

Attachment: STATUS OF INDEPENDENT REVIEWS AS AT August 2021

INDEPENDENT AFAC REVIEW - 2019

- The 2019 AFAC Review was led by Western Australian Mal Cronstedt and considered the causes, chronology and response of the 2018-19 bushfires along with a number of related matters.
- The report was released on 8 August 2019 and all nine recommendations were accepted in-principle by the Government.
- The Tasmania Fire Service is responsible for the implementation of all recommendations and reports that all recommendations are complete.

	Recommendation	Comment	Status
1	TFS, PWS and STT initiate a discussion among their Australian peers about good practice around managing new fire starts in remote terrain to include issues around identification, predictive analysis, risk management and suppression activities. The outcome should be a document which allows for benchmarking to accepted good practice across Australasia, from which Tasmanian fire agencies can develop protocols against which the management of future events can be tested.	Chief Officer made notification to COSC on 31/10/2019. Paper prepared and submitted to AFAC Rural Land Managers Group. The submitted paper has recommended the formation of a national working group to progress this matter. Current events nationally have delayed the formation of this working group. This work will be followed up by STT and TFS members of the Group, and reported through the Tactical Working Group.	Complete
2	TFS should pursue the creation of a cadre of volunteer remote area firefighters. In doing so the TFS should not consider itself limited to up skilling current volunteer brigade members, but should carry out a cost benefit analysis of creating one or more remote area firefighting units based	Additional funding of \$4 million allocated to State Fire Commission in 2020-21 budget. Three additional fire officers have been funded to implement and manage the new Volunteer Remote Area Team capability. \$450,000 has been allocated to support the roll out of the Program (marketing, doctrine, purchase of equipment and training). This will be implemented immediately.	Complete. Ongoing project work.

	in urban areas, in order to tap into the potential of those members of the urban based Tasmanian community who may have advanced knowledge and skills relating to navigation and survival in the wilderness.		
3	TFS should initiate a policy review (seeking support from Government as appropriate) to clearly identify what body or agency is responsible for planning, carrying out and enforcing fuel management on private property at a township level. If current arrangements are unclear or ineffective, TFS should request Government to consider making this a statutory responsibility of TFS and provide any additional funding required to support this function.	<p>Legal advice has been received from the Solicitor General.</p> <p>Advice confirmed responsibility clearly lies with the owner of the fuel.</p> <p>The Premier announced in State of the State a new process and legislation to streamline fuel treatment under bushfire hazard management plans.</p>	Complete. Ongoing project work to develop and implement new policy and legislation.
4	TFS, PWS and STT should work with Government and each other to continue to pursue a whole-of-state fuel management and burning program that encompasses all land tenures, meets the range of outcomes required by the State (township protection, risk reduction and landscape-scale burns and is inclusive of private landholders and local communities as well as all fire agencies.	<p>A Government's fuel reduction program has been in place since 2014.</p> <p>Funding for this program is also used for burning in the Tasmanian Wilderness World Heritage Area.</p> <p>Additional resources have been committed by the Premier for burn crews and private land burning.</p>	Complete

5	<p>TFS, PWS and STT agree an updated version of the Interagency Fire Management Protocol which maintains the principle that there will be one state-wide point of command for major unwarranted fires burning in the State of Tasmania, explicitly recognises the right of each of TFS, PWS and STT to have their objectives prioritised in incident action planning and adequate resources applied to objectives, and provides a mechanism for executive decision-makers from TFS, PWS and STT to come together and agree objectives and resourcing levels that will then be operationalised by whole-of-State control structure.</p>	<p>The 17th Edition of the Inter-Agency Protocol was distributed in the first week of December 2019. The new Protocol was a major rewrite, and new structures were created for multi-agency collaboration and coordination.</p> <p>A single point of command for major fires has been clearly articulated in the new Protocol.</p> <p>Communications materials have been distributed internally outlining the changes.</p>	Complete
6	<p>TFS, PWS and STT should establish a State Air Desk, to be staffed by specialist staff year-round, with responsibility for managing both preparatory and contractual issues out of season as well as aircraft management when fires or other emergency events are occurring.</p>	<p>A State Air Desk has been created within the State Operations section of the TFS. The Air desk Operates all year round.</p> <p>Multi-agency Aviation Standard Operating Procedures have been finalised and are being signed off by the newly formed multi-agency Strategic Coordinating Group.</p>	Complete
6a	<p>The proposed Tasmanian State Air Desk should have a finance officer attached to its staff.</p>	<p>Administration Officer (including finance) appointed and has commenced.</p>	Complete

7	<p>TFS, PWS and STT should jointly reach a decision on whether a winch capable remote area firefighting capability should be maintained in Tasmania; which agency or agencies should be responsible for that program; and how a winch capable remote area firefighting capability can be safely trained and kept current, to include consideration of the availability of winching aircraft. If the decision is taken not to maintain this capability in the State, TFS, PWS and STT should identify how the gap in capability that this represents should be filled in future fire seasons.</p>	<p>The government has announced and funded this capability over a four year term. 24 staff have been trained. Additional staff will be added to the team and train annually as required. Winch capable helicopter was contracted for the 20/21 season. The same operator will be used in the 21/22 season. All policies and procedures have been developed.</p>	<p>Complete. Ongoing project work.</p>
8	<p>TFS, PWS and STT should jointly carry out work to identify acceptable shift lengths and patterns – including requirements for rest days – for all personnel working on emergency operations. Once these have been identified, systems should be put in place to ensure that HR rostering practices follow these fatigue management guidelines. And senior staff should lead by example and ensure that they, as well as the people working under them, take adequate rest breaks.</p>	<p>Rosters and developed and implemented across STT, TFS, and PWS every summer. Minor amendments to SOPs will be made for the current fire season. Within the limits of different awards there are fatigue management guidelines in place for PWS, STT and TFS.</p> <p>The Technical Working Group (TFS, STT and PWS) meet regularly to ensure, as far as possible, a consistent approach to rostering, shift lengths and patterns.</p>	<p>Complete and ongoing</p>
9	<p>TFS should engage in discussions with Government about the construction of</p>	<p>Funding was announced by the Premier for development of appropriate State Control, Coordination and Communications</p>	<p>Complete Planning for new State Operations</p>

	purpose-built State Control Centre facilities for emergency management in Tasmania.	facilities in the State of the State in March 2020.	Centre is underway.
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INDEPENDENT AFAC REVIEW - 2016

- The report, containing 12 recommendations, was released on 30 April 2016.
- There was no official Government response to the recommendations.
- The Tasmania Fire Service is responsible for the implementation of all recommendations and reports that all recommendations are complete.

Number	Recommendation	Progress	Status
1	The Tasmanian fire agencies develop a joint multi-agency Fire Preparedness Matrix to guide decision-making in response to severe fire weather conditions or capacity issues.	<p>Reviewed current trigger points from PWS, SST & TFS for severe fire weather conditions</p> <p>Determine point for combined regional report/briefing to provide regional report on preparedness to Hot Day Response etc</p> <p>Developed a formal process and multi-agency matrix to document trigger points and procedures for all agencies</p> <p>TFS continues to work with our partner agencies to continually improve the management of severe fire events, including pre-season engagement including, but not limited to, environmental groups in order to ensure communities have a better understanding of fire management tactics. There were many operational improvements that were applied during the 2018-19 fire season. In particular, improved community communication and information sharing was very well received and the National Resource Sharing arrangements, including aircraft, were successful.</p>	Complete
2	<p>The Tasmanian fire agencies consider the development of fire operational guidelines to avoid long-term environmental impacts such as:</p> <ul style="list-style-type: none"> • strategies and tactics that will minimise the impact of fire management activities 	<p>This has been addressed through the development of the Fire Operations in Tasmania's Parks and Reserves. This document is updated annually.</p> <p>The operations plan addresses the decision making process in relation to retardant drops and the use of machinery.</p> <p>In addition, the development of a TWWHA Fire Management Plan has commenced work on this plan with a draft due to be released in September 2021. The plan will determine desired fire regimes for different vegetation</p>	Complete and ongoing

	<ul style="list-style-type: none"> • conditions under which earthmoving equipment and fire chemicals may be used • information on seasonal conditions and the times of year when various strategies and tactics should be applied; and • fuel management strategies. 	types with a view to improving ecological condition and mitigating against wildfire impact. The plan will detail the location of areas for which protection plans will be developed. The protection plans will detail specific options to halt fire spread either through physical means (firebreaks); suppression (chemical application); or protection plans that detail alternative approaches (i.e sprinkler systems).	
3	The Tasmanian fire agencies develop a multi-agency position to ensure that training for Incident Controllers includes training in how the transition from local incident control to Divisional Command is managed	This is being absorbed into the development and delivery of various pathway development programs for both career and volunteer TFS members.	Complete and absorbed into Business as Usual
4	The fire agencies consider how the Regional Fire Operations Centre (RFOC) as a concept adds value once a Level 3 IMT is up and running in a region.	Work on this has been incorporated into Recommendation 1	Complete
5	Further conversations take place between TFS and SES to identify what skills and capabilities may be transferable between the agencies, not just in the event of a future fire, but in case of future hazards for which SES is the primary response agency, including flood, earthquake and tsunami.	TFS and SES continue to work closely to identify transferable skills. This was put into operation successfully during the 2018-19 fire season with SES providing invaluable assistance on the ground and in particular in undertaking Rapid Impact Assessments.	Complete and ongoing
6	The Tasmanian fire agencies think more broadly about how staff who are already employed by Government could support the management of future emergencies.	During 2018-19 bushfire season the Interoperability Register was used extensively to provide support staff to IMTs, ROCs and the State Operations Centre. The use of government employees was very successful and demonstrates the development of the Register since its initial establishment.	Complete

7	<p>The Tasmanian fire agencies take steps at a national level to share learnings from the 2016 fires about the administration of interstate assistance and support the codification of the workings, structure and reporting lines of an Interstate and International Liaison Unit for future complex deployments within Australia and New Zealand.</p>	<p>Development of an Operations Manual aimed at introducing interstate and overseas fire fighters to fire suppression in Tasmania's parks and reserves. The manual was used during the 18/19 fire season.</p> <p>In August 2016, the Arrangement for Interstate Assistance (AIA) was developed by the National Resource Sharing Centre, a division of the National Aerial Firefighting Centre, in consultation with the Commissioners and Chief Officers Strategic Committee (CCOSC). It supports the timely and meaningful exchange of capability between Australian states and territories during significant incidents. The Commonwealth, through Emergency Management Australia (EMA) co-chairs CCOSC and is integral to this Arrangement. The AIA is intended to be the primary arrangement for mutual assistance in Emergency Management Activities being conducted by Australian and New Zealand agencies. The AIA is not intended to replace existing bi-lateral agreements which provide for everyday response operations by agencies across borders in support of their immediate neighbours. It caters for those times when significant resource deployments are requested for response to large scale events. In creating the AIA, the NRSC has had regard to previous interstate assistance arrangements developed by the Forest Fire Management Group and the Australian Council of State Emergency Services, and the Australasian Fire and Emergency Service Authorities Council Guide to resource sharing.</p>	Complete
8a	<p>The Tasmanian fire agencies review their pre-season engagement with groups such as (but not limited to) environmental groups who might benefit from a greater understanding of fire management tactics, in order to inform them of and receive feedback on intended approaches to firefighting and fire management</p>	<p>During the 2019 fires, the PWS and TFS convened two major stakeholder meetings with key conservation organisations. This action was initiated as a result of the 2016 bushfire experience.</p> <p>The TFS instigated a broad range of multi-agency measures in preparedness for the 2018-19 fire season, including public education campaigns, a Fuel Reduction Burning Program, use of predictive modelling, exercising emergency management plans, as well as ensuring appropriate resourcing</p>	Complete. Being continually Reviewed each fire season.

		<p>arrangements and contracts (e.g. aircraft and plant / machinery) were in place for response to fires.</p> <p>The TFS undertook a summer bushfire public education campaign, targeting high risk areas, encompassing:</p> <ol style="list-style-type: none"> 1. Bushfire Ready Schools; 2. Bushfire Ready Neighbourhoods; and 3. Community Bushfire Protection Planning. 	
8b	<p>The Tasmanian fire agencies review:</p> <p>* the work of the Public Information Section at incident management, regional and State level, to develop an increased appreciation of what information management might be most appropriate to service the public interest in understanding the progress of the incident and to identify ways of providing surge capacity to resource effective information management in protracted and significant incidents.8b</p>	<p>In response to recommendation 8, the TFS and PWS has improved the level of information provided to key stakeholders and community groups. In the 2019 fire season, a visitor management and environmental team were established to inform the public of visitor impacts arising from the fires and what actions were being taken to protect natural and cultural values. These teams were imbedded with the communications sections of PWS to deliver information via TFS public briefings; TFS and PWS facebook and other media channels (i.e websites). The PWS also produced weekly reports on the impacts of the fires on natural and cultural assets. This information was well received.</p> <p>Considerable improvements in information management, particularly with members of the community were delivered, particularly during the 2019 fires season. All Incident Management Teams and Regional Operations Centres had designated Public Information Officers, in addition to the Public Information Officer assigned to the State Operations Centre. Throughout the bushfire campaign, there were a significant number of community warnings issued to impacted communities. In addition there were several community forums held along with the insertion of Community Liaison Officers into evacuation centres to provide contemporary information to those impacted by the bushfires. A total of 28 Community Forums were held during the</p>	Complete Reviewed each fire season

		height of the fires. TFS also used a “talking head” on ABC local radio to provide additional context to the community information being provided. Daily media briefings were also held during the height of the fire activity at 1500 hours to provide informative and current bushfire information to the whole community.	
9	All Tasmanian fire agency staff who are assigned to aviation-related roles be required to complete the formal nationally recognised training appropriate to that role. Tasmanian fire agencies arrange secondments to larger states for staff who are going to undertake aviation-related roles, to give them practical experience of the role in advance of any major incidents.	Air Attack Supervisors, Air Base Managers and Air Observation Officers all are required to complete the nationally recognised training through AFAC.	Complete
10	The Tasmanian fire agencies commission a review into the effectiveness of aerial firefighting in the 2016 fires, in order to better understand and to document for future reference the cost-effectiveness of specific fire suppression strategies and tactics in different vegetation types. The Review should include a comparative analysis of fire suppression options whether aerial or ground-based.	The fire response in 2019 included a number of strategies adopted since the 2016 bushfires in the Tasmanian Wilderness World Heritage Area (TWWHA). This included: <ul style="list-style-type: none"> the use of aerial fire retardants delivered by aircraft, including large aerial tankers, supported by a decision support tool to guide environmentally appropriate use of these products; rapid detection through early spotter flights, deployment of initial attack crews, helicopter water-bombing, and early commencement of aircraft water-bombing contracts; For 2018-19, National Aerial Firefighting Centre (NAFC) aircraft contracts were put in place. This provided two (2) fixed wing and five (5) rotary assets along with additional resources under “call on demand” conditions. This supports the TFS led concept of operations of ‘rapid weight of response’,	Complete. Reviewed each fire season

		<p>which aims to contain and extinguish newly detected/reported bushfires at the earliest opportunity on days of very high fire danger.</p> <p>Aircraft are used to slow the progress of a fire until it can be attacked with ground crews. This improves the probability of first attack success by up to 50 per cent or more. The use of aircraft for firefighting suppression can be economically justified in events where other resources are unable to reach a fire for suppression. The use of initial aerial support with ground resources is the most economically efficient approach to suppression, according to the AFAC Bushfire Cooperative Research Centre.</p> <p>This recommendation has also been addressed through the 2019 Winch capability recommendation No 7 AFAC Operational Review in 2019.</p>	
11	That sufficient Tasmanian firefighters are trained in winch operations to sustain a 'first strike' capability until they can be reinforced (if necessary) by interstate capability; and that consideration be given to how winch-capable aircraft can be sourced to support this activity at fire incidents.	See recommendation 7 - 2019 AFAC Review.	Complete
12	That a full review be undertaken of the benefits and costs of training a cadre of Tasmanian volunteer firefighters in remote area firefighting, with reference to the experience of jurisdictions interstate that already do so.	See recommendation 2 - 2019 AFAC Review.	Complete

2016 TWWHA BUSHFIRE AND CLIMATE CHANGE RESEARCH PROJECT

- Following the fires that threatened the Tasmanian Wilderness and World Heritage Area (TWWHA) in 2016 the former Premier committed \$250,000 for the TWWHA Bushfire and Climate Change Research Project to examine the impact of climate change on the TWWHA and ways to improve how Tasmania prepares for and responds to bushfires in the TWWHA.
- The Tasmanian Government’s response to the Research Project was publicly released in December 2017. Of the Project’s 18 recommendations, the Tasmanian Government supported 13 in full, and five in-part (noting these recommendations involved longer-term strategic planning and resourcing considerations).
- Being a research project rather than an operational review, some recommendations require a longer time to implement. The two agencies responsible for implementation of the recommendations, DPIPWE and DPFEM (TFS), report that:
 - Thirteen (13) recommendations are complete.
 - Four (4) recommendations will be implemented in 2021.
 - One (1) recommendation (#18) is expected to be completed in 2023.

No.	Recommendation	Govt Response	Lead Agency	Progress	Output	Completion
Bushfire Prevention						
1	Comprehensive fire management planning	Supported	DPIPWE (PWS)	Fire Management Officer (TWWHA) commenced in October 2018 and has drafted a <i>TWWHA Fire Management Plan</i> that will contain: <ul style="list-style-type: none"> • clear, well-defined objectives for fire management for the TWWHA; and • clarity regarding circumstances in which priority will be given to protecting the Outstanding Universal Value of the TWWHA over built assets. 	<i>TWWHA Fire Management Plan</i>	2021

No.	Recommendation	Govt Response	Lead Agency	Progress	Output	Completion
				An public consultation draft has been prepared and is on track to be released for public comment in September 2021. There have been delays due to additional requirements for stakeholder consultation. The NPWAC has been consulted on the draft ahead of public comment.		
2	The Bushfire Risk Assessment Model (BRAM)	Supported	DPIPWE (PWS)	PWS to establish a governance framework for fire management tools including BRAM and the Bushfire Operational Hazard Model (BOHM). BRAM has been redeveloped to include:	Governance arrangements for fire management tools including BRAM and the BOHM.	Complete
				<ul style="list-style-type: none"> • <i>Acquisition of Aboriginal Heritage data (complete)</i> • <i>Making BRAM outputs available on COP (complete)</i> • <i>Transition to ArcGIS (complete)</i> • <i>Modification to accept climate futures (complete)</i> • <i>Appropriate fire spread tools for vegetation types Web Interface</i> 	Project Plan for update of BRAM and BOHM	Complete
					Updated BRAM	Complete
3		Supported	DPIPWE	TWWHA Fire Management Plan to include	Updated firescape	Complete

No.	Recommendation	Govt Response	Lead Agency	Progress	Output	Completion
	Objectives for planned burns		(PWS)	<p>clear objectives for management burning in the TWWHA including indigenous burning practices. (Rec 1)</p> <p>Firescape and other tools to be used to guide the development of planned burning programs to meet objectives and new data incorporated into the models as they become available.</p>	<i>TWWHA Fire Management Plan</i>	2021
4	Monitoring the consequences of fire	Supported-in-Part	DPIPWE (NCH)	<p>Develop a framework for monitoring impacts of bushfires and planned burns in the TWWHA including trigger points for field-based assessments of fire impacts on natural values.</p> <p>Monitoring reports completed to date in preparation for framework development:</p> <ul style="list-style-type: none"> • Lake Mackenzie Alpine Fire Impacts Workshop, 8 June 2016. Natural and Cultural Heritage Division, Department of Primary Industries Parks Water and Environment, Hobart, Nature Conservation Report Series 16/2 • Assessment of the ecological impacts of the 2016 Mersey Forest Fire Complex, Nature Conservation Report no 17/5. 	<p>Further monitoring at Lake Mackenzie (Mersey Forest Complex fires)</p> <p>Future monitoring in accordance with Monitoring Framework.</p>	Complete
					Monitoring framework	Complete

No.	Recommendation	Govt Response	Lead Agency	Progress	Output	Completion
				<p>Department of Primary Industries, Parks, Water & Environment, Hobart.</p> <ul style="list-style-type: none"> PWS has recently been working on adapting a bushfire severity mapping tool which utilises satellite imagery to identify the intensity of the burn and impact to vegetation. The tool should be available for use in 2021/22 and may also be used for assessing the success of fuel reduction burns. 		
Bushfire Preparedness						
5	Research on fire, and natural and cultural heritage values	Supported	DPIPWE (NCH)	<p>TWWHA Bushfire Research Group meets annually to provide a forum for a broad range of stakeholders to provide input to research priorities. Most recent workshop held on 26 August, 2021.</p>	Issues Paper: Review of TWWHA Fire Ecology and Management Research Program	Complete
				<p>Bushfire research is conducted by institutions such as the UTAS, University of Melbourne, Sustainable Timber Tasmania, and Forest Practices Authority. Some of this may be part funded by DPIPWE or with the benefit of funding under the NPA. Availability of external research funding sources and the success or otherwise of any research proposals submitted for consideration dictates what research might</p>	<p>Future research program to include consideration of recommendation and review</p>	Complete and ongoing

No.	Recommendation	Govt Response	Lead Agency	Progress	Output	Completion
				<p>be undertaken.</p> <p>Current or recently completed research program includes:</p> <ol style="list-style-type: none"> 1. Lake Mackenzie Rehabilitation Trials (ongoing) 2. Effects of planned burning and bushfire on biodiversity 3. Fire impacts on soils (ongoing). 4. A study into the resilience of Hickman's Pygmy Shrimp to fire (complete) 5. A study of ground parrot activity in relation to planned burning in moorlands near Melaleuca (ongoing) 6. An ongoing research and management program to identify and determine at risk Aboriginal cultural heritage sites in the TWWHA including those at risk of impact from climate change (ongoing). 7. A Cultural Burning workshop for Aboriginal People (ongoing) 8. A fire research program assessing buttongrass moorland fire management, peat combustion, and impacts of climate change on priority 		

No.	Recommendation	Govt Response	Lead Agency	Progress	Output	Completion
				<p>vegetation(ongoing)</p> <p>A review of research and monitoring of natural values impacts in moorlands/treatable fuel areas is being conducted in conjunction with the development of the TWWHA Fire Management Plan and future research priorities will be identified.</p>		
6	Research on fire vulnerability, fire behaviour and fire model inputs	Supported	DPIPWE (NCH/PWS)	<p>Short term research effort has been directed as proposed in the recommendation as opportunities arise:</p> <ul style="list-style-type: none"> • ACE CRC completed an Assessment of the viability of planned burning as a management tool under a changing climate. Funded by the Tasmanian Bushfire Mitigation Program (TBMP) • UTAS research into organic soil moisture thresholds for combustion completed. Funded by the TBMP. This UTAS work on the combustion of Organic soils is being supported with extensive fieldwork and analysis of soils undertaken by DPIPWE. A draft tool for field assessment of organic soil moisture and combustion likelihood has been developed and is undergoing field trials. 	<p>Complete TWWHA funded Organic Soil Combustion Project</p> <p>Complete TWWHA Organic soil mapping project</p>	Complete and ongoing

No.	Recommendation	Govt Response	Lead Agency	Progress	Output	Completion
				<ul style="list-style-type: none"> DPIPWE is mapping the location of organic soils within the TWWHA to assist with bushfire management and a draft map of likely organic soils across Tasmania has been prepared. Release of the map is planned for July 2021. Buttongrass Moorland Landcover Mapping Trial to identify fractional cover (bare ground, green and non-green vegetation) shown to not be feasible using remote sensing tools. 		
7	Lightning and ignition detection	Supported-in-part	DPIPWE (PWS)	<p>New Inter-Agency Protocol for responding to lightning storms, including detection.</p> <p>Remaining activity against this recommendation to be subsumed under implementation of recommendation 1 of the AFAC Review into the 2018-2019 fires, which called on TFS, PWS and STT to initiate a national discussion among their Australian peers about good practice for managing new fire starts in remote terrain to include issues around identification, predictive analysis, risk management and suppression activities.</p> <p>In the 2020/21 fire season PWS and TFS subscribed to a new satellite based lightning</p>	<p>New Inter-Agency Protocol detailing procedure for responding to lightning storms, including detection, pre-positioning and response.</p> <p>PWS annual fire action plans detail detection strategies.</p>	Complete
				<p>Discussion paper prepared and submitted through the AFAC Rural</p>	Complete	

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				and hotspot detection system (Ororatech).	Land Managers Group	
					Subsumed under Rec 1 of AFAC Review 2019	Complete
8	Investment in facilities and equipment that enhance fire management capabilities in the TWWHA	Supported-in-part	DPIPWE (PWS)	Two initiatives to better understand fuel moisture in SW Tasmania have been undertaken. New weather stations have been purchased and deployed to ensure coverage of the TWWHA for fire suppression and fuel reduction burning. Sprinkler systems have been purchased. Additional investment in facilities and equipment to support implementation of asset protection plans as the plans are developed and as funding allows.	CSIRO Cosmos (Cosmic Ray Sensor) installed near Scotts Peak	Complete
					Remote Automatic Weather Station on the Davey River	Complete
Bushfire Response						
9	Mapping of values	Supported	DPIPWE (NCH)	Revision mapping of alpine vegetation communities and other fire sensitive vegetation communities in the TWWHA extension area underway. Sphagnum peatland mapping substantially remapped; and pencil pine (Athrotaxis cupressoides) vegetation remapping	Revision mapping of high priority fire sensitive vegetation communities. Incorporate the most up-to-date and available vegetation,	Complete and ongoing Annual process each spring

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				<p>commenced in the Central Plateau region.</p> <p>Revision mapping of pencil pine vegetation completed, for the Mt Field National Park.</p> <p>The very tall forests (forests with at least one eucalypt over 70 m in height per hectare) were mapped from the available LiDAR for the TWWHA.</p> <p>BRAM updated annually with the latest spatial data available (rec 6). Fine scale vegetation revision mapping was also undertaken during the 2019 fires to assist with on-ground fire protection activities for iconic fire sensitive vegetation.</p> <p>High resolution imagery across the central plateau has been captured in January 2019 to assist in mapping high priority vegetation communities.</p> <p>Aboriginal Heritage Tasmania have provided buffered spatial data/polygons for Aboriginal cultural heritage sites for the BRAM.</p>	soil and other natural and cultural values mapping into TASVEG and BRAM	
10	PWS to review its immediate, medium and long-term fire suppression	Supported	DPIPWE (PWS)	Outputs to address climate futures, an analysis of demographics, organisational change and resource requirement of the department's capability, suitable facilities and access to equipment and appropriate	BOHM updated to accept climate change outlooks	Complete
					Resource Deployment	Complete

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	capabilities, including staffing.			contractors (plant, equipment & aircraft). A summary report will include a succession plan to overcome workforce gaps. The workforce capability plan (Model of Fire Cover) has been drafted and consultation with TFS and STT is expected to be completed in September 2021.	Tool Workforce capability review (Model of Cover).	2021
11	Use of volunteers	Supported	TFS	This recommendation reflects an election commitment 'Supporting our Emergency Volunteers' as well as recommendation 12 from AFAC 2016 Review and recommendation 2 from AFAC 2019 Review. Project manager appointed and project plan is in development.	Refer Rec 2 from AFAC 19	Complete
12	Fire suppression techniques and methods	Supported in part	DPIPWE (PWS)	Engaged with NSW firefighting agencies in regard to the adoption of the joint operational protocol for remote area firefighting. Reviewed NSW PWS & RFS helicopter winching operations and incorporated into Aerial winching procedures.	Continue to engage with the sector in national forums such as the Forest Fire Management Group (FFMG), the Fire Equipment Development Officers Group (FEDOG), AFAC Rural Land Management Group. Incorporate policies,	Ongoing and incorporated into BAU

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					procedures and equipment as appropriate	
13	Aerial fire suppression	Supported	DPIPWE (PWS)	Review NSW PWS & RFS helicopter winching operations (rec 12). Model of Fire Cover – work underway (Rec 10)	Review and report on aircraft capability & staff aviation training requirements.	Complete
					Develop a Model of Cover (Rec 10) for aviation capability	2021
14	Research on fire suppression chemicals	Supported	DPIPWE (PWS)	Literature review of ecological impacts of firefighting chemicals Research & monitoring program developed Ten long-term monitoring plots established Pre- application surveys for vegetation, soil chemistry, soil invertebrates complete Post- application surveys for vegetation, soil chemistry, soil invertebrates- scheduled The final report date will depend upon the time that treated areas return to a steady state after application.	Literature review of ecological impacts of firefighting chemicals	Complete
					Research and monitoring program to determine impacts of firefighting chemicals on TWWHA values commenced.	Established
15		Supported	DPIPWE	Decision support tool (spatial layer) and	Decision support tool for the use of	Complete

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	Use of fire suppression chemicals		(PWS)	guidelines developed & loaded onto COP	firefighting chemicals	
					Guideline document	Complete
16	Improved public information and communications	Supported	DPIPWE (PWS)	PWS Public Communications Officer manual prepared. PWS website rebuilt. Planned burning page and alerts added.	Communications Plan on bushfires and fire management	Complete
Bushfire Recovery						
17	Rapid assessment of the impacts of major bushfires in the TWWHA	Supported in part	DPIPWE (PWS / NCH)	Rapid Impact Assessment approach trialled during the 2019 fires and evaluated in terms of its utility and compared to a bushfire rapid risk assessment approach as well as that utilising burned area assessment teams. Current work on bushfire intensity mapping underway will assist with rapid impact assessments (see AFAC recommendation 4 from 2016).	Agreed Rapid Impact Assessment Protocol	Complete
18	Ecosystem rehabilitation and restoration trials	Supported	DPIPWE (NCH)	Contract awarded to the University of Tasmania to undertake Rehabilitation Trials for fire-affected pencil pine and Sphagnum	Project plan approved by DPIPWE Steering Committee	Complete

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				<p>wetlands over a four year period at Lake Mackenzie. This work is well advanced, with final results due in June 2022.</p> <p>DPIPWE has received NDRRA funds to extend existing Lake Mackenzie Rehabilitation Trials project to include a focus on burnt soils. The consultant firm Wild Ecology is undertaking this work. Trials are in progress with final results expected in June 2023.</p>	Report and decision support tools: pencil pine and Sphagnum trials	June 2022
					Report and decision support tools: soils	June 2023