmentally, and socially more disruptive wildfire events. The 2019 fire season also fitted an emerging syndrome of lightning-ignited bushfires in western Tasmania. The Tasmanian bushfire season can be understood as an expression of the 'Anthropocene', a new trajectory for the Earth System induced by anthropogenic climate change, compounded by other factors such as land use and fire regime changes. Bushfires in the Anthropocene have a trajectory that tracks away from historical norms towards more extreme events. The increased frequency of abnormal fires will significantly reduce our ability to reliably ensure clean air, supply potable water, store carbon, and conserve soils.

The emergence of 'Anthropocene bushfires' raises profound questions for fire management and community safety, and requires the development of new fire management practices to protect human life, property and infrastructure, to conserve heritage and biodiversity, to manage conservation areas and national parks, and to sustain yields from forestry landscapes and hydroelectrical catchments. Anthropocene bushfires demand a recalibration of socio-political expectations around the capacity, effectiveness and financial costs of firefighting and fire prevention approaches, methods and practices.

It is in this context that I offer this submission AFAC Review concerning the 2018-19 Tasmanian bushfires. I address three issues that cross-cut the Terms of Reference of the Review: (a) communication, (b) managing emergency bushfire response vs. prevention trade-off and (c) the role of research, development, and training in adapting to Anthropocene bushfires. These views are my own but reflect the thinking behind the establishment of the *Fire Centre*, a new transdisciplinary research centre at the University of Tasmania that has a focus on providing solutions to the challenges of this new era of bushfire activity and impacts.

Communication

Bushfire is a multidimensional phenomenon with a deep entwinement of natural processes and human agency. Such complexity demands nuanced communication and intellectual framing. It is natural for fire managers to tackle a bushfire emergency using a command and control top-down approach, yet, the most effective pathway to avoid or mitigate fire disasters requires individuals and communities to undertake bushfire risk management.

Likewise, bushfire must not be framed exclusively as a 'disaster' or natural hazard, because bushfire is a vital ecological process in fire adapted plant communities. For these reasons, on-going integrated year-round communication, regardless benign or disastrous fire events, is critical for effective and sustainable fire management.

It was apparent that the Tasmanian Government public communications of the protracted 2018-19 fire event became suboptimal. By and large, official messaging was narrowly framed around the operational matters and advisories of the bushfire threat, yet the public hungered for a deeper and more coherent explanation of what was happening and why. In this situation there was an important role for academics to disseminate broader contextual information, discuss issues and present a range of points of view. During the 2018-19 bushfires the *Fire Centre* provided an evidenced and broad narrative to the fires and their context, and in some cases was able to temper alarmist claims about fire impacts. Regular media interviews with *Fire Centre* staff and traffic to the newly established *Fire Centre* website (<http://www.firecentre.org.au>) demonstrated we were an effective channel for disseminating content of value to the public. The *Fire Centre* also held a very successful and well-attended public lecture and forum with a panel that included representatives from the Tasmania Fire Service (Ms Sandra Whight Director Community Fire Safety Division, TFS) and the Tasmanian National Parks and Wildlife Service (Mr Jason Jacobi, Deputy Secretary TPWS). Feedback from our forum indicated that independent academic voices during a protracted fire crisis are most effective when there is information exchange with fire managers.

I am most also grateful to Ms Whight and Mr Jacobi for facilitating background information exchanges with their staff. This professional communication helped me and my staff, and hence members of the public, to understand the evolution of the fire situation. I would like to see such official information sharing between fire managers and University of Tasmania academics become more routine to ensure there is an informed and independent public discussion of bushfire events in Tasmania.

Effective delivery of information is critical to bushfire preparation as well as to communicate the details of an evolving bushfire situation. The official communication of the status of the fires and associated warnings hinged on the Tasmania Fire Service website. A complementary digital communication approach are smart-phone apps that can leverage mobile technology. Apps can provide highly targeted, specific, and nuanced messaging that inform of fire risk while providing new opportunities and approaches to delivering bushfire preparation information. In contrast to traditional channels of communication, such as websites, smart phone technologies can facilitate two-way information exchange between emergency services and the public, keeping a focus on fire prevention year-round. Apps therefore have significant potential to build resilient fire-ready communities.

To this end, the *Fire Centre* has been working with the TFS to develop a fire awareness smart-phone app called *FireWatch*. The app was initially funded by the Tasmanian Bushfire Mitigation Grants Program, which saw the prototype subjected to preliminary 'beta testing' in the summer of 2017-18, predominantly with TFS volunteers. Unfortunately, the app was not deployed for the 2018-19 fire season because of the difficulty finding funding for enhancements identified during beta testing. Funding was eventually received from a

Tasmanian Community Fund grant in late 2018. Some larger administrative barriers remain to be settled before this app can be deployed, involving ongoing administrative support and funding, and finalizing Intellectual property agreements between the University of Tasmania and the Tasmanian Government. The refinement, deployment and ongoing maintenance of *FireWatch* is a pivotal step in improving communication between fire managers and the public, and with appropriate investment can be a powerful conduit to the 'democratization' of bushfire risk management through building greater public awareness of bushfires, capacity to respond to bushfires, and trust in government agencies. Government investment in the deployment and ongoing support of this app should be a high priority.

Managing the emergency – preventative fire management trade-off

Globally the cost of fire suppression is surging and is becoming economically unsustainable. In the USA for example individual fire events can cost over US\$100 million. A similar escalation in costs is apparent in Tasmania, with a marked upswing in the costs from the 2012-13 fire season (around \$15 million) to around \$52 million in the 2015-16 fire season. The costs of the 2018-19 fire season have not been reported but they are likely to eclipse all previous fire seasons by a substantial margin.

The driver for the escalation in firefighting costs is related to the increasing use and growing reliance on aerial firefighting. Although this can be justified in the context of emergency response, an important concern that this leads to the decoupling of the scale of emergency response relative to the investment in fire prevention. Inadequate investment in fire prevention can itself lead to an emergency firefighting cost spiral, causing a vicious feedback loop. Large expenditures on emergency firefighting need to be understood as symptomatic of inadequate investment in fire prevention and fuel management. As such, I recommend that emergency firefighting expenditure is conceptualized as a 'price signal' used to drive investment in fire prevention. The government should commit to match investment in fire prevention proportional to emergency firefighting expenditure, ideally on a dollar for dollar basis.

Investment in fire prevention and fuel management should be spread across a spectrum of activities to avoid an overreliance on planned burning to reduce fuels. Alternative fire management and prevention strategies include mechanical fuel management ('green fire breaks'), subsidies for building and retrofitting of housing to become more bushfire resilient, improved planning of the wildland-urban interface, and public education programs. Government funding is also required to build an appropriately skilled labour force to manage fuels and fight bushfires in agencies, organization and enterprises outside the Tasmania Fire Service, including National Parks, Sustainable Timbers Tasmania, Hydro, Local Councils, agricultural enterprises, Tasmanian Aboriginal Community, Tasmanian Land Conservancy.

Role of research, development and training adapting to Anthropocene bushfires

Adaptation to the trajectory of larger-scale and longer duration fire seasons, and stemming their ecological, economic and social disruptions, demands investment in research and development, and training. Effective research and development must be cross-disciplinary

because no single agency, discipline or individual has the requisite skill sets and capabilities to comprehend, articulate and motivate the necessary adaptive change to Anthropocene bushfires. Universities, with their broad range of disciplinary interests spanning the creative arts, humanities and sciences, are an ideal vehicle for building adaptive capacity for communities to sustainably co-exist with fire. To this end I established the University of Tasmania Fire Centre to fill a critical global niche. Surprisingly, globally there remains no other university centre whose core mission is the holistic understanding of landscape fire and development of solutions to fire management.

The Fire Centre is designed to work closely with the Tasmanian community and promotes information exchange between academics and stakeholders and targets collaborative research and training programs. The Centre's mission is to *enable place-based solutions to the emerging global landscape fire crisis through community engagement and the creation and dissemination of research, education, outreach, and practitioner tools.*

With respect to research, a critical area for improvement is the development of case studies that document the ecological, environmental and social impacts of individual fire events, including both uncontrolled and planned bushfires. Case studies are essential for developing understanding of the Anthropocene bushfires and enabling evidenced-based evaluation of the effectiveness of firefighting techniques and various fire prevention interventions. Additionally, case studies are powerful vehicles for building a culture of collaboration because they require information exchange between agencies and university researchers, and they are also ideal as projects for training postgraduate students. Other key research areas are public communications, community preference for fuel management practices, community bushfire preparedness, health effects of bushfire risk and public strategies to mitigate bushfire health effects such as smoke exposure and psycho-social stress, comparative analysis of wildfire law and public policy, and economic analysis of the trade-offs and contrasts between fire management approaches. Such research must be tailored to suite the Tasmanian context and needs to be informed by global scholarship.

Research collaboration with Government and other stakeholders can lead to the upskilling of labour force in fire management, including fire behaviour prediction, implementation of planned burning programs and other forms of fuel management, and appreciation of fire impacts on ecological and environmental values and human health (biodiversity, water quality, and air pollution), and post fire ecological restoration programs. This can be achieved through the development of practitioner tools (such as methods for fuel hazard assessments, fire severity mapping and fire weather calculators), smart phone applications, and web-based delivery of training and research. An example of this approach is the smart phone app 'AirRater' (<http://airrater.org>) that was designed to help manage the adverse health impacts of smoke pollution. AirRater was a collaborative project between the University of Tasmania and the Tasmanian and Federal Governments.

Training is critical because the challenges of future fires will be substantially different to those in the past. Short courses are required to upskill current and train the next generation fire managers. The University of Tasmania Fire Centre has the capacity to develop courses that fill stakeholder identified training needs.

Conclusion

The 2018-19 bushfire season fits a trend of worsening bushfire in Tasmania, driven by climate change. To adapt to increasing threat of economically and ecologically destructive fires demands a significant re-evaluation of policy and practice in fire management. There is a critical role for the University of Tasmania Fire Centre in this process because it can bring together a wide diversity of skills and perspectives from the biophysical sciences and the humanities that can be directed to research, development and training.