

# **AFAC INDEPENDENT OPERATIONAL REVIEW**

**A review of the management of the Tasmanian  
fires of January 2016**

Prepared for Tasmania Fire Service,  
Forestry Tasmania and Parks and  
Wildlife Service Tasmania

April 2016

## ACKNOWLEDGEMENTS

The following conducted this Review on behalf of the Australasian Fire and Emergency Service Authorities Council (AFAC):

- Assistant Commissioner Tom Dawson – Queensland Fire and Emergency Services
- Bob Conroy
- Paul Considine – Manager National Resource Sharing Centre, National Aerial Firefighting Centre

Overall direction was provided by the AFAC office.

The Review team would like to thank those individuals who gave freely of their time and spoke openly with the Review members. The team benefitted from the input of representatives of the Tasmanian fire agencies, representatives of interstate agencies that assisted with the management of the fires, officials from the Tasmanian State Government and representatives of organisations with an interest in promoting the values of the Tasmanian wilderness areas. The manner of participation was supportive of the aim of this Review to establish areas of good practice and identify opportunities for progressive improvement.

The input of these individuals in preparing this document was of great benefit to the Review team. However the content of this report and its conclusions remain the joint responsibility of the team.

AFAC, April 2016

## Copyright © 2016, Australasian Fire and Emergency Service Authorities Council Limited

All rights reserved. Copyright in this publication is subject to the operation of the Copyright Act 1968 and its subsequent amendments. Any material contained in this document except the cover photographs can be reproduced, providing the source is acknowledged and it is not used for any commercial purpose whatsoever without the permission of the copyright owner.

Australasian Fire and Emergency Service Authorities Council Limited (ABN 52 060 049 327)

Level 1, 340 Albert Street  
East Melbourne Victoria 3002  
Telephone: 03 9419 2388  
Facsimile: 03 9419 2389

Email: [afac@afac.com.au](mailto:afac@afac.com.au)  
Internet: <http://www.afac.com.au>

## Disclaimer:

This document is constructed from consultation and research between the Australasian Fire and Emergency Service Authorities Council Limited (**AFAC**), its members and stakeholders. It is intended to address matters relevant to fire, land management and emergency services across Australia and New Zealand.

The information in this document is for general purposes only and is not intended to be used by the general public or untrained persons. Use of this document by AFAC member agencies, organisations and public bodies does not derogate from their statutory obligations. It is important that individuals, agencies, organisations and public bodies make their own enquiries as to the currency of this document and its suitability to their own particular circumstances prior to its use.

AFAC does not accept any responsibility for the accuracy, completeness or relevance of this document or the information contained in it, or any liability caused directly or indirectly by any error or omission or actions taken by any person in reliance upon it.

Before using this document or the information contained in it you should seek advice from the appropriate fire or emergency services agencies and obtain independent legal advice.

Photo next page: Pencil pine tree north of Lake Mackenzie – damaged but survived the 1961 Central Plateau fire – scorched again. *Photo: Chris Emms, Fire Management Officer, Parks and Wildlife Service Tasmania*

# AFAC INDEPENDENT OPERATIONAL REVIEW

A review of the management of the Tasmanian  
fires of January 2016



# TABLE OF CONTENTS

<b>1 Summary</b>	<b>4</b>
<b>2 About the Review</b>	<b>6</b>
Introduction	6
Terms of Reference	6
Relationship to other review activities	7
Methodology	7
<b>3 The Tasmanian fires of January 2016</b>	<b>8</b>
Weather and climate	8
Significance of climate change	8
Lightning Caused Ignitions in Dry and Very Remote Areas	11
Recommendation 1	11
Summary of the Major Fires 13th January to 24th March	14
The Wuthering Heights Fire Complex	14
The Mawbanna Fire	14
Griffiths Creek Fire	14
Maxwell River Fire	14
The Mersey Forest Fire Complex	14
Gordon River Mt Cullen	14
Timeline of the first 10 days of the fires	16
<b>4 The Tasmanian emergency management context</b>	<b>17</b>
Tasmanian Emergency Management (EM) arrangements	17
State and Regional planning	17
State Emergency Management Plan	17
The State Fire Management Council	17
Fire Management Area Committees	17
State Fire Protection Plan	17
State Bushfire Safety Policy	18
Interagency Arrangements	18
Multi-Agency Coordination Group (MAC)	18
Interagency Protocol (2015-16)	18
Tasmanian Emergency Inter-Operability Register	18
<b>5 Our findings</b>	<b>20</b>
5.1 TOR 2: The understanding of and the priority placed on environmental values and the consequences of existing land management of the fire affected areas and the effectiveness of fire tactics used for wilderness area fires	20
Impact of Bushfires on Environmental Values	20
Policy and Planning Framework for Fire and the Environment	20
Fire Management in the Tasmanian Wilderness World Heritage Area	21
Impacts of the 2016 fires on the TWWHA	22
Western Tasmania Aboriginal Cultural Landscape	24
The Tarkine	24
Understanding of and Strategic Prioritisation of Environmental Values	25
State Level Strategic Fire Risk Assessment and State Strategic Bushfire Control Plans	25

Strategies, tactics and suppression guidelines.....	27
Land Management Activities .....	28
5.2 TOR 3: Was the incident management structure managed appropriately in terms of AIIMS? .....	28
Recommendation 2 .....	28
Recommendation 3 .....	29
5.3 TOR 4: Was regional and state level co-ordination effective, to include consideration of the relationship between the State Fire Operations Centre, the regional IMTs and the Multi-agency Co-ordination arrangements (MAC)? .....	30
Recommendation 4 .....	31
5.4 TOR 5: Was integration of other response and support agencies, local and State government effective? .....	32
Recommendation 5 .....	33
Recommendation 6 .....	33
5.5 TOR 6: Was early and sufficient consideration given to calling for interstate assistance, was the assistance requested in a timely fashion and was it appropriate/sufficient and how well was the interstate assistance managed? .....	34
Timeliness of interstate resource requests .....	35
Adequacy of interstate resources requested.....	36
Use of Australian Defence Force assets.....	37
Management of Interstate Deployments.....	38
5.6 TOR 7: The broad effectiveness of targeted community messaging and warnings specific for rural interface and wilderness environments.....	39
Recommendation 7 .....	39
5.7 TOR 8: The effectiveness of aviation management used in support of the fire response .....	42
Recommendation 8 .....	42
Recommendation 9 .....	43
Recommendation 10 .....	44
5.8 TOR 9: Comment on appropriateness of objectives and measures of success identified and any other factors to improve effectiveness of agency involvement before, during and after the fires. ....	45
Objectives and measures of success .....	45
Other factors to improve agency effectiveness.....	46
Remote area firefighting.....	46
Recommendation 11 .....	47
Recommendation 12 .....	47
Fire behaviour analysis.....	48
State Control Centre capacity.....	48
Transition to recovery .....	49
<b>6 Conclusion .....</b>	<b>50</b>
<b>7 Glossary.....</b>	<b>51</b>
<b>Annexe A: the Tasmanian fire agencies .....</b>	<b>52</b>
The Commission, Chief Officer and Tasmania Fire Service .....	52
Parks and Wildlife Service.....	52
Forestry Tasmania .....	53
<b>Annexe B – the Review team.....</b>	<b>54</b>
<b>Annexe C .....</b>	<b>55</b>
Organisations whose staff contributed to the Review.....	55
<b>References .....</b>	<b>56</b>

# 1 SUMMARY

- 1.1 On 13th January 2016, a dry lightning storm passed over North and West Tasmania. Hundreds of lightning strikes ignited multiple fires in exceptionally dry and inaccessible terrain, including within the Tasmanian Wilderness World Heritage Area and threatened significant environmental and cultural assets including stands of unique old growth vegetation.
- 1.2 This marked the start of a firefighting campaign that lasted in excess of two months and involved the use of unprecedented levels of interstate support and aviation resources. Loss of life was avoided and damage to built assets and injury to persons was experienced only at low levels. Considering the firefighting conditions over an extended period, these achievements were commendable.
- 1.3 A total of 229 vegetation fires were recorded from 13th January to 15th March burning a total area of 124,742ha<sup>1</sup> with a combined perimeter of 1,260kms in largely remote, rugged and inaccessible areas. About 20,125 ha or 1.27% of the Tasmanian Wilderness World Heritage Area was affected by these fires, including about 1466ha or 1.8% of threatened and sensitive vegetation communities, some of which may not recover. Other sensitive areas, including Aboriginal and historic heritage areas were also affected by the fires.
- 1.4 Recognising that these circumstances would inevitably reveal learning points, the Tasmanian fire agencies requested an industry peer review of the management of the fires. This report describes that Review and its outcomes.
- 1.5 Overall, we think that the way in which the fires were managed is a tribute to the Tasmanian fire agencies, their leadership and all personnel involved in this incident. We also recognise the very significant effort of interstate and international fire agencies that came to Tasmania's aid in circumstances that the State could not hope to manage effectively by itself.
- 1.6 There has been some public criticism of the way that the fires were handled, particularly in relation to the attention paid to environmental assets in the course of fire suppression operations. We think that this criticism is largely misplaced. But it is understandable in part, because one of our conclusions is that more could be done to engage and inform groups and communities that particularly value the wilderness areas and the natural and cultural heritage values of Tasmania: both in fire management planning and in understanding the complexities and dangers associated with fire operations in this unique landscape.
- 1.7 That is not to say that everything was done perfectly and this Review would not have done its job if we did not identify those areas where progressive improvement is possible. We think that there is scope for streamlining the State's fire control structures (including possible legislative amendment); pre-planning of fire suppression tactics in remote locations; additional development of domestic Tasmanian capability in certain areas (particularly aviation management and use of volunteers); and as indicated above, a new focus on engaging community groups with an interest in fire management in wilderness areas.

## RECOMMENDATIONS

- 1.8 This review makes 12 recommendations as follows:

### Recommendation 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.

### Recommendation 2

The Tasmanian fire agencies consider the development of fire operational guidelines to avoid long-term environmental impacts such as:

- strategies and tactics that will minimise the impact of fire management activities
- 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.

1 All fire areas cited in this Report are based on the best evidence available to the team and are subject to revision if additional information comes to light

### **Recommendation 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.

### **Recommendation 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.

### **Recommendation 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.

### **Recommendation 6**

The Tasmanian fire agencies think more broadly about how staff who are already employed by Government could support the management of future emergencies.

### **Recommendation 7**

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.

### **Recommendation 8**

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
- 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 serve 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.

### **Recommendation 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.

### **Recommendation 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.

### **Recommendation 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.

### **Recommendation 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.



## 2 ABOUT THE REVIEW

### INTRODUCTION

- 2.1 This Review was requested by the Tasmanian fire agencies, namely Tasmania Fire Service (TFS), the Parks and Wildlife Service (PWS) and Forestry Tasmania (FT). It has been conducted on a non-statutory basis, with no formal powers of compulsion of witnesses or documents. We did not, however, find that that caused us any difficulty in speaking with people who we felt could help us better understand the context of the fires, and we were able to obtain documents from the fire agencies to give us a better understanding of the progression of events.
- 2.2 We gained the strong impression throughout the course of the Review that the Tasmanian fire agencies are genuinely learning organisations. In other words, they understood that an event of the scale of the 2016 fires would inevitably produce some examples of good practice to be followed in the future, as well as indicating points where progressive improvement could be applied to optimise future incident management. The fact that they sought an independent review before any suggestion was made of any formal external evaluation in our opinion demonstrates this willingness to learn very clearly and we considered that this willingness carried through into the extensive and voluntary engagement of fire agency staff with us.
- 2.3 The Review was conducted by a team with broad and varied experience of urban fire, rural fire, land management and aviation operations from both Australia and overseas. The AFAC office oversaw the Review and contributed to the editing of this report. The Review has had regard to other publications<sup>2</sup> in compiling this report. The result is intended as an independent audit of operational performance by industry peers. The Review team endeavoured to approach their task in a constructive fashion, bringing a technical understanding of the subject matter to bear on their conclusions and aiming to highlight both positive learnings and focuses for improvement in the future.

### TERMS OF REFERENCE

- 2.4 The terms of reference for this Review were agreed between AFAC and the requesting agencies and are as follows:
1. Document the context of the campaign fires in Tasmania initiated on 13 January 2016 by lightning and subsequent fires that formed part of the campaign event.
  2. The understanding of and the priority placed on environmental values and the consequences of existing land management of the fire affected areas and the effectiveness of fire tactics used for wilderness area fires.
  3. Was the incident management structure managed appropriately in terms of AIIMS ICS?
  4. Was regional and state-level co-ordination effective, to include consideration of the relationship between the State Fire Operations Centre, the regional IMTs and the Multi-agency Co-ordination arrangements (MAC)?
  5. Was integration of other response and support agencies, local and State government effective?
  6. Was early and sufficient consideration given to calling for interstate assistance, was the assistance requested in a timely fashion and was it appropriate/sufficient and how well was the interstate assistance managed (i.e. effectiveness of the Interstate and International Liaison Unit in Hobart)?
  7. The broad effectiveness of targeted community messaging and warnings specific for rural interface and wilderness environments.
  8. The effectiveness of aviation management used in support of the fire response.
  9. Comment on appropriateness of objectives and measures of success identified and any other factors to improve effectiveness of agency involvement before, during and after the fires.

2 AFAC *Conducting Independent Operational Audits*, Version 1, October 2013; AFAC *What is Operational Success for Fire and Emergency Services*, January 2015; SCP/AFAC *Strategic Directions for Fire and Emergency Services in Australia and New Zealand 2014-2016*, 2014



## RELATIONSHIP TO OTHER REVIEW ACTIVITIES

- 2.6 The Review team was advised that other after action reviews are also being undertaken independently by the agencies involved. They include debriefing and after action review exercises being undertaken internally within TFS, Tasmania Police and supporting organisations in other jurisdictions. These internal exercises will not necessarily be designed to be put into the public domain. As we are unaware of any such exercises that have concluded, we have not drawn on internal reviews of this nature in reaching our conclusions: our report is free-standing and based on the evidence that the Review team gathered during the fieldwork phase of the Review.
- 2.7 We were told that the Tasmanian fire agencies, and TFS in particular, had taken the opportunity to seek external validation of their operations during the active phase of the fires, before this Review was commissioned. Wayne Preedy from Queensland Fire and Emergency Services came to Tasmania under the auspices of the Australian Government Emergency Management Assistance Team (EMAT) to provide feedback on the workings of the State-level emergency management arrangements. A peer review team of Stuart Ellis, from AFAC, Rob Rogers from NSWRFs and Tony Murphy from EMV was invited to visit Tasmania at the beginning of February 2016 and subsequently provided feedback on fire operations as well as making suggestions for ongoing management of the fires.
- 2.8 We consider that requesting high-level support of this nature while operations are ongoing represents good practice within the fire and emergency sector. We are aware that this has occurred in the past, for example in the context of the Hazelwood coal mine fire in Victoria in 2014. We would encourage operational leaders to consider the obtaining of high-level peer support of this nature as a potential strategy in any protracted or novel incident in the future.
- 2.9 Subsequent to this Review commencing, we became aware of an inquiry into the 2016 Tasmanian bushfires by the Australian Senate. This Review will be complete before the Senate Inquiry reports and there are no formal connections between the two processes.

## METHODOLOGY

- 2.10 The Review team travelled to Tasmania during the period 7 March 2016 to 5 April 2016 and met with fire agency staff, personnel from other agencies, government and representative bodies. The team had the opportunity to visit a number of the firegrounds and discuss the strategies used there. We considered documentation relevant to State emergency management arrangements, preparedness, response and recovery. We also contacted some stakeholders by email to obtain feedback on their experience of the management of the fires. A list of documentary material referenced and organisations we received feedback from, is attached at Annexe C.
- 2.11 As a non-statutory Review, this Report should be read as the expert professional opinion of the Review team, but does not claim to reach conclusive findings on factual issues. We have not undertaken a comprehensive audit of Tasmanian fire agency records and have proceeded on the basis of speaking with and reviewing what we think is a representative sample of sources. We may use language in this report such as 'we were told', which sets the context for the conclusions that follow, but does not imply that we investigated and confirmed what we were told. If we use phrases such as 'we found' or 'we conclude' these should be taken as conveying our opinion on the matter based on the best evidence available to us.
- 2.12 Arising out of our Review we have identified certain recommendations for the Tasmanian fire agencies: we invite them to have regard to our recommendations while acknowledging that it is a matter for the agencies to prioritise these as they see fit. In places in this report, we have made comments or suggestions that we have not wished to elevate to the status of recommendations, but which, again, we invite the agencies to take account of in their future business planning.

## 3 THE TASMANIAN FIRES OF JANUARY 2016

### WEATHER AND CLIMATE

- 3.1 Over the last few decades, Tasmania has experienced a long term drying trend that has been characterised by a 10-20% reduction in cool-season (April-September) rainfall. This is thought to result from the southward shift of the rain bearing fronts from the Southern Ocean, which normally account for much of the cool-season rainfall in southern Australia. An upward trend in bushfire occurrence has also been occurring since the 1930s particularly in low to moderate fire sensitive vegetation. PWS reports that the total area burned has tripled since the 1960s, with the largest percentage increases falling in these low fire sensitivity classes<sup>3</sup>.
- 3.2 In the 12 months preceding the January 2016 fires, Tasmania was in the grip of unusually dry weather conditions. Large parts of Tasmania particularly in the West Coast and Central Plateau areas were recording either 'lowest on record' or 'very much below average' rainfall percentiles during this period, coinciding with rapidly falling and consistently negative Southern Oscillation values for South-eastern Australia (Figure 1)<sup>4</sup>.
- 3.3 These conditions worsened over the Oct-Dec 2015 quarter, resulting in the State's driest ever spring on record (over the last 140 years) and the hottest October on record prompting an early start to the fire permit period in southern Tasmania and Flinders Island.
- 3.4 During this period well above average Total Fire Bans and fire permit embargoes were declared and a large number of vegetation related fire calls were being recorded by TFS in both the North and North West regions of Tasmania.
- 3.5 Tasmania's mean summer temperature for the 2015-16 season was 1.8 degrees above average. This was largely as a result of unusually warm water temperatures off the Tasmanian east coast. Numerous December daily maximum temperature records were broken and record-high minimum temperatures for December were also observed over large parts of Tasmania<sup>5</sup>.
- 3.6 These very dry and consistently warm conditions produced underlying deep fuel dryness and curing of live vegetation in most vegetation types including the moorlands, heathlands, dry forests and wet forests. The high altitude vegetation types on the Central Plateau, especially the grasslands and sedge lands became available for burning. Soil dryness indices indicated that even rainforest fuels on the west coast were dry enough to burn in many locations – as was later observed. 'Below' to 'well below' soil moisture contents at the 10 cm to 100 cm depth levels were recorded over the 2015-16 summer period and this condition lasted well into February 2016<sup>6</sup>.

### SIGNIFICANCE OF CLIMATE CHANGE

- 3.7 CSIRO and BoM have modelled trends in climate variables in the 21st Century. Although the direction of change in summer and autumn rainfall in southern Australia cannot be reliably projected, there is medium confidence of a decrease in western Tasmania in summer<sup>7</sup>. Tasmanian temperatures are also projected to continue to rise by about 2.9 °C under the high emissions scenario and about 1.6 °C under the low emissions scenario<sup>8</sup>.
- 3.8 Scientific projections indicate that it is likely that an increased incidence of drought – coupled with consecutive hot and dry days – will result in longer fire seasons and an even larger number of days of extreme fire danger. Climate change is considered to be increasing the frequency and severity of many extreme weather events, including extreme bushfire conditions<sup>9</sup>.
- 3.9 AFAC has noted in the past<sup>10</sup> that there is considerable scientific advice and evidence to the effect that climate change may bring about longer and more severe fire seasons, reducing opportunities for controlled burning and increasing pressure on firefighting resources. While many people we spoke to considered fire conditions in Tasmania in early 2016 to be unprecedented in terms of drought conditions and availability of fuels to burn, we consider that it would be prudent for the Tasmanian fire agencies to plan on the basis that these conditions may recur in the future.

3 PWS, 2012

4 BoM, 2016a

5 BoM 2016a

6 BoM 2016c

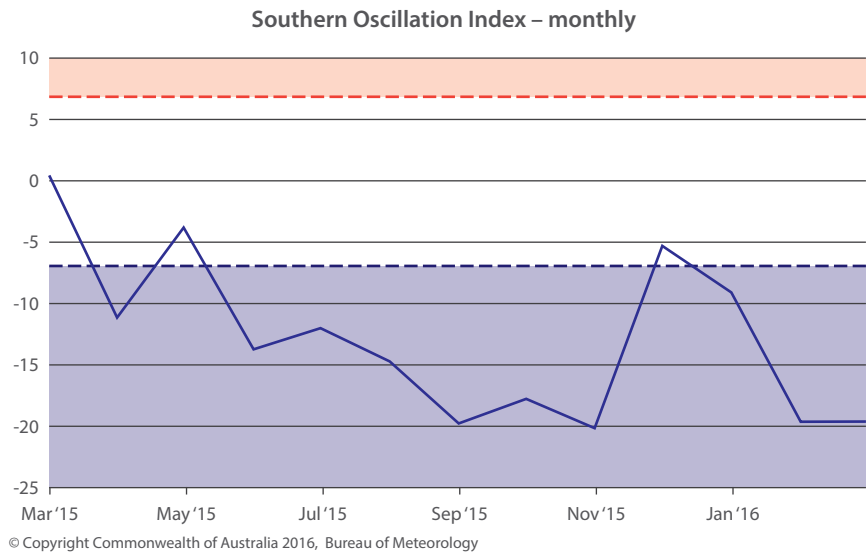
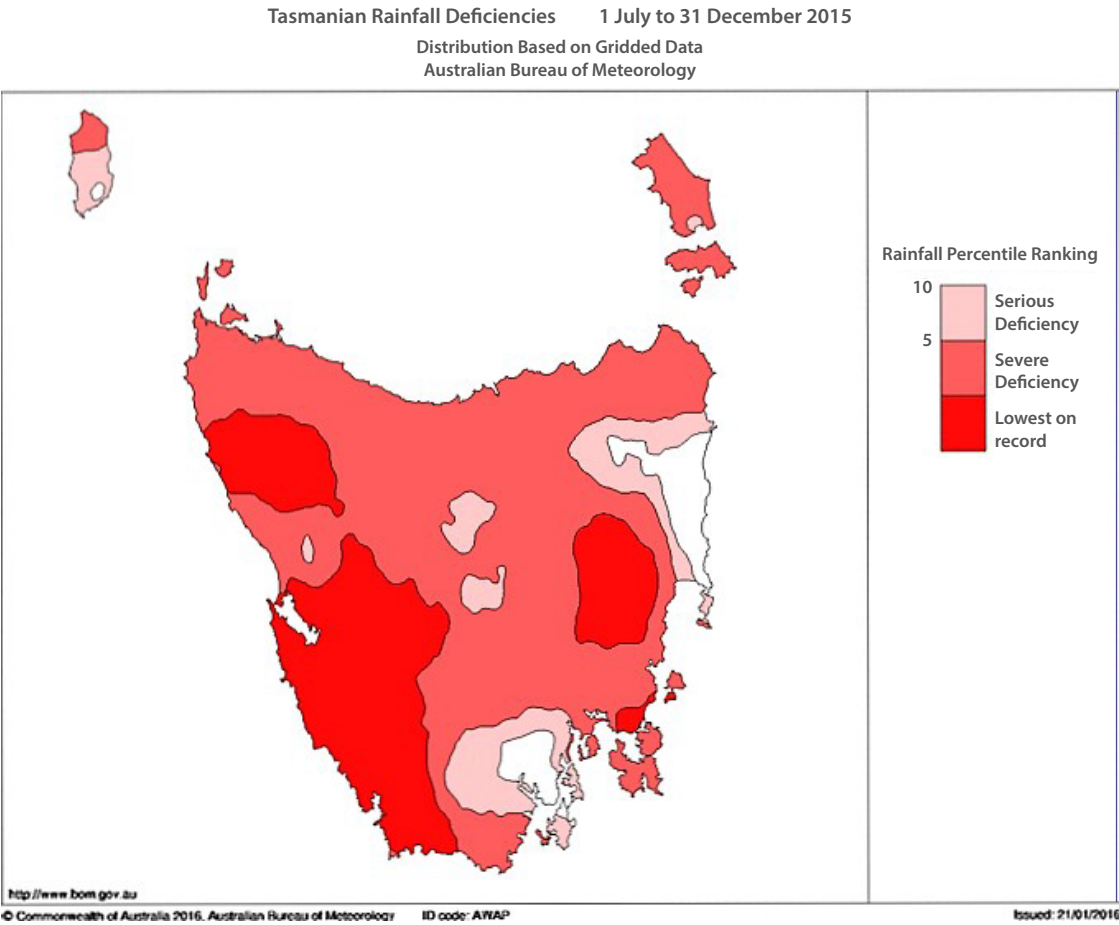
7 CSIRO and BoM, 2015

8 Climate Council, 2016

9 Climate Council, 2016

10 AFAC position on climate change, 2009

Figure 1: Climatic conditions in Tasmania leading up to 2016 fires (© BoM)



## OPERATIONAL PREPAREDNESS

- 3.10 It was apparent that fire agencies were well aware of and concerned about the fire weather conditions and high fire danger for the summer of 2015-16 and were implementing preparedness arrangements in accordance with the 2015-2016 Inter-Agency Protocol for fire management. For example a pre-season inter-agency briefing was held in accordance with part 2.4 of the Protocol on 7th January. Also as part of seasonal preparedness the multi-agency Tasmanian severe weather group made an assessment to the Bushfire and Natural Hazards CRC and AFAC of the bushfire potential for the coming summer.
- 3.11 The Fire Permit Period in Tasmania is a statutory provision which requires landowners wishing to light fires to obtain a permit to do so and to have safety precautions in place. A blanket 'embargo' or suspension of those permits that have been issued can be put in place where fire weather conditions are assessed to be more dangerous than normal. In 2015-16 the Fire Permit Period started on the 10th November for the North-Western Region – permit conditions were already in place elsewhere in the State.
- 3.12 A Total Fire Ban (TFB) is the highest state of readiness for bushfire within Tasmania. During a TFB, all fire permits are suspended, no new fires are to be lit (except in the course of approved operations), a hot day response is activated, strike teams are prepositioned, most brigades have crews on station and patrols are undertaken. TFBs are declared for municipal areas and are grouped where possible into regions. Declarations are triggered by fire danger or existing or increasing resource commitment to current fires. In advance of the widespread lightning strikes on 13th January, TFBs were declared on 3rd October (Southern Tasmania), 14th October (southern Tasmania), 19-20th December, 25th December and 12th January (Southern Tasmania).
- 3.13 Total Fire Bans were subsequently declared for 18th January (North and North West Tasmania), 20th January (North and North West), 21st January (state-wide) and an unprecedented four day TFB between 22-27 January. TFS used social media (for example Facebook messaging) and media outlets to advise the public of these declarations. A record 15 TFB days were declared in 2015-16<sup>11</sup>, 5 more than any previous year. The PWS implemented an indefinite ban on campfires in high-risk campgrounds from around the 18th of January, to reduce the risk of new fire starts.
- 3.14 The *Fire Service Act 1979* authorises the State Fire Commission to declare an Area of Extreme Hazard, which then regulates the use of that area. This is a potentially effective means of both alerting communities and tourists of the level of fire danger and also managing visitor use to protected and other hazardous areas, particularly those areas which might have multiple entry points (for example the Walls of Jerusalem NP) – we did not see any evidence that this provision had been invoked in 2016.
- 3.15 A 'hot day response' is usually put in place at the same time as a fire permit embargo, but it is a separate action. It also occurs during a TFB. A Hot Day Response is notified through the TFS pager network and automatically provides an increased initial weight of response for all vegetation incidents. This will usually include automatic dispatch of aerial resources in the Hobart and Launceston urban fringe. The relevance of this is greater in areas that are accessible by road and where fire trucks can be dispatched to an incident. Although a hot day response was in place for the 12th and 18th of January, this had little operational effect in those remote locations where fires started as a result of lightning strikes.
- 3.16 Strike Team and Remote Area Team pre-positioning may occur if the Regional Chief or Regional Fire Controller is concerned that local resources may need augmenting or if fires are anticipated in locations with long travel times from source locations for back up resources. This is applied on a case by case basis.
- 3.17 In Tasmania fire danger is forecast for Forest, Moorland and Grass fuel models with the forecast then affecting fire permits, hot day response, strike team positioning, Total Fire Bans, remote area closures etc. However, there does not appear to be a standard approach to this at present. The fire danger threshold values currently used are the existing level of FFDI 38 being the threshold for a Total Fire Ban, and an FFDI of 25 is documented in regional arrangements as a trigger point for considering a hot day response.

11 Premier's State of the State Address, 9 March 2016

- 3.18** The PWS had developed an Annual Fire Action Plan for 2015-16 in accordance with its planning framework described at Annexe A. This included a matrix with trigger points in it for the implementation of certain preparedness actions in its State Daily Fire Action Plans. FT's Fire Action Plans (see Annexe A) also contained a preparedness and response matrix. TFS has given some recent thought to the development of such an approach to address fire weather forecasts or anticipated fire agency resource limitations<sup>12</sup>. Tools of this nature, for example, the ones in the PWS and FT Fire Action Plans, are often set out in a matrix, which allows Regional and State Control Centres to read down columns representing fire danger or existing fire agency resource commitments and then read across to a standard set of actions such as fire permit embargo, pre-positioning of resources and so on.
- 3.19** We welcome the steps that have been taken to date by the Tasmanian fire agencies to develop preparedness matrices, and in our view it would be worthwhile to build on this work by developing a joint multi-agency Fire Preparedness Matrix to provide a single, comprehensive statement of the desired level of State preparedness for different given weather and resource commitment scenarios. While the Review team found no evidence that the lack of a formal inter-agency preparedness matrix had any effect on the outcome of the January 2016 fires, any resource that is agreed between agencies and helps to support consistent and efficient approaches to preparedness is to be encouraged.

#### Recommendation 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.

- 3.20** On the 12th January, a State operations briefing was held which alerted agencies to the high to very high fire danger, the very dry fuel conditions and the chance of lightning storms on the 13 January. While the State Fire Operations Centre was not stood up, SFOC personnel had been identified and could be called on immediately should the situation demand it. A State Fire Controller (the TFS Acting Deputy Chief Officer) was nominated. Response arrangements were also organised for TFS regional centres as follows.
- 3.21** In the South a permit embargo and Total Fire Ban were in force; strike teams were deployed to New Norfolk and Oatlands; aircraft were deployed to Gretna and on stand-by at Cambridge; dozers were on stand-by; an Incident Management Team (level 3) was in place and the Regional Fire Operations Centre was operational.
- 3.22** In the North a permit embargo was in force and a Tier 1 hot day response (South Esk only) was in place; in the North-west a permit embargo (West Coast Group only) was in place; a Task Force had been deployed to Zeehan; the Regional Fire Operations Centre was operating from Three Mile Line (1100 hours); and District and regional appointments were in place.
- 3.23** Other agencies had the following arrangements in place: Tasmania Police – a hot day response was in place in accordance with the TFS/TasPol MoU; PWS: Daily Fire Action Plans had been issued with preparedness actions in accordance with the triggers set out in the Annual Fire Action Plan. Crews were patrolling and monitoring throughout the State (including Musselroe Bay); FT: Crews were actively managing a fire at Paradise, with additional capability on stand-by; and air support was available in accordance with current readiness protocols.

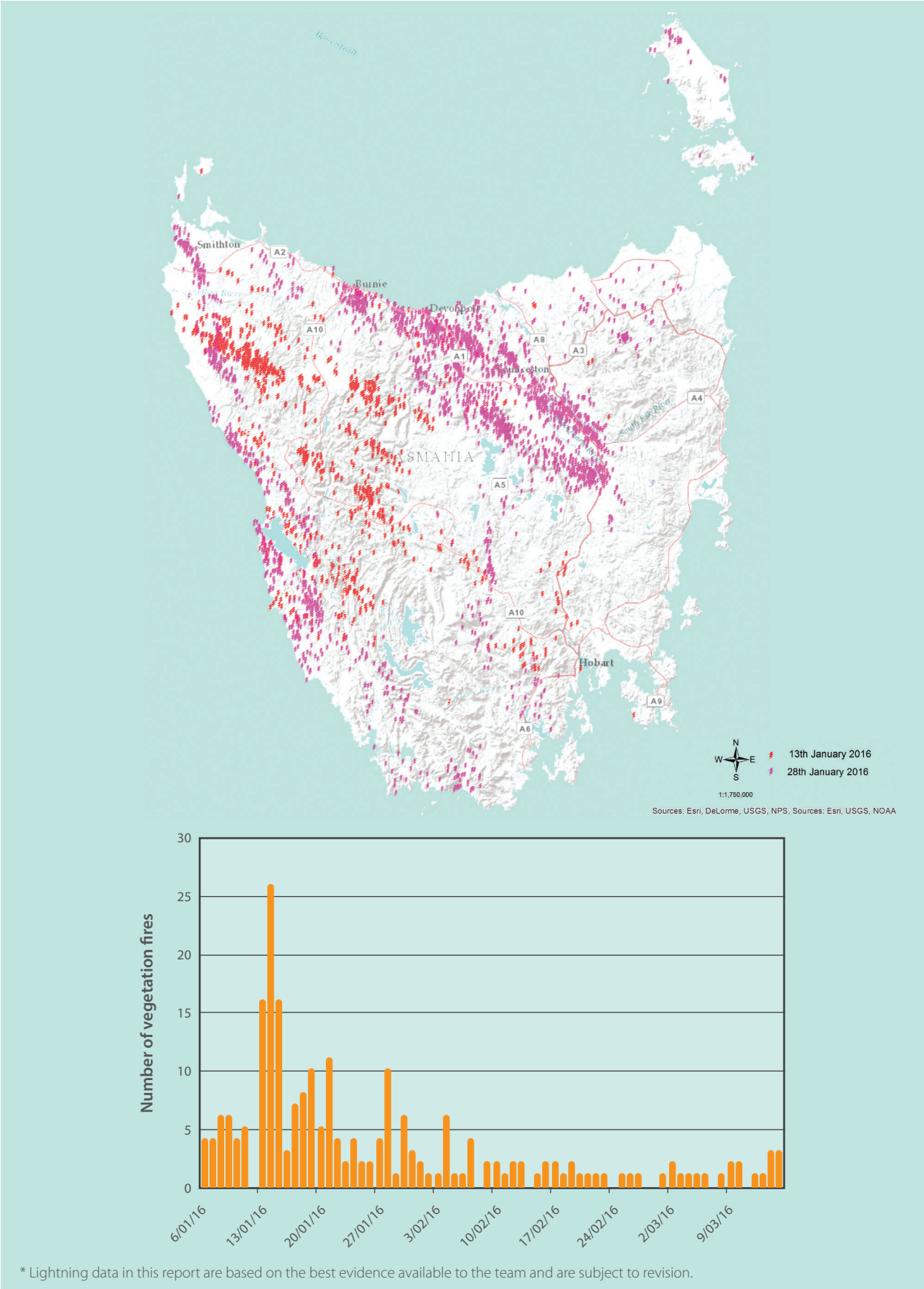
### LIGHTNING CAUSED IGNITIONS IN DRY AND VERY REMOTE AREAS

- 3.24** Lightning currently accounts for around 80% of the total area burnt in the Tasmanian Wilderness World Heritage Area (TWWHA) in the last 10 years: this represents an 8-fold increase from the previous decade<sup>13</sup>.
- 3.25** On 13th January 2016 a cold front triggered thunderstorms with 897 ground strikes being recorded, of which 653 were recorded on public lands and 272 of these being in some very remote areas of the TWWHA, primarily in the Franklin-Gordon Wild Rivers National Park (Figure 2).
- 3.26** On the 28th January another storm front passed over the main island of Tasmania (figure 2) with 2,516 ground strikes being recorded, of which 946 ground strikes were recorded on public lands and 325 of these being within remote areas of the TWWHA, primarily within Southwest National Park (NP) (257) Franklin-Gordon Wild Rivers NP (67), Arthur Pieman Conservation Area (75) and Central Plateau Conservation Area (53). On 13th February 2016 there was further lightning activity which also started fires.

<sup>12</sup> For example, a TFB to restrict new fire starts may be justified, even where weather conditions are not severe, if fire agency resources are already stretched dealing with existing fires

<sup>13</sup> DPIPWE, 2015

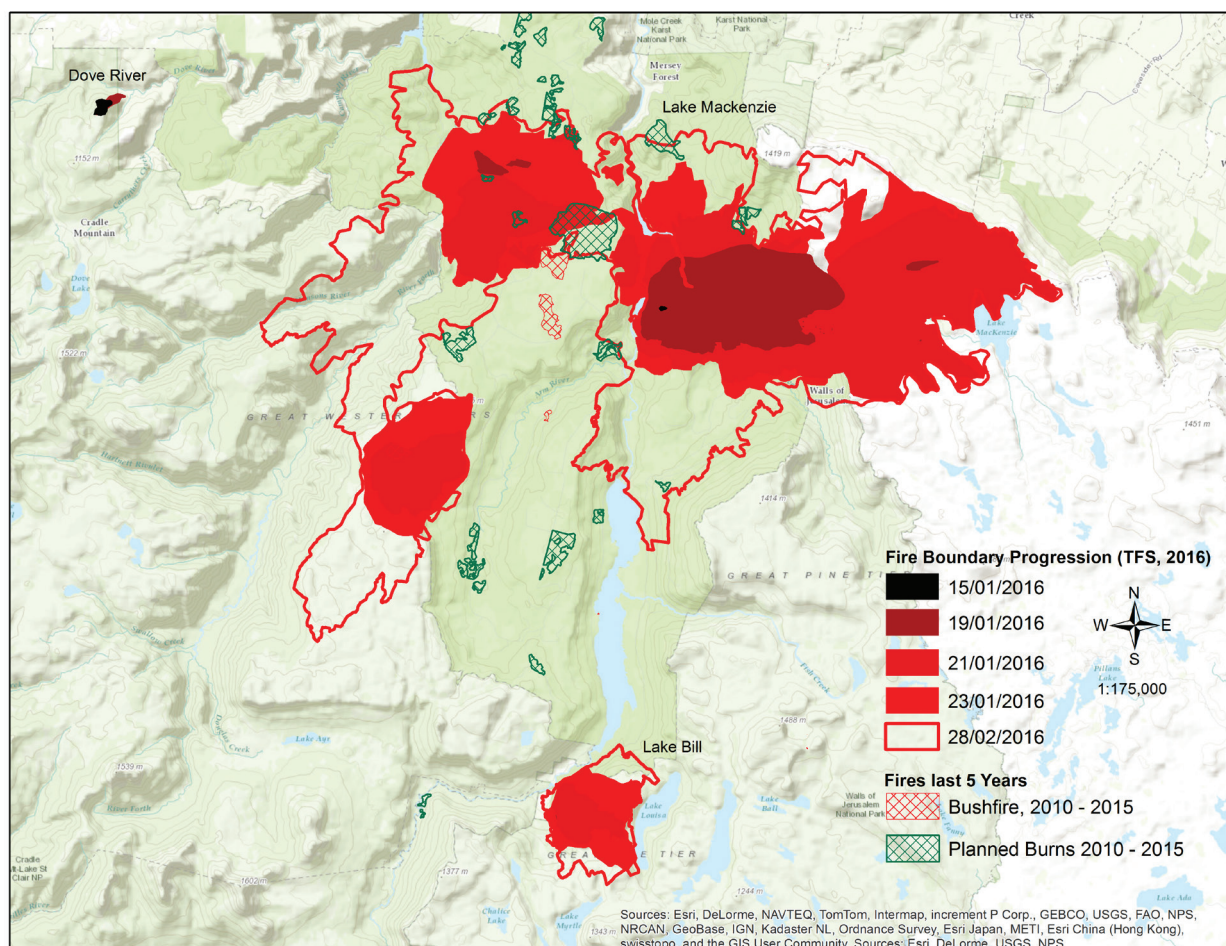
**Figure 2: Distribution of lightning land strikes January 2016 and recorded vegetation fires January 13th to 15th March (Source: TFS 2016)\***





- 3.27 More than 165 vegetation fires were recorded between the 13th January and the 13th February with most probably originating from these lightning storms, while 229 vegetation fires in total were recorded up to the 15th March.
- 3.28 As a result of the very low soil moisture content, fires were being sustained overnight in all fuel types. This is unusual in the wetter fuel types where under typical conditions, fires will stop spreading or may burn themselves out overnight. However fires burning in moorlands, heathlands, dry forests and wet forests on all aspects, from the coast to the alpine regions were found to be actively spreading with prevailing and variable winds during the day.
- 3.29 As at the end of February there were still 25 'Going'<sup>14</sup> fires, while 24 were classed as 'Under Control'<sup>15</sup> or at 'Patrol'<sup>16</sup> status. New fires or re-lights of fires previously classified as safe were still being detected during the late summer and early autumn period.
- 3.30 When moving into wet and dry forests under strong localised wind conditions, fires were intense and moving quickly and were spotting up to 10km ahead of the fire, particularly at Lake Mackenzie between 19th to 21st January (figure 3). Given the extremely dry conditions and variable winds, fire behaviour was erratic unpredictable and dangerous across all firegrounds during this period.
- 3.31 Given the remote nature of the terrain in which these lightning strikes occurred, the cloud cover recorded in the first few days following these storms and the nature of the vegetation and fuel in which they were recorded, it was and remains very difficult to determine which fires started from which lightning events.
- 3.32 As at 1 March 2016, 42 fires were recorded as active across Tasmania with approximately 123,800ha burnt and a fire perimeter estimated at around 1000kms. At that time fire weather conditions and drying trends were predicted to continue well into March<sup>17</sup>.

**Figure 3: Fire progression 15th January to 28th February 2016 Mersey Forest Fire Complex (TFS, 2016).**



- 14 A fire is 'going' where it is not burning behind identifiable control lines and control strategies are not yet fully in place
- 15 The fire perimeter is behind identifiable control lines. The fire is not out, active fire may be within the perimeter. Firefighting activities continue to extinguish the fire. The fire could breach control lines under difficult weather conditions.
- 16 Fire is at a stage where firefighting resources are only required for patrol purposes to ensure the fire is safe.
- 17 IILU, 2016



## SUMMARY OF THE MAJOR FIRES 13TH JANUARY TO 24TH MARCH

**3.33** From 13th January to 15th March the TFS recorded a total of 229 vegetation fires burning a total area of 124,742ha and a total perimeter of 1,260kms. We describe below six fires that were of most significance – some of these fires are what are known as ‘complexes’ and would have originated in multiple different ignitions merging to form a bigger fire.

### *The Wuthering Heights Fire Complex*

The Wuthering Heights complex covered around 22,294ha. It includes the Stephens Rivulet fire first recorded on 20 January; the Julius River fire first recorded 20 January; the Rebecca Road/Rachael Creek fire first recorded on 14 January, together with the Temma backburn on 28 January and the Arthur River backburn on 30 January. This fire was managed as part of the West Coast Complex from the Northwest RFOC at Burnie.

### *The Mawbanna Fire*

The Mawbanna Fire included the Pipeline Road, Rulla Road, Sumac Road and Gahnia Road Fires and eventually burnt around 62,637ha. It was first recorded 14 January 10.24am and marked as under control on 16 March. On the 17th March a Watch and Act message was issued for this fire, as the southern western edge of the fire had run further to the west coast since the 7th March. This fire was managed as part of the West Coast Complex from the Northwest RFOC.

### *Griffiths Creek Fire*

The Griffiths Creek Fire (2,933ha) was first recorded 14th January 1601hrs and still marked as going at the date of writing. No control action other than monitoring was undertaken on this fire due to the low risk attached this fire. This fire was monitored as part of the West Coast Complex from the Northwest RFOC at Burnie.

### *Maxwell River Fire*

The Maxwell River South Fire (1,258ha) first recorded 18 January 2101hrs and marked as patrol at 14 March 2016. This fire was managed as part of the West Coast Complex from the Northwest RFOC at Burnie.

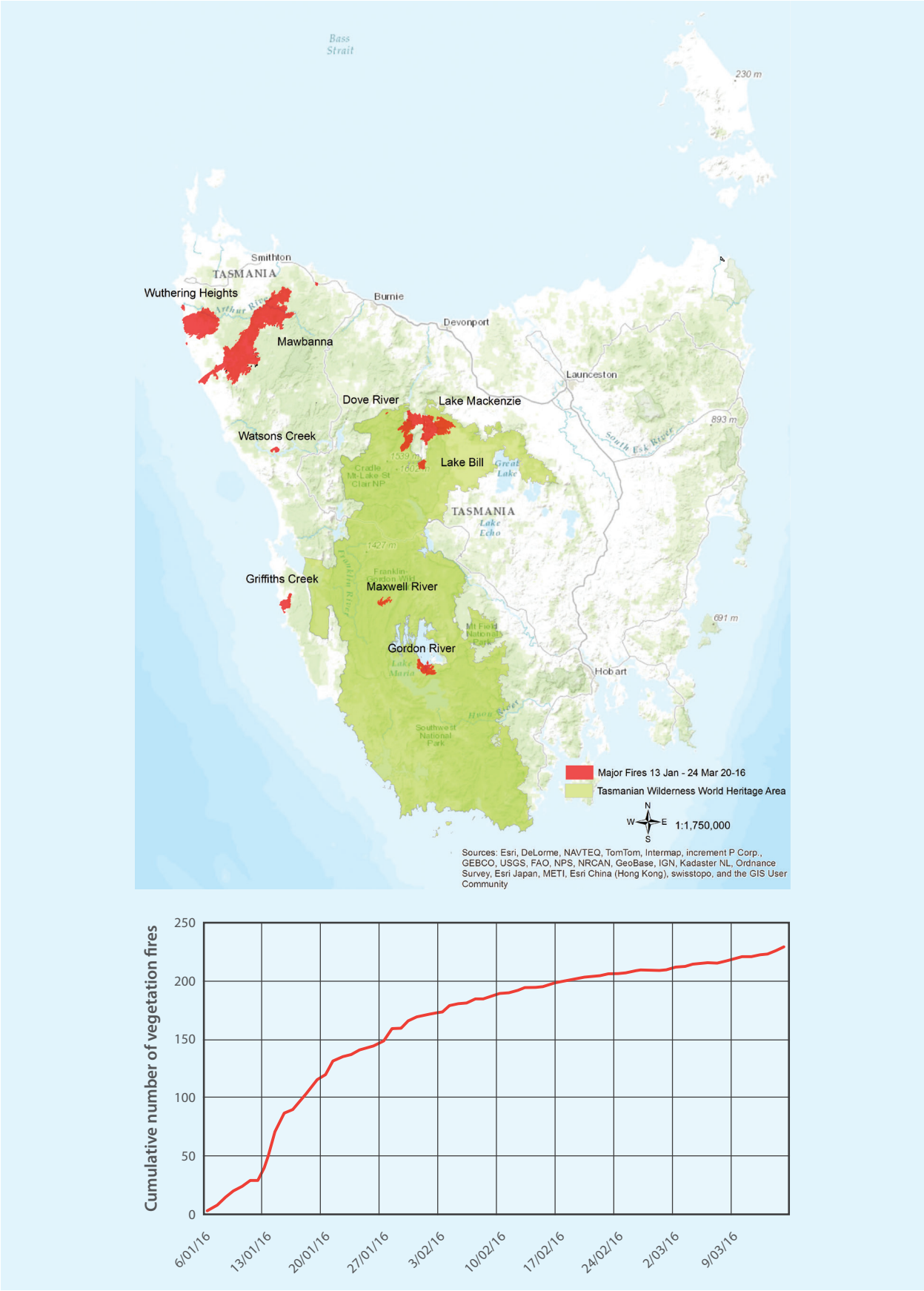
### *The Mersey Forest Fire Complex*

This complex includes the Lake Mackenzie fire which was first reported on 19 January and burnt 25,723ha, the Lake Bill fire which was first recorded on 16 January (1,397ha) and the Dove River fire which was also first recorded on 16 January (56ha). The Lake Mackenzie fire incorporated the Patons Road/Lemonthyme Hill fire (15 January), the Lake Parangana fire (15 January) and the February Plains fire (20 January), together with other smaller fires on the Central Plateau. This fire was managed from the North RFOC at Youngtown, Launceston.

### *Gordon River Mt Cullen*

The Gordon River Road Fire (4,130ha) first recorded 17th January 6:09pm and marked as patrol on 14th March 2016. This fire was managed from the Southern RFOC at Cambridge.

**Figure 4: Location of Major Fires 13 Jan-24 March 2016 and cumulative number of recorded vegetation fires 13th January to 15th March 2016<sup>18</sup>**

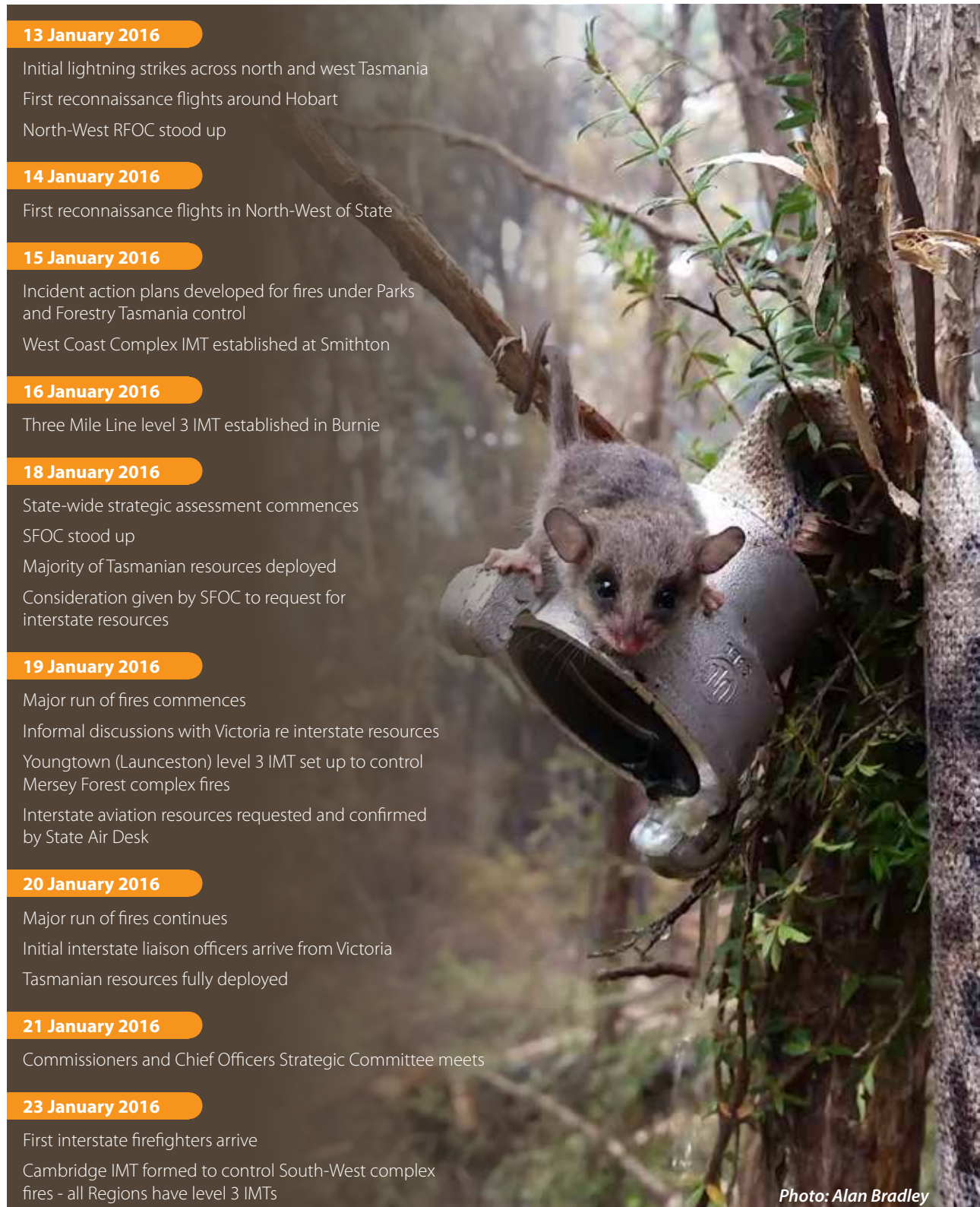


18 TFS, 2016

## TIMELINE OF THE FIRST 10 DAYS OF THE FIRES

- 3.34** In the figure below, we show some of the significant developments that took place over the first 10 days of the fires, particularly in relation to the way in which State, Regional and incident control structures were developed. As can be seen, formal incident action plans were in place by 15 January (Day 2) for fires under the management of PWS and FT; an initial multi-agency IMT was set up at Smithton also on the 15th January; and the first multi-agency level 3 IMT was in place at Three Mile Line, Burnie on the 16th January.

**Figure 5: Timeline of the first 10 days of the 2016 Tasmanian fires**



## 4 THE TASMANIAN EMERGENCY MANAGEMENT CONTEXT

### TASMANIAN EMERGENCY MANAGEMENT (EM) ARRANGEMENTS

#### STATE AND REGIONAL PLANNING

##### *State Emergency Management Plan*

- 4.1 The Tasmanian Emergency Management Plan (TEMP) is established under the *Emergency Management Act 2006* and is the overarching framework for the prevention and mitigation, preparedness, response and recovery from disasters. The Plan outlines the principles for emergency management in Tasmania, records the roles and responsibilities related to identified hazards and functions and outlines the arrangements for prevention and mitigation, preparedness, response and recovery.

##### *The State Fire Management Council*

- 4.2 The *Fire Service Act 1979* defines the State Fire Management Council (SFMC) as the primary advisory body that provides government, agencies and stakeholders the strategic direction for planned landscape-scale vegetation management and burning. The SFMC oversees the development of a state vegetation fire management policy through the facilitation of a state-wide forum. This initiative is designed to guide the function of regional Fire Management Area Committees in developing strategies for tenure-blind fire protection through fuel management planning and implementation. This serves to promote community understanding of bushfire risk and associated land management mitigation strategies. The regional approach also encourages coordination between stakeholders to invest in research and improvement in the management of bushfire-related risk.
- 4.3 The SFMC reinforces the principle of shared responsibility across governments, agencies and stakeholders. The SFMC acts as a facilitator in preparing regional fire protection plans by providing strategic objectives for addressing bushfire risk and vegetation management, that assist in determining the priorities for community protection planning and the development of bushfire-ready neighbourhoods.

##### *Fire Management Area Committees*

- 4.4 Amendments were made to the *Fire Service Act 1979* in 2012 which administratively align the responsibility for the management of bushfire fuels across the State. The Fire Management Area Committee structure was reviewed and as a result there are 10 fire management areas established for the State with boundaries gazetted in 2013 to more effectively manage vegetation fuels for the mitigation of bushfires.
- 4.5 Each Fire Management Area Committee is required to prepare a Regional Fire Protection Plan in accordance with section 20(1)(c) of the *Fire Service Act 1979*. The Regional Fire Protection Plans describe the prevention and preparation arrangements for one or more hazards within the fire management area. The first Regional Fire Protection Plans were approved for implementation in 2014-15 (<http://www.sfmc.tas.gov.au/committees>) and were reviewed and approved by the SFMC in December 2015.

##### *State Fire Protection Plan*

- 4.6 The State Fire Protection Plan<sup>19</sup> is identified as a sub-Plan to the TEMP. The State Fire Protection Plan (SFPP) has been developed pursuant to section 8(1)(d) of the *Fire Service Act 1979* to ensure effective fire and emergency prevention and protection measures are provided throughout Tasmania. This SFPP sets the framework for effective emergency prevention and protection measures that are the responsibility of TFS and other agencies as required under the *Fire Service Act 1979*.
- 4.7 The TEMP specifies the risks that TFS and other agencies are responsible for and recognises that Forestry Tasmania (FT) and the Parks & Wildlife Service (PWS) have responsibility for the administration and management of fire and fire control measures within the land tenures for which those agencies have management responsibility. The SFPP is written primarily as a TFS policy document rather than a multi-agency document and requires updating.

19 TFS, 2013



### *State Bushfire Safety Policy*

- 4.8 The State Bushfire Safety Policy<sup>20</sup> is a position statement under the SFPP. The Policy is prepared by the TFS Chief Officer in consultation with others and contains objectives under the headings of Community Awareness and Understanding, Community Resilience, Bushfire Warnings and Bushfire Safety. The Policy is intended to be reviewed and updated annually. The Policy appears to replace or overlap with the State Vegetation Fire Management Policy 2012 (SVMP 2012) which was due to be updated in 2014, however the SFPP and *Fire Service Act 1979* do not refer to the new Bushfire Safety Policy, only the SVMP 2012. There is only minor reference to the SVMP 2012 in the State Bushfire Safety Policy.

## **INTERAGENCY ARRANGEMENTS**

### *Multi-Agency Coordination Group (MAC)*

- 4.9 The three fire agencies appoint a representative and deputies to a Multi-Agency Coordinating (MAC) group. The MAC group has responsibility to facilitate and coordinate the management of interagency responses, primarily to Level 3 bushfires. The MAC group represents an agreed pooling of responsibility for managing the largest bushfires, in order to achieve the best outcomes for the State: it is to be commended as an example of interagency co-operation.

### *Interagency Protocol (2015-16)*

- 4.10 The interagency protocol is updated annually, led by TFS. It describes the roles and responsibilities of the fire and land management agencies in fire management and the role of the MAC.
- 4.11 In the event of an event occurring that meets the criteria for a level 3 incident under AIIMS<sup>21</sup>, an interagency level 3 incident management team (IMT) is established under the interagency protocols to manage the incident. The Chief Officer appoints a State Fire Controller, who in turn appoints incident controllers to the level 3 incident management teams. Owing to capacity constraints, no more than one level 3 IMT will generally be set up in a Region, and that IMT will take control of all major incidents within the Region and appoint Divisional Commanders and Sector Commanders to take operational control and command of a geographical section of fires or a fire within the region.
- 4.12 The interagency protocol provides for the setting up of Regional Fire Control Centres (RFOCs), which are responsible for the oversight of all incident management teams, regardless of tenure, working within the relevant region. A Regional Fire Controller is appointed to head the RFOC. An RFOC will be established when the operational tempo in the Region suggests that region-wide co-ordination of resources, or interagency co-operation, may be required.
- 4.13 Where there are two or more level 3 incident management teams established in the State, a State Fire Control Centre is stood up. The SFOC is managed by the State Fire Controller. The Regional Fire Controllers will then report to the SFOC.
- 4.14 We discuss in part 5 below how the interagency arrangements functioned in relation to the 2016 fires.

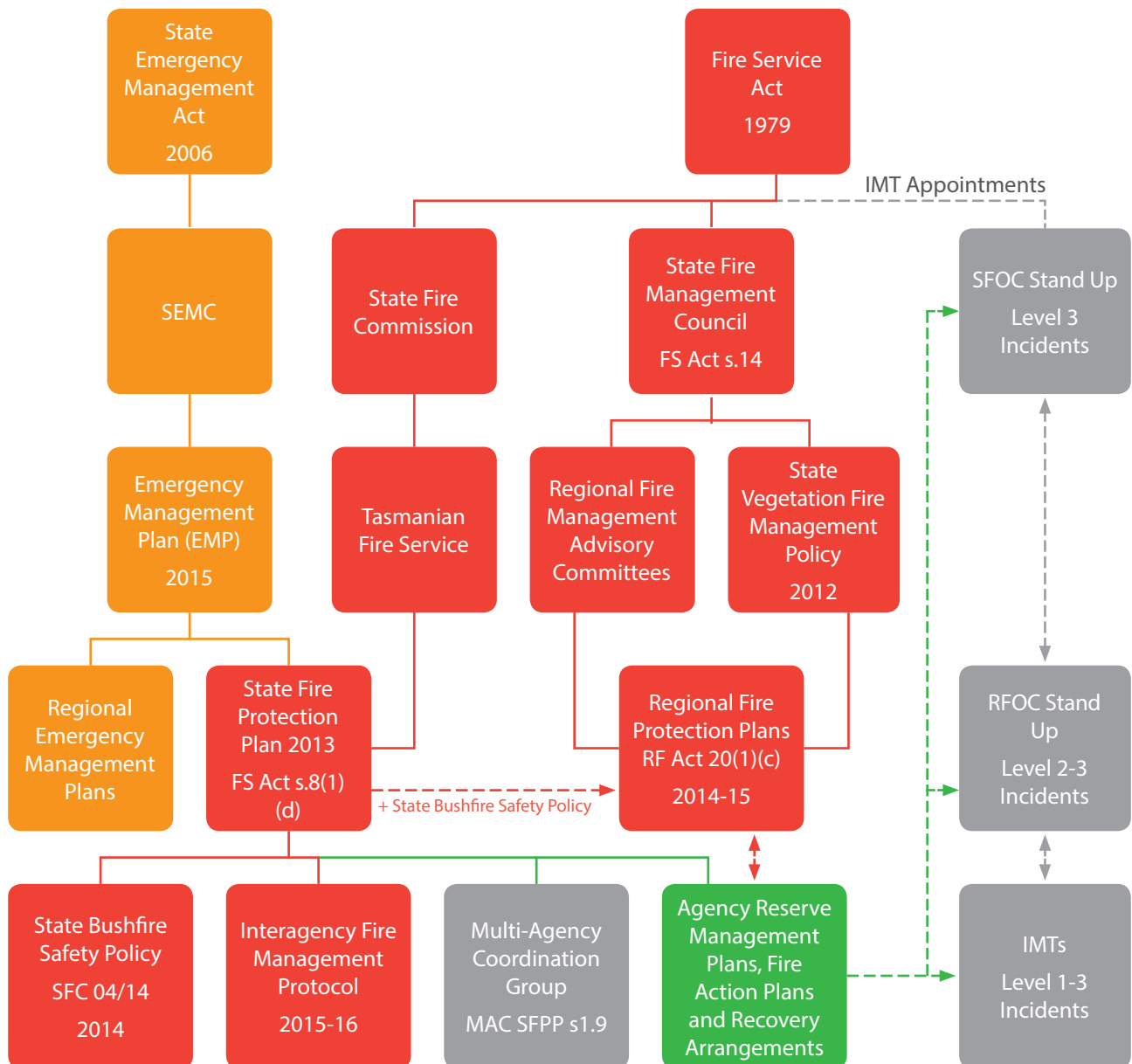
### *Tasmanian Emergency Inter-Operability Register*

- 4.15 Interoperability arrangements in Tasmania were developed after the 2013 Dunalley Fire to facilitate the deployment of skilled employees between Tasmanian Government agencies to assist with the management or coordination of a significant, complex or protracted emergency event. The arrangements are documented in the State Emergency Management Plan. The aim of the arrangements is to identify 100 Category A and B employees, whose details will be maintained on a central register with the Office of Security and Emergency Management, within the Department of Premier and Cabinet. Twelve agencies across Tasmania are involved in the arrangements. The three categories for which staff could nominate are:
- Category A – Skills aligned to response and recovery operations;
  - Category B – Administrative skills; and
  - Category C – Tasmanian Emergency Information Service (TEIS).

20 TFS, 2014

21 Complex incidents which require to be broken down into geographical or functional Divisions for their effective management

**Figure 6: Tasmanian Bushfire Management Framework**



## 5 OUR FINDINGS

**5.0.1** The context of the fires and the emergency management arrangements in Tasmania at the time has been described in narrative form above. In this section of our report, we address in turn the other terms of reference that the Review team worked to.

**5.0.2** It is important to note that in those instances where we have discussed possible improvements that could be applied to future operations, this need not be read as a criticism of the way in which the fires were managed. Few reviews of fire and emergency incidents working with the benefit of hindsight could not identify learning points for the future and indeed this is one of the main reasons why reviews of this nature are commissioned. Our comments and recommendations should therefore be read in the spirit that they are intended, to support continuous improvement of the delivery of fire and emergency services both in Tasmania and beyond.

### **5.1 TOR 2: The understanding of and the priority placed on environmental values and the consequences of existing land management of the fire affected areas and the effectiveness of fire tactics used for wilderness area fires**

#### **Impact of Bushfires on Environmental Values**

**5.1.1** Bushfires are an important agent of change across the variable landscapes of Australia. The composition, structure and spatial distribution of plant and animal communities may be affected as a result of changes in the fire regime.

**5.1.2** The 'fire regime' of a region has been defined in terms of the combined effects of bushfire type, frequency, intensity and season of occurrence<sup>22</sup>. Gill and Bradstock<sup>23</sup> added that the spatial distribution of the components of the fire regime, or the "patchiness" of bushfires, is also an important component in the description of fire regime impacts across a landscape.

**5.1.3** Fire regimes have the potential to transform the vegetation of a bushland area<sup>24</sup>. This potential for transformation is one of the major concerns that many conservation agencies and other bodies have in relation to frequent burning or high intensity burning of fire sensitive vegetation, heritage values or landscapes. Some of these changes will be undesirable and may have significant long-term impacts and associated failures in achieving the desired management outcomes for the lands in question.

**5.1.4** Lightning and Aboriginal burning practices have helped shape plant and animal communities in Tasmania: with some communities being adapted to frequent fire, (button grass moorland) and some requiring varying levels of infrequent fire to maintain population health (wet and dry eucalypt forest and woodland formations). Others are very sensitive to fire, such as rainforest and related shrub formations (*Athrotaxis spp* and *Nothofagus spp* dominated communities), highland treeless formations (alpine coniferous heathland and cushion moorland communities) and alpine sphagnum bogs, peatlands and associated fen communities. Peat and other organic soils, which have accumulated over centuries, underlie both fire sensitive and fire dependent communities and can be damaged or destroyed by fires burning under drought conditions. There is very poor understanding of the time and processes required for these fire sensitive communities to fully recover from damage by fire, with some commentators suggesting that they may be irreplaceable particularly given current predictions of the impacts of climate change.

**5.1.5** There are also cultural heritage sites in Tasmania such as historic huts and Aboriginal sites that are damaged or destroyed by certain fire regimes, particularly high intensity fire regimes. Aboriginal art sites, occupational deposits, shell middens, scarred trees, quarries and carved trees may be irreparably damaged by high intensity or frequent fires, or by inappropriate suppression or recovery activities.

#### **Policy and Planning Framework for Fire and the Environment**

**5.1.6** The *Fire Service Act 1979* states that the Commission is to perform its functions in respect of managed lands in a manner that is consistent with the purposes for which those lands are set aside and consistent with any associated management plans. The provisions of the Act are focussed exclusively on the protection of life and property and are silent in relation to the protection of environmental, cultural values or community values. The Act is also silent in relation to environmental sustainability of the Commission in the conduct of its activities.

**5.1.7** The State Fire Protection Plan does however, capture the protection of environmental values in its stated aim (s.1.4): "In implementing this plan, agencies focus on the protection of life, property and the environment from fire and

22 Gill, 1975

23 1993

24 Bowman and Jackson, 1981



other emergencies by developing appropriate prevention, preparedness, response and recovery strategies". Regional fire protection plans are required to be consistent with the State Plan and therefore to be consistent with this aim.

- 5.1.8** Regional fire protection plans (for example the Western, Midlands, Southern and Central North plans) consistently define 'asset' as including *"anything valued by the community that may be adversely impacted by bushfire. This may include residential houses, infrastructure, agriculture, industry, environmental and heritage sites"* and also state that *"the main objective of fire protection plans is to identify risk and provide actions for the protection of communities at risk from bushfire. Risk based planning places the highest priority on protection of human life followed by protection of infrastructure and environmental values"*.
- 5.1.9** The risk assessment process accounts for relative impacts on the environment when assessing regional risk within the consequence table which samples risk across a range of credible environmental consequence levels in accordance with the National Emergency Risk Assessment Guidelines (NERAG). The Fire Protection Plans, however, do not go into any detail in relation to environmental, heritage or community values.

### **Fire Management in the Tasmanian Wilderness World Heritage Area**

- 5.1.10** The Tasmanian Wilderness was inscribed on the World Heritage List for both its outstanding natural and cultural universal values:

Natural

- as an outstanding example representing the major stages in the earth's evolutionary history
- as an outstanding example representing significant ongoing ecological and biological processes
- as an example of superlative natural phenomena, and
- contains important and significant habitats for in situ conservation of biological diversity.

Cultural

- bearing an exceptional testimony to a civilisation or cultural tradition
- as an outstanding example of a type of landscape which illustrates significant stages in human history, and
- being directly and tangibly associated with living traditions of outstanding universal significance.

- 5.1.11** The Australian and Tasmanian Governments are required to protect and conserve the natural and cultural values in the Tasmanian Wilderness WHA in accordance with obligations under the World Heritage Convention and the *Environment Protection and Biodiversity Conservation Act 1999*. The PWS is also landowner for the purposes of the *Fire Service Act 1979* and is required to take reasonable measures to prevent fires leaving those lands that are managed by the Service.

- 5.1.12** Fire management by PWS in the TWWHA is conducted in accordance with the following policies, plans and procedures:

- Tasmanian World Heritage Area Management Plan<sup>25</sup>; a draft revised plan was exhibited in 2013
- *Fire Management Policy 2011*;
- *Fire Management Planning Policy 2009*;
- Regional Strategic Fire Management Plans, and
- Park and Reserve plans of management.

- 5.1.13** The current WHA plan (1999) prescribes the development and implementation of:

- strategic fire suppression plans for the whole WHA which detail fire sensitive assets, protection priorities, areas where earth moving machinery may be used, existing fire breaks and low fuel areas, water sources, access routes, available fire suppression resources and contact information, which are to be regularly updated; and
- fire management plans for the whole WHA covering prevention, preparedness and mitigation strategies which, as far as is practical, ensure that:
  - fire frequencies are appropriate for the maintenance of biodiversity;
  - fire is prevented from occurring in rainforest, alpine and sub-alpine vegetation and other fire-sensitive plant or animal communities;
  - wet forests are protected from fires so as to maintain the maximum area of forests as old growth;
  - a range of fire frequencies is maintained within button grass moorland and scrub communities;
  - habitats for threatened species and communities are maintained with appropriate fire regimes, and
  - peats and other fire sensitive soils or landforms are protected from the destructive effects of fire).

- 5.1.14** The draft revised TWWHA<sup>26</sup> management plan states that a holistic fire plan will be prepared for the TWWHA to ensure that all aspects of fire management are considered, integrated and implemented and to sit over the PWS Strategic Regional Fire Plans. Work has already begun on bushfire risk assessment and prescribed burn areas for this TWWHA holistic fire plan.
- 5.1.15** There is no mention in the draft revised TWWHA management plan of cross-tenure fire management arrangements (for example State Bushfire Safety Policy, the role of the State Bushfire Council, Fire Management Area Committee, State and Area Fire Protection Plans); section 8 (7) of the *Fire Service Act 1979*; statutory obligations of the PWS under s.49 (dealing with hazards on land) or s.64 (duties of an occupier); or of the Inter-Agency Fire Management Protocol. We think that reference to these factors might enhance the plan and encourage the Tasmanian fire agencies to engage with the authors of the draft revised TWWHA management plan to promote their inclusion.
- 5.1.16** The specific fire management objectives identified for the TWWHA (PWS, 1999) and which need to be taken into account by the Chief Officer and Commission under include:
- to protect people from fire;
  - to conserve World Heritage and other natural and cultural values including:
    - geodiversity, particularly aspects that are rare or unique;
    - native plant communities and species, particularly those that are rare or threatened;
    - the habitats of native animals, particularly those that are rare or threatened;
    - wilderness quality;
    - scenic and viewfield quality;
    - Aboriginal cultural resources, and
    - historic cultural resources
  - to achieve targeted fire regimes within the WHA, and
  - to protect buildings and facilities within the WHA from fire.

This clearly identifies that conservation of environmental and world heritage values is an underpinning principle of fire management in the world heritage area.

- 5.1.17** An overriding principle of the PWS Fire Management Policy is that bushfire suppression in parks and reserves and on adjoining public and private land, takes priority over all other activities. However, all reasonable steps will be taken to ensure that the impact of planned fires, prevention and fire-suppression activities on natural and cultural values is minimised.

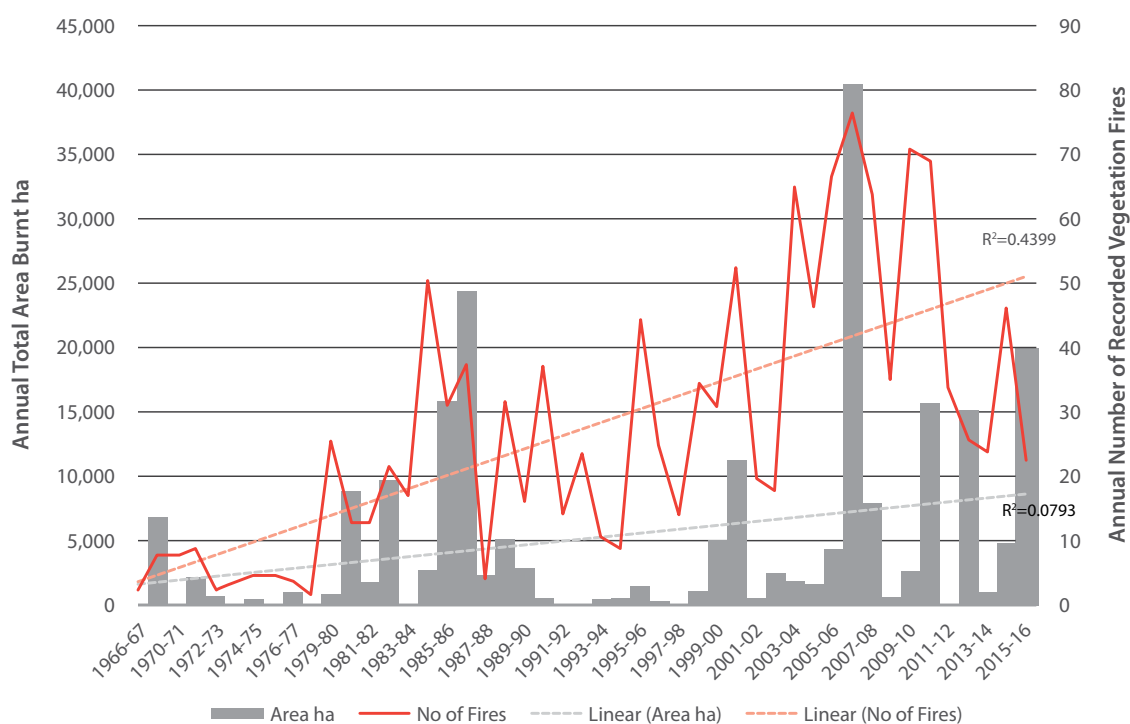
### Impacts of the 2016 fires on the TWWHA

- 5.1.18** The 2016 bushfires burnt approximately 20,125ha of the Tasmanian Wilderness World Heritage Area representing 1.27% of its total area (Figure 8). This occurred in 18 recorded and mapped bushfire events during the January-February 2016 period. Most of the fires within the WHA were kept under 50 hectares (72%) with the largest fires in the TWWHA being the Lake Mackenzie Road fire which affected 13,724ha; the Gordon River Road fire burnt 3,520ha; and the Maxwell River South fire burnt 1,260ha of the World Heritage Area.
- 5.1.19** The total area burnt in 2015-16 within the TWWHA is well above the average annual total for the now TWWHA over the last 50 years (4,543ha), while the number of recorded fires in 2015-16 is slightly less than the annual average over the same period (Figure 7). The area burnt in 2015-16 is matched in size class (>10,000ha) by the 1985-86 (16,001ha), 1986-87 (24,446ha), 2000-01 (11,443ha), 2006-07 (40,532ha), 2010-11 (15,923ha) and the 2012-13 (15,276ha) fires within the TWWHA and by the estimated total area burnt within the WHA in the 1930s (26,500ha on the Engineers Range) and in the 1960s (97,400ha on the Central Plateau and Engineers Range).
- 5.1.20** A total estimated area of approximately 1,466ha of scheduled and threatened vegetation communities was burnt in the TWWHA, which is about 1.8% of the total area of threatened community area recorded within the WHA (Figure 9). However most of the threatened community area that was burnt is comprised of what might be considered fire dependent vegetation (namely 623ha of highland grassland and 578ha of highland grassy sedgeland). Of the fire sensitive threatened communities, about 94ha of *Athrotaxis cupressoides*<sup>27</sup> open woodland, 47ha of *Athrotaxis cupressoides* rainforest, 1ha of *Athrotaxis selaginoides* subalpine scrub, 3ha of cushion moorland, 4ha of rainforest fernland and 83ha of sphagnum peatland was burnt within the TWWHA.

<sup>26</sup> DPIPWE, 2013

<sup>27</sup> Pencil pine

**Figure 7: Tasmanian Wilderness World Heritage Area: Annual Total Area Burnt (ha) and Annual Number of vegetation Fires 1966-2016 (Source: TFS March 2016)**



**Figure 8: Fires affecting the TWWHA**

Fire Name 15 Jan - 1 Mar 2016	TWWHA Area Affected (ha)
Cracroft Hills	1.75
Detached Creek	2.66
Diamond Lake	3.44
Dohertys Range	4.45
Dove River	55.89
Elliott Range	1.3
Gordon Plains	3.32
Gordon River Road	3520.13
Gould Point	99.92
Lake Bill	1377.48
Lake Mackenzie Road	13724.26
Maxwell River	2.86
Maxwell River (South)	1259.51
Nicholls Range	8.23
Norway Range	38.43
Princess Range	6.98
Rasselas Track	12.30
Scorpion Creek	2.85
<b>Total Area of WHA Burnt</b>	<b>20,125.76</b>
<b>% of Total WHA Area 1,584,090ha</b>	<b>1.27</b>

Source: TFS fire progression data 24th March 2016



Fire affected areas at Lake Bill, 10th March 2016. Photos: Bob Conroy

**Figure 9: Fires affecting TWWHA Threatened Native Vegetation Communities**

Fire Areas (ha) Affecting TWWHA Threatened Communities	Alkaline pans	Athrotaxis cupressoides open woodland	Athrotaxis cupressoides rainforest	Athrotaxis selaginoides subalpine scrub	Cushion moorland	Eucalyptus brookeriana wet forest	Highland grassy sedgeland	Highland Poa grassland	Rainforest fernland	Sphagnum peatland	Grand Total
Dove River		15									15
Gordon River Road Mt Cullen						12					12
Lake Bill		43	11					15	4	10	83
Lake Mackenzie Road		36	36	1	3		578	608		73	1,335
Maxwell River South	21										21
<b>Grand Total</b>	<b>21</b>	<b>94</b>	<b>47</b>	<b>1</b>	<b>3</b>	<b>12</b>	<b>578</b>	<b>623</b>	<b>4</b>	<b>83</b>	<b>1,446</b>
<b>% of Total TWWHA TNVC 2014</b>	<b>4.06</b>	<b>0.58</b>	<b>1.34</b>	<b>0.02</b>	<b>0.10</b>	<b>1.66</b>	<b>7.04</b>	<b>4.10</b>	<b>1.21</b>	<b>1.28</b>	<b>1.85</b>
<b>% of Total Tasmanian TNVC 2014</b>	<b>4.01</b>	<b>0.58</b>	<b>1.05</b>	<b>0.02</b>	<b>0.09</b>	<b>0.16</b>	<b>3.10</b>	<b>2.39</b>	<b>0.24</b>	<b>2.40</b>	<b>0.57</b>

Source: TFS fire progression data 24th March 2016 and ListMap TNVC 2014

## Western Tasmania Aboriginal Cultural Landscape

- 5.1.21** The Western Tasmania Aboriginal Cultural Landscape, which is a National Heritage listed place, was also impacted by both the spread of the Mawbanna fire complex with around 700ha burnt in the Kenneth Bay area in mid-March and with about 2,400ha burnt in the Wuthering Heights fire complex in the Temma, Arthur River and Sandy Cape areas. This National Heritage listed area is an approximately 2 kilometre wide section of land which follows the Tarkine Coast and is comprised of Aboriginal hut depressions together with seal hunting hides and middens lacking fish bones, which are an expression of a very specialised and more sedentary Aboriginal way of life. The nature of any damage in this area is currently unknown.
- 5.1.22** We noted that attention was given to the appointment of a DPIPW Aboriginal heritage liaison officer within the North West Complex IMT, to assist in minimising the risk of damage to very significant recorded and unrecorded Aboriginal heritage sites in that area. We were advised that the State Fire Controller countermanded a proposal to undertake a major backburn proposed for this area, in consideration of the heritage values that may have been placed at risk from this proposal. It was positive to note the efforts made throughout this event to take Aboriginal heritage values into account.
- 5.1.23** More than one incident controller raised with us the difficulty of getting information about the location of sensitive Aboriginal cultural sites. There are good reasons why the location and nature of these sites is not in the public domain. We were pleased to note that an arrangement was made whereby geospatial information was made available to incident management teams about areas to avoid (if possible) in firefighting operations for cultural reasons. We think that this example should be built upon and a level of trust established so that appropriate information can be provided to incident planners in good time to allow incident action plans to take Aboriginal cultural values fully into account. The difficulties in identifying an appropriate and accepted Aboriginal community representative who can liaise with the IMT and speak for country were also apparent and this issue might also benefit from planning outside the fire season.

## The Tarkine

- 5.1.24** The Mawbanna Fire, Wuthering Heights Fire Complex and Watsons Creek fires impacted on the broader Tarkine area of 439,000ha which was recently proposed for National Heritage listing based on the extent and integrity of its Gondwanan cool temperate rainforest, fossil flora, lichen flora, wilderness and magnesite karst landscapes. The area's high concentration of Aboriginal sites has led to it being described by the Australian Heritage Council as "one of the world's great archaeological regions". Only relatively small areas of recorded threatened native vegetation communities were affected by these fires.

## Understanding of and Strategic Prioritisation of Environmental Values

- 5.1.25** Fire management activities may have an impact on the environment. The impact may be positive or it may be negative. In some circumstances, there is potential for fire management activities to significantly degrade both natural and cultural heritage values. Officers of the PWS will generally have an advanced appreciation and knowledge of environmental values in accordance with their responsibilities under the *Nature Conservation Act 2002* and *National Parks and Reserves Act 2002*. FT staff also have an appreciation and knowledge of environmental values relevant to their duties through training in the Forest Practices system. These officers are typically selected to perform Planning, Deputy Incident Controller or Liaison Officer roles within Incident Management Teams (IMTs) and therefore their experience and knowledge of these values and of the associated policies and plans of the land management agencies are accounted for in the development of priorities, strategies, briefings and tasking.
- 5.1.26** The Review Team noted as an example of good practice that the PWS Initial Fire Report form provides for the early recording and reporting of values at risk in the initial stages of fire reports and prompts for inclusion of sensitive habitats and watersheds, etc. on the form.

## State Level Strategic Fire Risk Assessment and State Strategic Bushfire Control Plans

- 5.1.27** In the early stages of the fires, land managers such as PWS and FT were primarily managing fires in accordance with the Inter-Agency Fire Management Protocol. It was apparent at this time that control objectives were primarily focussed on fire fighter safety and keeping the fires as small as possible in accordance with a risk assessment process undertaken and approved by senior PWS and FT officers.
- 5.1.28** As a result of the large number of known going fire events (over 80) in the days following the 13 January storms and the limited resources available to control them, state level risk assessment and prioritisation of fires was undertaken almost daily at the SFOC. This began on the 18th January and finished on 12th February. The risk assessment process used the NERAG as a framework, to provide an objective and repeatable approach to prioritising fires and identifying key risks, and was a major contributor to the development and regular revision of the State Strategic Bushfire Control Plan and briefing process.

### National Emergency Risk Assessment Guidelines (AG, 2015)

NERAG (AG, 2015) provides a contextualised, emergency-related risk assessment method consistent with the Australian Standard *AS/NZS ISO 31000:2009 Risk management – principles and guidelines*.

NERAG's purpose is to:

- enable consistent and rigorous emergency-related risk assessments
- increase the quality and comparability of risk assessments
- improve the national evidence base on emergency-related risks.

While the NERAG is not intended to support or replace operational emergency-related risk assessment tools and is not intended to be used to assess risk to emergency personnel who are, for example, undertaking emergency response duties, it nevertheless is a process which can be useful for supporting decision-making when there is a need to allocate scarce resources.

- 5.1.29** The strategic risk assessment process took account of the proximity and impact of all fires on environmental and heritage values and other values at risk, and was used to prioritise each fire according to its overall risk score. The results of the risk assessment were used as a tool to inform incident management team decisions. While there was acknowledged to be scope for further improvements to the process using improved regional weather outlooks, the approach adopted in Tasmania was considered by the Review team to be good practice.
- 5.1.30** Strategic bush fire control plans which used the outcomes of the risk assessment process were developed and approved from 4th February and were then updated regularly by the SFOC Intelligence Unit. The plans were endorsed by the MAC and subsequently approved by the State Fire Controller for use and guidance in resource allocation for the SFOC, RFOCs and IMTs. The purpose of the Control Plans was to use the risk assessment outputs to provide guidance for operational decisions and to assist with resource allocation. The Control Plans were informed by the State Fire Protection Plan, May 2013 and the State Level Strategic Fire Risk Assessment outputs and their status was highlighted within the State Fire Controller's Command Intent:

*"Containment strategies are to be consistent and in line with the state strategic priorities ensuring community, natural, cultural and heritage values are addressed. The State Strategic Bushfire Control Plan is to be considered for all operational and resource planning."*



- 5.1.31** The Strategic Control Plans also reported specifically on damage to natural and cultural heritage values and the potential for further damage. Fire control objectives, strategies and key risk exposures (both immediate and medium term) were identified within the strategic bushfire control plans for all fire complexes and included specific references to environmental and cultural values. References were also made to the importance of preparing rehabilitation plans for those areas that might be subject to long-term damage.
- 5.1.32** It was apparent that there was an appreciation and assessment of sensitive environmental values at senior levels in the SFOC, RFOCs and IMTs. For example the following extract was obtained from the State level strategic fire risk assessment for the Lake Mackenzie Road, Mersey Forest fire on 1 February 2016:
- "Lake Mackenzie/Lake Bill/February Plains fire complex has major ongoing threat to irreplaceable natural values, potential threats to Walls of Jerusalem and as far south as Mt Ossa (peat/soils, threatened species, alpine/sub-alpine communities, refugia).*
- All crews are aware of the issues when working in and around the fire ground in relation to threatened natural vegetation, flora, fauna and Aboriginal Heritage sites each respective IAP Divisional and Sector plan clearly specifies the requirements when working in and around the area of concern.*
  - Areas of known Aboriginal heritage sites have been plotted on the respective maps and request for indigenous parks staff to be augmented into the firefighting operations has occurred".*
- 5.1.33** The Review Team was told of examples where the State Fire Controller or PWS General Manager intervened to ensure that environmental values were prioritised in considering fire suppression strategies (for example at the Mawbanna Fire Complex and Central Plateau fires). Examples were also seen of capturing environmental values in prioritised resource deployments at Lake Mackenzie in addressing the risk of the fire impacting on Highland Poa grassland and *Athrotaxis cupressoides* open woodland communities to the south east and south west and Highland Poa Grassland and Rainforest fernland in Sector Charlie.
- 5.1.34** Another example is provided by the Doherty's Range fire (26/01/2016) which was also identified as a high risk should it become a large fire and impact on proximate fire sensitive landscapes. As a result resources were allocated to restrict the fire to 4 hectares despite the fact that it was burning in a very remote and inaccessible area.
- 5.1.35** At Lake Bill, the Review Team saw examples of efforts to contain the fire from impacting on mapped sphagnum peatland and unmapped *Athrotaxis cupressoides* groves. Similarly, at Maxwell River South the team saw examples of the care that was taken at alkaline pans due to the Aboriginal heritage and natural heritage values of these areas and of the efforts taken in very difficult terrain to minimise the risk of the fire taking leads and crossing the Prince of Wales Range and impacting on the Huon Pine forest, including the Olegas Truchana Huon Pine Reserve to the South East.
- 5.1.36** At the Gordon River Mt Cullen fireground, the Review Team saw significant areas of *Athrotaxis selaginoides* sub-alpine scrub that was protected by containing the spread of the southern perimeter of this fire. The Review Team has also noted some examples where rapid response to fire reports assisted in minimising damage to environmental values, for example the response to the Lake Plimsoll (15/01/2016) and Tyndall Reserve (20/01/2016) fires which ensured that fire did not spread and impact on nearby *Athrotaxis selaginoides* rainforest and sub-alpine scrub and *Athrotaxis selaginoides* /*Nothofagus gunni* short rainforest; and also at the Dove River fire (16/01/2016) where control strategies prevented the fire from spreading further into nearby *Athrotaxis selaginoides* and *Athrotaxis cupressoides* rainforest and open woodland.
- 5.1.37** The Review Team also saw references to environmental values being recorded in Situation Reports such as<sup>28</sup>:
- Lake Mackenzie Complex Sitrep #9 and #19, 24 January 2016 1030hrs and 31 January 1230: areas east and south of Lake Mackenzie are "World heritage listed and contain fire sensitive vegetation and high natural values"; "eagles nests" and "Tasmanian Devil insurance population" mentioned.
- Pipeline Road Mawbanna Sitrep #9 19 January 2016 1500hrs: Sensitive cultural values sites to the S and SW of the fire have been identified and Div Comm informed"; and
- Maxwell River South IAP #01 31 January 2016 0800hrs: IAP notes the presence of environmental values potentially at risk".
- 5.1.38** At Lake Mackenzie a special report was prepared on the environmental values for each sector of this fire. Although we were not directly informed of how this document was used in the field, the intent was to inform IAPs and firefighter briefings: this demonstrated to us that considerable effort was being taken to ensure that environmental values were given prominence in developing operational plans for this complex of fires.

- 5.1.39** It was suggested to us that environmental values were not always prioritised in making tactical decisions: for example there was evidence to show that backburning to protect built assets with little heritage significance may have subsequently led to impacts on nearby sensitive plant communities (for example at Sandy Lake). Given the numbers of interstate crews who may have lacked detailed knowledge of Tasmanian environmental assets, we are not surprised to learn of incidents of this nature: but they were few so far as we could judge and were not evidence of institutional ignorance or disregard for environmental values.
- 5.1.40** Overall, based on the evidence rehearsed above, the Review team is confident that Tasmanian fire agencies were appropriately sighted throughout on the need to preserve environmental and wilderness areas during the 2016 fires. This is to be expected, given the role that the PWS plays in multi-agency fire suppression planning and operations. We were impressed by the detailed knowledge of and commitment to these values demonstrated by PWS and FT staff and shared by them with staff from other Tasmanian agencies and visiting interstate firefighters.

### Strategies, tactics and suppression guidelines

- 5.1.41** The usual strategy adopted in Tasmania of relying on rainforest and mosslands for containing fire boundaries could not be relied on in the exceptionally dry prevailing conditions and therefore greater effort was required to contain fires, or at least to leverage off the advantage that these boundaries provide.
- 5.1.42** Only a few of the IAPs viewed provided explicit detail or maps of sensitive environmental values, but some did provide alerts regarding raptor sites and generic information regarding Aboriginal heritage areas (for example Rebecca Road Sector Plan West Coast Complex 20 January 2016).
- 5.1.43** The strategies and tactics used to contain these fires utilised standard techniques of earthmoving machinery (for example at the Mawbanna Fire), handtool lines and water, foam, gel and retardant bombing and backburning. There was little evidence of any references in IAPs to land manager specific protocols, plans or suppression guidelines: however prior approval from land managers and Fire Control Officers for some of the higher impact control tactics (earthmoving and retardant) was always sought. We expect that the suppression guidelines contained within the PWS Regional Strategic Fire Plans were taken into account in implementing these high impact tactics.
- 5.1.44** The interagency protocol and regional fire protection plans (2014-15) do not include or reference the use of appropriate fire suppression guidelines aimed at minimising impacts on the environment, despite this being stated as one of the aims of the State Fire Protection Plan 2014.
- 5.1.45** This does not, however, suggest that the protection of environmental values was not taken into account in the development of fire control strategies. The Review team understands that in the past, the strategy for management of fires in remote or wilderness areas was one of monitoring only. The current PWS policy, however, is to actively suppress reported fires for the first 24 hours and then review progress. This policy demonstrates PWS's commitment to engage in active fire suppression where it is feasible and appropriate to do so. In cases of multiple simultaneous fire starts, or where it has been decided in advance that a fire in a particular location may safely be allowed to burn without active intervention, the option of monitoring only may be adopted.
- 5.1.46** The Griffiths Creek fire for example (2,933ha) became a large fire burning in a largely inaccessible area south of Macquarie Heads and was assessed as low priority with little long-term impact on life, property or environmental values. While the spread and behaviour of the fire was regularly monitored, firefighting resources were allocated to contain higher priority fires elsewhere.
- 5.1.47** The development of multi-agency guidelines for minimising the environmental impact of fire management activities, particularly those operational activities which may have avoidable impacts on sensitive natural and cultural heritage values, may be useful and worthwhile in the Tasmanian context. For example, such guidelines could cover the use of firefighting chemicals such as retardant, gel and firefighting foam, the use of saltwater in natural areas, back-burning and incendiary operations, use of earthmoving equipment and construction of handtool lines, the taking of water from tarns, rubbish and waste management and Aboriginal heritage guidelines. Such guidelines could also include a hygiene protocol (for example in relation to *Phytophthora sp.*) for sensitive areas. The guidelines could then be referenced in planning documents, IAPs and training materials and provide a reference for decision-making on approvals for these activities.
- 5.1.48** The Tasmanian government has announced a new research initiative to examine the impact of climate change on wilderness areas and to strengthen firefighting techniques specific to protecting wilderness values, with a focus on prevention, improving predictive modeling, fuel reduction and fire retardant use. This should assist to further build on the practical lessons taken from the management of the 2016 fires.



## Recommendation 2

The Tasmanian fire agencies consider the development of fire operational guidelines to avoid long-term environmental impacts such as:

- strategies and tactics that will minimise the impact of fire management activities
- 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.

## Land Management Activities

- 5.1.49** The Review team noted examples where bushfires or planned burns in the last five years appeared to assist in the containment of the 2016 fires. For example, control efforts at a few locations on the boundaries of the Mersey Forest Fire Complex appeared to have been supported by fuel reduction arising from previous fires both planned and unplanned. The team also noted examples where burns in the last five years did not appear to help contain fire boundaries. This may have been in the buttongrass moorlands where fuel development is rapid, or in areas where the previous burn was not effective in reducing fuel levels. We expect that overall these burns did assist in the modification of fire behaviour, reduction in spotting potential and creation of mosaic patterns in these previously burnt areas.
- 5.1.50** We were advised that the Tasmanian Government has funded a major fuel reduction program (\$28.5m over 4 years) and that work is well underway in developing a multi-agency program of strategic burning based on State level risk assessment, which includes consideration of environmental values. The team viewed some of the early work in developing a forward plan of strategic burns within the Tasmanian Wilderness WHA, which will be captured as part of the proposed holistic fire management plan for the WHA.
- 5.1.51** The team also noted the Planned Burning Guidelines<sup>29</sup> which are used to help inform the strategic planned burning programs mentioned above. The use of guidelines such as this is considered best practice in terms of managing for appropriate fire regimes in different vegetation types and could also be used in assessing the risk of bushfires to achieving acceptable fire regimes in threatened vegetation communities.
- 5.1.52** The Review team believes that the approach to fire management as described above places the Tasmanian fire agencies at the forefront of contemporary fire management practice for protecting and conserving environment and heritage values. This is, of course, providing that such practices continue to be based on a state wide risk assessment process and informed by ongoing research, community participation and adaptive management.
- 5.2 TOR 3: Was the incident management structure managed appropriately in terms of AIIMS?**
- 5.2.1** It was apparent to the Review team that the Australasian Inter-agency Incident Management System (AIIMS) has been mainstreamed within the TFS and is also well-embedded in the Parks and Wildlife Service and Forestry Tasmania. All TFS staff who may find themselves in incident management roles during an incident have been trained in the use of AIIMS and the pre-arranged structures for major incident management follow the structures prescribed by AIIMS.
- 5.2.3** AIIMS is designed primarily for the management of incidents, not the management of broader Regional or State-level governance arrangements. The current AIIMS manual does however provide that components of the AIIMS structure can be adapted for use at regional and state level.
- 5.2.4** We saw that a consistent AIIMS ICS organisational chart was used to fill positions within the SFOC during the 21st to 31st January 2016 period. We assume that the same SFOC organisational chart was used throughout the 2016 fire season. The hierarchy and positions identified within these organisational charts changed very little throughout the SFOC operational period.
- 5.2.5** The Review team noted that some key senior positions that would be found within the ICS hierarchy at incident level were not identified in the State level arrangements (for example Planning and Logistics Officers). We also noted that standard ICS hierarchal reporting structures were not in place (for instance within the Operations Section, albeit Operations at a State co-ordination level will differ from incident operations in its management requirements).
- 5.2.6** This does not mean that key functions were not undertaken, as these were primarily being achieved within incident IMTs and the RFOCs: however there is a chance that function gaps at SFOC level may go unnoticed and that confusion

29 Marsden-Smedley, 2009

at incident level in terms of functional reporting streams to SFOC may be unclear. We believe that although the use of a standard ICS structure for the SFOC may have been previously tried and tested, it would also be worthwhile to review this approach to ensure that functional gaps are not unintentionally permitted. There are other comments made below that are relevant to this observation (e.g. in relation to Air Operations).

- 5.2.7** The team also noted the use of different formats for IAPs and heard some comment about the limited value and high workload in producing multiple 30-50 page IAPs for ground crews. We understand that during the campaign the State Fire Controller directed all IMTs to use a standard 'long' format of IAP to ensure consistency. We received support from some of the ICs for a simpler format of IAP focussed on the needs of both Divisional Commander and Sector Commander level and use of the longer format within IMTs where planning, record keeping and reporting processes may all call for a more detailed document. We understand that the IAP format will be reviewed following the fire season and it may be worth giving consideration to having a long form IAP for incident control centre accountability purposes, while also producing a shorter, more user-friendly version for personnel working at the front line.
- 5.2.8** We saw evidence from incident action plans (IAPs) prepared on the 15th and 16th January, just two days after the initial lightning strikes, that the incident management structures being set up used AIIMS methodology.
- 5.2.9** When we spoke to personnel from interstate and international agencies who had been deployed to Tasmania, we heard the comment that the fact that AIIMS structures were in use meant that they could fit in seamlessly to the incident management structure and incoming staff already knew what their role was and who they should report to within the structure.
- 5.2.10** One learning point the review team identified was in relation to aviation management and its place within the AIIMS structure. We discuss this in more detail under the relevant term of reference below. Largely owing to the unprecedented size of the aviation resource applied to the fires, TFS staff were not all familiar with how aviation should be tasked and managed within the AIIMS structure.
- 5.2.11** The overriding principle is that aviation is a resource like any other and needs to be assigned to and tasked by the IMT managing an incident. Attempts should not be made to task aviation at a regional and state level – the function of those levels is to obtain aviation resources and assign them to IMTs for tasking. We were told that occasionally in the earlier stages of the fires some confusion seemed to be creeping in, with resources apparently tasked at State level rather than IMT level.
- 5.2.12** It is also important the positions like Air Operations Manager are filled where relevant and integrated into the AIIMS structure. Even where incident management team personnel are unfamiliar with the capabilities of aviation resources, a knowledgeable AOM can brief accordingly and ensure the best and effective use of these resources.
- 5.2.13** We heard of occasions early in the fires where some IMT staff were unsure of the capabilities that aviation resources could offer to them. Our view is that these lessons were taken on board in the course of the fires and should such an event ever recur, Tasmanian personnel will be more familiar with how aviation integrates into AIIMS.
- 5.2.14** One other issue that was brought to our attention was the transition between IMTs dealing with fires in the first couple of days of this event and the multi-agency level 3 IMTs that were set up to run complexes of fires thereafter.
- 5.2.15** It is central to AIIMS doctrine that AIIMS is adaptable and scalable: so, as the significance of an event is seen to increase, AIIMS structures can expand to accommodate this. Appropriate decisions were made very early in the course of the fires that multi-agency IMTs should be set up to run groups, or 'complexes' of fires: this meant that the necessarily limited numbers of qualified staff could be more efficiently used to work across groups of fires, with local management being retained through the use of Divisional Commands reporting up to the IMT.
- 5.2.16** We were told of some initial reluctance by local managers to transition local IMTs to Divisional Commands. This is not an experience unique to Tasmania and can often reflect a lack of familiarity among incident controllers with the intent behind, and practicalities of, establishing level 3 incident management structures to manage complexes of fires.
- 5.2.17** It may be that the experiences of 2016 will lead to these transitions being more practised in the future: we recommend that all three fire agencies ensure that training for incident controllers includes providing a good understanding of how the transition from local incident control to Divisional Command is managed.

### Recommendation 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.

**5.3 TOR 4: Was regional and state level co-ordination effective, to include consideration of the relationship between the State Fire Operations Centre, the regional IMTs and the Multi-agency Co-ordination arrangements (MAC)?**

- 5.3.1 On the 14th January at 1000hrs the SFOC convened to ensure a multi-agency approach to the situation known at the time. The TFS Acting Deputy Chief Officer was nominated as State Fire Controller.
- 5.3.2 The Southern RFOC (RFOC-S) was operational from Cambridge with a Regional Fire Controller appointed and a multi-agency IMT identified. 20 incidents were reported between 1930hrs and midnight on 13th January with the majority being reported as at patrol or contained status. Deployed strike teams assisted local brigades to apply a heavy weight of resources, with aircraft under regional control.
- 5.3.3 In the North Region only minor ignitions were reported, most of which were being actively managed. Resources were on standby with ability to support North-West Region if necessary.
- 5.3.4 In the North-West an RFOC was constituted at Three Mile Line, Burnie. In the vicinity of 1000 lightning strikes were reported overnight primarily in the Mt Zeehan area. Light rain was falling with many fires inaccessible but conditions were thought to be favourable for control efforts. A general state of readiness was in place with aircraft being under regional control, and resources including a multi-agency IMT on standby.
- 5.3.5 In the period 14th-18th January, the focus was on the North-West region in particular. It was rapidly identified that a multi-agency incident management structure would be needed in the North-West: the process of implementing multi-agency arrangements started on the 15th January and by the 16th January a senior TFS officer had been tasked with setting up a multi-agency IMT at Burnie to control all the fires burning in the area.
- 5.3.6 In advance of expected bad fire weather on 19 January, a multi-agency IMT was formed in the North Region at Youngtown. Although not initially tasked with managing any of the major fires, over the course of the 19th as it became clear that fires in this area were burning out of control, responsibility was passed from the existing Forestry Tasmania incident managers to the multi-agency IMT.
- 5.3.7 On the 19th January, SFOC was operating and the Intelligence Unit was established. A Linescan-capable aircraft was requested and delivered from Victoria, most probably as a result of difficulties in mapping hot spots through smoke. The PWS briefed the SFOC that visitor safety was a matter of concern and was a priority in remote areas. PWS set up a visitor management team and strategy to implement procedures for visitor safety across the State. The PWS visitor management team liaised with IMTs and RFOCs to request resources (primarily aviation) from them when necessary to secure the safety of visitors. Rapidly escalating fire behaviour was noted on the Lake Mackenzie and Mersey Forest Road fires with reports of fires and embers in Golden Valley and Western Creek.
- 5.3.8 From this point on, the procedures documented in the interagency protocol continued to be followed, with level 3 IMTs established in each of the North, North-West and South Regions, RFOCs in place for each of those Regions and an SFOC in place in Hobart. The Mawbanna and Wuthering Heights fires were managed by a level 3 IMT based at Three Mile Line, Burnie in the North-West Region, the Mersey Forest complex was managed from Youngtown (Launceston) in the North and the Gordon River Road fire was managed from Cambridge in the Southern Region.
- 5.3.9 It is evidence of the maturing of State Control arrangements since they were established in 2012, that they were put into place with minimal difficulty and the system operated according to plan. We think however, that some of the feedback we have received from participants in the process indicates that a review of the basis for multi-agency fire management in Tasmania should now take place. This review can be based on evidence gathered from actual implementation and use of the arrangements and so may support a more streamlined system for the future.
- 5.3.10 One of the most consistent pieces of feedback we received was that the RFOC level of management seemed at times superfluous once a level 3 IMT was operating in a Region. As previously noted, a level 3 IMT will take control of all significant fires in the Region in question, delegating forward command to Divisional Commands. This means that the original intent of the RFOC, to provide a Regional overview of firefighting activity, is effectively being met by the IMT.
- 5.3.11 We were told of concerns that RFOCs were becoming too involved at times in the operational responsibilities of the IMTs and that the procedure by which IMTs had to request resources through the RFOC, which then passed them on to the State level, imported an unnecessary layer of bureaucracy and slowed down the fulfilment of resource requests.
- 5.3.12 While we understand and acknowledge that the business of the fire agencies (particularly TFS) needs to continue at a management level during major incidents – separate from incident management and including all those day-to-day responsibilities of a business such as personnel and property management, business continuity and so on – it seems to us that the comments about the ‘mission statement’ of the RFOC once a

level 3 IMT was set up have a logic to them. It makes sense for an RFOC to oversee disparate incidents at level 2 if the Region is experiencing a 'busy day'. But once the call has been made to set up a level 3 IMT, we think that there may be scope for the RFOC and the IMT to merge.

- 5.3.13** One immediate benefit would be that the staff needed to run the RFOC could be dedicated to IMT business. It would make reporting lines cleaner: we encountered confusion from a number of sources as to whether a level 3 IMT reported to the RFOC or not. And it would avoid 'double-handling' of requests that currently have to go through the RFOC.
- 5.3.14** It makes good sense for there to be a senior TFS manager in place in a Region who is not undertaking incident control responsibilities and who can be responsible for managing other aspects of the business, as well as providing some senior oversight of the Region detached from the demands of incident control. But we encourage the fire agencies to reflect on the outcomes of the 2015-16 season and to closely consider whether the RFOC as a concept adds value once a level 3 IMT is up and running in a region, apart from on days of predicted challenging weather and the likelihood of new incidents arising.

#### Recommendation 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.

- 5.3.15** We have also described above the concept of the MAC group and how it fits into State fire management arrangements. When AFAC carried out its Audit-Review of the 2013 fires in Tasmania, the relationship between the MAC and the SFOC came in for some scrutiny and we noted how the MAC (which had operated for many years on quite a personal level among fire agency heads) and the SFOC did not necessarily have a clear functional delineation.
- 5.3.16** Those observations no longer hold true and we think that it is now clear to all that the SFOC is responsible for State fire management in times of major incidents. Some people we spoke to, however, appeared to mourn the loss of the 'old' MAC, with its quite personalised level of operational control and guidance in major incidents.
- 5.3.17** It appears to us to be obvious that the leaders of the three fire agencies should collaborate closely in order to discuss and agree matters of policy and even procedure: but we think – as we understood the intended effect of the 2012 reforms to be – that the MAC could do this as a policy and planning group out of the fire season and leave operational control of fires at the State level to the State Fire Controller and SFOC. That is largely what happened in 2016, with support from FT and PWS appointed liaison officers and Deputy Fire Controllers, and we endorse this approach.
- 5.3.18** Some incident controllers, however, thought that the SFOC was not a good forum for a frank discussion about fire suppression strategies, which the MAC used to facilitate. We can understand that the rather more formalised structures of SFOC, with a wider membership base, would not necessarily encourage those quite technical and open discussions. However experienced they may be, level 3 incident controllers may (and arguably always do) need some form of sounding board or review to enable them – and the State Fire Controller – to be confident that they are on track.
- 5.3.19** Another related issue we heard from some level 3 controllers is that the SFOC morning briefings, which took place daily and required the presence of level 3 incident controllers by video-link, became too long, in part because of the number of people round the table and the discussions that took place. These briefings exceeded an hour on occasion, which we agree is inconsistent with the incident controller being able to give careful attention to their own IMT during that time – a particular challenge on days when shifts were changing and new staff needed briefing.
- 5.3.20** Although we would not wish to be seen to prescribe a solution to these issues, one possible way forward would be for the State Fire Controller or their delegate – possibly accompanied by delegates of the Chiefs of the other fire agencies – to hold a technical pre-briefing before the main SFOC briefing to discuss specific fire suppression strategies. Depending on operational needs these could be with individual level 3 ICs, or level 3 ICs across the State as a group. Deputy ICs could then attend the SFOC briefing to answer more general questions and brief the broader group. Whether this or another solution is adopted, we encourage some further reflection on this aspect of communications and support for level 3 ICs.

#### **5.4 TOR 5: Was integration of other response and support agencies, local and State government effective?**

- 5.4.1** One of the notable things about the way agencies work together in Tasmania, in the opinion of the Review team, is that the size of the State means that close working relationships are the rule within and beyond emergency response agencies. For that reason, we expected to find and did find that there was good communication between the fire agencies and other response and support agencies throughout the period of the fires.
- 5.4.2** We spoke with representatives of Tasmania Police and the Tasmania State Emergency Service. Both of these agencies were represented at the SFOC and we did not hear any complaints that they were not being adequately briefed about the fires, or were unclear about their expected role.
- 5.4.3** We were advised that consideration was given on a regular basis as to whether a state of emergency should be declared, which would have given Police more specific powers to become involved in the management of the situation. However, consideration of the fire-specific nature of these events and limited community impacts meant that such a declaration was not considered necessary.
- 5.4.4** For that reason Police did not play a very prominent role in the management of the fires. Where their assistance was needed, for example in managing traffic, we did not hear of any problems with liaison between fire managers and Police.
- 5.4.5** The position of the State Emergency Service (SES) in relation to the management of the fires had changed somewhat since the last major fire incidents in 2013. This is because an organisational restructure has led to the SES reporting through to the Chief Fire Officer, instead of, as previously, reporting to Police. This was seen by the SES as a significant opportunity to play a more integrated and hands-on role in managing the fire incident.
- 5.4.6** We heard of some positive examples where this had taken place, with SES volunteers working in fire IMTs, assisting in the management of base camps and even in one case contributing to fire behaviour analysis and strategic planning, through the particular skills of one SES staff member. The attitude that we encountered from both SES and fire was that the relationship was a much more collaborative one.
- 5.4.7** Equally it was clear to us that SES staff and volunteers did not want to be firefighters or to lose their identity as the SES. The operating principle was to find support roles for SES that were operational, but not firefighting, in nature, consistent with the 'all hazard, all-agency' approach supported by AIIMS.
- 5.4.8** We gained the impression that with the goodwill being demonstrated on all sides and the important steps that had been taken in bringing SES personnel into the management of the fires, Tasmania was demonstrating good practice in this area. We expect that in advance of future major incidents taking place, further conversations may take place between fire 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. Owing to the ongoing importance of this work we think the point is important enough to warrant a recommendation, although this is not to be taken to detract from the good work already being done in this area.
- 5.4.9** We had the opportunity to meet with the Head of the Tasmanian Public Service during the course of our Review. He was complimentary of the way that the fire agencies, both through the SFOC and direct briefing, had kept State Government informed and no deficiencies in that area were noted.
- 5.4.10** In relation to the integration of State Government into the response, we heard of two relevant initiatives in particular. Firstly, the TEIS (Tasmanian Emergency Information Service) was activated. This provides a call centre capacity drawn from across State Government, to handle calls and inquiries about an emergency situation, including in this case the fires. The TEIS concept seems to us to be a valuable one and to have provided valuable redundancy in this case. As it turned out, the volume of calls was quite low and it soon became apparent that the TEIS would not need to play an ongoing role in the management of the emergency.
- 5.4.11** Another initiative involving the use of State Government personnel that we were told about is the Interoperability Register. This register, open to all Tasmanian State Government staff, allows people who are

interested in assisting in support roles in an emergency situation to note that interest and then potentially be called upon to fulfil incident management roles in a major emergency.

- 5.4.12** We discussed the success of this initiative with State Government and fire agency staff, and concluded that it had not been utilised to its full potential during the fires. There are many roles, for example Public Information, Logistics and Finance positions in IMTs, that require no firefighting expertise (although we think they do require familiarity with the context).
- 5.4.13** Positions of this nature were the subject of requests for interstate assistance during the 2016 fires, at the accompanying financial cost to Tasmania. And as will appear elsewhere in this report, we think that notwithstanding interstate assistance that was forthcoming, additional support in Public Information and Finance in particular would have delivered benefits to the management of the emergency. Just to take one example, if a finance officer had been attached to the State Air Desk throughout the fires, a significant load would have been alleviated from the officer who ran the State Air Desk and a closer check could have been kept on both the accuracy of invoicing and cumulative spending on this very expensive resource.
- 5.4.14** Our understanding is that staff on the Interoperability Register do not receive supplemental training in emergency and incident management to allow them to slot seamlessly into IMT roles. This may be a wasted opportunity. Emergency management is increasingly about far more than front-line operations and we encourage the Tasmanian agencies and indeed fire and emergency agencies across the country to think more broadly about how staff who are already employed by Government in their State could support the management of future emergencies.
- 5.4.15** Similar points may be made in relation to local government: and one important point that was made to us was that an interoperability register was a good concept, but did not necessarily address the needs of incident management teams based in the North and North-West of the State when so many people on the register are based with the State Government in Hobart. This is clearly a consideration (although it should be set against the issues involved with bringing this capacity from even further away, in other words interstate).
- 5.4.16** It may be that local government staff would also have a valuable role to play as part of the Interoperability Register, although there may be capacity issues to take into account particularly for smaller local councils.
- 5.4.17** We communicated with a number of local councils for the fire affected areas, to ask for feedback on how well they felt they had been kept informed about fire operations. Our general view was that there were limited opportunities for local government actually to be integrated into operational service delivery, owing to the nature of the fires: but information flow would necessarily be important and good information flow might reveal opportunities for local government to play some role in the management of the emergency.
- 5.4.18** We encountered mixed reviews from local government about information flow. Some felt they had been kept well-briefed, while this was not the case in other areas. Again this may be a learning point in relation to information management more generally and perhaps points to the desirability of increased resource and focus being applied to the Public Information function at State, Regional and IMT level in future events. At least, we would expect local government to be seen as a significant stakeholder and to be kept well briefed about the progress and management of fires in their area.

#### **Recommendation 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.

#### **Recommendation 6**

The Tasmanian fire agencies think more broadly about how staff who are already employed by Government could support the management of future emergencies.



**5.5 TOR 6: Was early and sufficient consideration given to calling for interstate assistance, was the assistance requested in a timely fashion and was it appropriate/sufficient and how well was the interstate assistance managed?**

- 5.5.1 The Review team applied a high level of scrutiny to this particular term of reference, as we are aware from general media reporting of the Tasmania fires that it has been suggested in some quarters that interstate assistance was not called for early enough, or alternatively in sufficient weight.
- 5.5.2 This issue is closely linked with the question of the effectiveness of fire tactics employed on the fires – and also with the issue of the management of aviation resources. This is because it is impossible to make a judgement about the obtaining and use of interstate resources, without having a sound appreciation of how fires burning in rugged and inaccessible terrain are to be managed. It is not possible to reach a reasoned judgement on whether a certain resource should have been called for earlier, without having an understanding of how that resource would actually be used.
- 5.5.3 It will also assist in an understanding of this subject if some background about the custom and practice of interstate and international resource sharing is provided: this will be done in the paragraphs below. Interstate resources are not an infinite resource and their availability depends on conditions prevailing in the state from which they are being requested.
- 5.5.4 It is important to appreciate the financial implications of requesting interstate assistance, which can be very significant. Interstate resources are not provided for free and the costs involved in obtaining interstate resources can very quickly exceed seven figures. The cost is directly proportionate to the time that the interstate resources are provided for and so it is important to ensure that there is meaningful work for those resources to do on arrival.
- 5.5.5 Interstate resource sharing is a relatively recent development in Australasian fire and emergency services. An AFAC paper on the subject identifies the first major deployment of recent times being to fires in NSW in 1994. In the two decades since, the movement of resources interstate and across the Tasman to tackle major incidents has become more practised: but even in 2016 the arrangements for such deployments continue to evolve and be refined.
- 5.5.6 As matters stand, a request for the deployment of interstate resources will generally be made when there is a risk that the resources available within a state will become overwhelmed or exhausted in relation to a given, ongoing incident. It is not standard practice to request resources just in case such an incident occurs, based on current or forecast conditions: indeed to do so might well result in significant wasted expenditure.
- 5.5.7 Equally, states may be very reluctant to deploy resources unless there is a specific and pressing task for them to do: it would be a bad use of a state's capacity to send its resources out of the jurisdiction for them to sit around and do nothing. When a state makes a request for interstate resources, it is generally understood that a description of the tasks those resources will be applied to, will be forthcoming at the time of the request.
- 5.5.8 For that reason, this report approaches the question of the request for interstate resources on the basis that there needed to be an actual incident, which had been identified as potentially exceeding the domestic capacity of Tasmanian resources to manage, before it would have been reasonable to invoke interstate assistance.
- 5.5.9 Another aspect of this is that interstate resources take time, under current arrangements, to be made ready for deployment. The existing procedure is that a request is made to Emergency Management Australia, which then convenes and co-chairs the Commissioners and Chief Officers Strategic Committee – (CCOSC) to consider which states have resources available (keeping in mind actual and potential fire conditions affecting them) and which are prepared to contribute to a deployment. Once that has been identified, the states supplying resources have to make their own domestic logistical arrangements for mobilising resources to a point of departure and transporting them and their equipment, to the requesting state.
- 5.5.10 Accordingly we would anticipate some delay, in excess of 24 hours, to occur between a request for substantial resources and their arriving where they are needed. There may be exceptions, for example if the request is for teams of tankers to drive across a state land border, which might be achievable more quickly. But where, as here, specialist resources had to be identified and then deployed by air to reception points in Tasmania, there was always going to be a delay in the requested resources arriving.
- 5.5.11 While it might be reasonable to argue (as has been suggested) that Australia could in the future in some way maintain a contingency reserve that was available to reinforce a state's capacity before an incident had happened, based on heightened risk, such a reserve does not exist at present. Such an initiative would require very careful exploration by all states and territories and the Australian Government to define how it would work, how it would be paid for and when it would be available for use.



**5.5.12** Set against that background, the Review team explored the chronology of Tasmania's assessment of the fire situation and the requests made for interstate resourcing.

#### **Timeliness of interstate resource requests**

- 5.5.13** As the timeline of the fires recorded earlier in this report shows, the development of the fire situation following 13 January was incremental and the building of intelligence about the fire situation took place over several days following the 13th. For example, on the 15th, 27 Fires were known about on Parks land. By the 16th, an additional seven fires had been discovered.
- 5.5.14** The Review team is of the view that it was an important part of assessing the state-wide situation that a full and accurate picture needed to be built of what fires were burning and where. It was also important for that process to take into account the exceptional dryness of fuels and the high likelihood that fires, once they had become established, could burn for extended periods. That would be expected to influence a decision to request interstate assistance earlier, as conditions were known to be difficult and have high potential to lead to longer-duration fires.
- 5.5.15** We consider that it was both appropriate and necessary for the Tasmanian fire agencies to take time, after the lightning strikes of 13 January, to assess the situation. They needed to have situational awareness and an appreciation of what fires were burning and what this meant for future resourcing needs. We do not think that it would have been appropriate to rush large numbers of personnel into remote and hazardous terrain without a clear understanding of what they were going to do and adequate resources to transport them safely there and back.
- 5.5.16** We also understand that weather conditions did not allow immediate access to many of the fires. In the days after the 13th there are reports of cloud and rain<sup>30</sup>, with some of the initial fires being extinguished by rainfall. Helicopters cannot fly in adverse conditions and this was a limiting factor both in discovery of some of the fires and transporting firefighting resources to and from remote firegrounds.
- 5.5.17** It should be appreciated that Tasmania does have some remote area firefighting resources of its own, with staff from Tasmania Fire Service, Parks and Wildlife Service and Forestry Tasmania having the requisite skills and experience. There was for that reason a suitable 'initial reaction' force available in Tasmania to combat those fire starts that had been identified. Because current sector practice is that interstate assistance is there to supplement local resources, the fact that local resources were able to work on the fires in the initial stages would have been seen to lessen the need to move straight to calling for interstate help. We note in this regard briefings that indicate that Tasmanian domestic resources were 'mostly' deployed on 18th January and 'fully deployed' on 20th January.
- 5.5.18** The Review team considers that the likelihood of needing interstate assistance to manage the fires at some stage of the management of the incident ought to have been (and probably was) clear to the fire agencies by the 16th January. This is taking into account the known prevailing drought conditions, very large number of recorded lightning strikes on the 13th, significant numbers of fire starts, likelihood that new fire starts would be identified as the weather became warmer following the 16th January and potential for fire growth and spread.
- 5.5.19** Our understanding is that the Chief Officer of TFS had held discussions with the Emergency Management Commissioner in Victoria by the 19th January and following those discussions, liaison officers from Victoria were deployed to Tasmania and were in place by the 20th as forerunners to the substantial deployments that followed. As the diagram of the development of the fires earlier in this report shows, by this time the fires were expanding very significantly as a result of the adverse weather. The formal arrangements through Emergency Management Australia were invoked and the meeting of the CCOSC took place on 21st January.
- 5.5.20** If the formal arrangements had been invoked on the 16th or 17th January, that meeting could have taken place by the 18th and deployment of interstate resources could perhaps have been accelerated by two or three days. Set against that, the feedback we have received from the Tasmanian fire agencies is that they did not feel that their resources had been exhausted at this stage and as discussed above, prevailing weather conditions between the 13th and 16th January meant that it was not possible to attack many of the fires directly and indeed they had not all been possible to identify.
- 5.5.21** While we are conscious that it is easy to make these judgements in hindsight, we think that the exceptional drought conditions combined with the very large number of lightning strikes on the 13th, the lack of consistent good rain thereafter and the significant numbers of burning fires on the 16th, could have been taken as a pointer that interstate resources were going to be needed. Once that was established, there would have been benefits in moving sooner to establish the availability particularly of the interstate remote area firefighting resources that were clearly going to be required.

30 See for example reported observations for Strahan, Tas on 14-15.1.16 and Lake St Clair, Tas, 15.1.16 at [www.bom.gov.au](http://www.bom.gov.au)

- 5.5.22** For future seasons, there would be advantages in giving consideration to these issues in advance of the fire season, by identifying trigger points that would lead to a decision to seek assistance from interstate resources. These trigger points might vary depending on the type of resources required. Identifying these trigger points in advance would also have the benefit of allowing for consultation on them, so that if an agreed trigger point is reached during an incident, all interested parties will then be aware that the intent is for interstate resources to be deployed.
- 5.5.23** However, the Review team wishes to place clearly on the record that there is no evidence that the course of the fires would have in any way been changed by a somewhat earlier request for interstate resources. We have already noted that Tasmania has its own, not insignificant 'first strike' capability for remote area firefighting that was deployed in a timely fashion. We have also noted that making a request for resources is one thing: receiving those resources and then deploying them to the fireline, is another.
- 5.5.24** Weather conditions on the 19th and 20th January were such that the fires already burning in the landscape expanded rapidly and indeed, a significant proportion of the damage done by the fires was done by 21 January, with fire boundaries already extensive by the 19th (see figure 3 above). Photography of the aftermath of the fires demonstrates that they burned with an intensity such that direct attack on the fires during the 19th-20th would have been impossible in many cases regardless of the resources available. Interstate resources in fact started to arrive on 23rd January, so that if the process had been brought forward by three days (the maximum we think realistic), they would not have been in Tasmania before the major run of the fires.
- 5.5.25** Our discussion of the development of the fires and firefighting tactics elsewhere in this report demonstrates that it is entirely unrealistic to expect that the fires ignited after 13th January and burning in this remote and rugged landscape could have been extinguished or all rendered safe in the period before the 19th January – regardless of resources available. The weather conditions prevailing on the 19th were such that, combined with the dryness and nature of the fuels, even fires that had been thought to have been contained by firefighting efforts in the previous days may have escaped and gone on to expand significantly.
- 5.5.26** We summarise this part of the report by concluding that the pre-season identification of trigger points for seeking interstate assistance may streamline the process in an actual incident. Where a jurisdiction considers that it is at least likely that it will need to call on interstate assistance, there is merit in invoking the agreed formal procedures for doing so early. Even if the resulting discussions do not lead to deployment then and there, at least all involved will be clear as to the likely requirements and can make arrangements to pre-warn resources for mobilisation where appropriate. But if, as we think in hindsight they could have done, Tasmanian fire agencies had taken this step on the 16th or 17th January, it would have made no difference to the outcome of the fires.

### **Adequacy of interstate resources requested**

- 5.5.27** When considering the adequacy of the resources requested, an important point to note is that some of the most significant requests for resourcing applied to aviation assets. This aspect is discussed in more detail, later in this report. Given that many of the fires were burning in inaccessible country, obtaining additional reconnaissance and water bombing capacity was an early and sensible step to take. Where ground crews were to be deployed as well – and it is a given in vegetation firefighting that it is necessary for ground crews to work together with aviation assets to fully control and extinguish fires – then in many cases it was necessary to transport them by air given the absence of roads and the very difficult terrain involved.
- 5.5.28** For this reason, when the issue of requests for interstate resources is being considered, the narrative and comments below relating to the management of aviation resources should be considered as part of the picture.
- 5.5.29** So far as the quantity of resources is concerned, it was clear to the Review team that the scale of the operation exceeded anything Tasmania had done before, including in relation to the 2013 fires where there was a very significant risk to life and community assets. In our view it is clear that by the time the operation was in full swing, by the beginning of February 2016, there was sufficient interstate assistance in place, which was appropriately skilled and qualified for the firefighting tasks that required to be done.
- 5.5.30** Documents available to the Review team showed that well over 100 remote area firefighters were deployed to Tasmania at any given time through the peak of operational activity, in addition to the remote area crews available in the State; that in addition, substantial numbers of tanker-based firefighters were deployed later in the campaign to relieve fatigue on Tasmanian resources: and dozens of incident management team, aviation support and other personnel were deployed in addition to support firefighting efforts. Altogether, documentation available to us shows that hundreds of interstate and international personnel were deployed to Tasmania during the early 2016 campaign.

- 5.5.31** In this context the Review team notes that the fires, particularly those burning in wilderness areas, were never going to be appropriate for the kind of staffing levels seen for example in Victoria in 2009, when well over 1000 frontline firefighters were active for weeks. Particular considerations affecting the Tasmania fires were the lack of road access and hazardous nature of the country in which the fires were burning.
- 5.5.32** This meant that firefighters deployed to those fires needed to have specific training in working in remote and wilderness areas: and the capability to deploy them forward rested on the availability of sufficient aviation assets, specifically helicopters, to take them to the locations of active fire and bring them out again as required. There are limitations on the numbers of firefighters with that training across Australasia as a whole and there were additional limits imposed by the capacity of the helicopter fleet to transport them.
- 5.5.33** During the course of the Review, we inquired into the use of remote area firefighting resources and the way in which they were obtained from interstate. The nature of the terrain into which firefighters were being committed in Tasmania meant that they needed to have particular skills and abilities. These included good fitness levels, to enable them to walk significant distances across rough country carrying equipment; training in the use of helicopters as a form of transport; and for some roles experience in working in tall timber. There was additionally a requirement for some crews with training to be inserted into remote country by winch.
- 5.5.34** We encountered some evidence, particularly earlier on in operations, where there was some misunderstanding over these requirements. Use of terms like 'arduous', 'remote area' and 'remote area firefighter' carried subtly different meanings in different jurisdictions. For example, it was necessary to specifically express the requirement for crews to be trained in entering and exiting helicopters at the hover (close to the ground) and there is reason to believe that some crews who were not trained in this skill were nonetheless deployed, leading in one case to a potentially serious safety incident.
- 5.5.35** While these issues were largely resolved over the course of operations, we consider that it would be a good idea for Tasmania fire agencies to engage with interstate counterparts to arrive at industry-recognised definitions and skill sets for the kinds of crews likely to be called for in future deployments. This should include some consideration being given to how the current training and fitness status of potential deployees can be verified in advance, to avoid the risk of untrained personnel being deployed to an incident.

#### **Use of Australian Defence Force assets**

- 5.5.36** Although not strictly speaking 'interstate assistance', we consider under this heading the use, or otherwise, of Australian Defence Force (ADF) assets.
- 5.5.37** There has been some comment placed on the public record to the effect that assistance should have been requested from the ADF earlier than it was, or that assistance was offered but not accepted.
- 5.5.38** The first point we would make is that the ADF was represented at the SFOC throughout the most significant period of the fires. An ADF representative was effectively embedded in State-level decision-making and having spoken to that representative, we conclude that the lines of communication with the ADF were open in terms of discussing the availability of assets and what capabilities could be provided if necessary. Indeed the feedback was given that requests were made to the ADF that, following discussion, it was agreed could be met from civilian capacity instead.
- 5.5.39** The next important point is that the ADF has no bushfire fighting capability. Its aircraft are not adapted for water bombing and its pilots do not have training in aerial firefighting techniques. We have not investigated and do not wish to comment on the question of whether it would ever be appropriate for Defence aviation assets to be used for aerial firefighting: we are satisfied that it was not necessary in Tasmania in 2016, as sufficient civilian assets were available.
- 5.5.40** ADF personnel are not trained as bushfire firefighters. It would have been dangerous and in our view irresponsible to deploy untrained troops into remote country to engage in what was a fairly technical firefighting operation and our understanding is that the ADF would not agree to do so even if they were asked.
- 5.5.41** We understand that some reconnaissance capability was offered to the SFOC by the ADF, but it needs to be appreciated that ADF assistance does not come free of charge and the capability that was offered was in the event able to be replicated by civilian assets at a significantly lower price. It would therefore have made no sense to accept that offer.
- 5.5.42** The one example where ADF capacity was used was the use of a RAAF C17 to transport a mobile base camp from NSW to Tasmania for use at Stanley. It should be noted that the base camp itself was a civilian, not an ADF asset. It was believed that the base camp could be transported 24 hours quicker if it was flown in, rather than carried by surface freight. The camp was required because accommodation for interstate firefighters was hard to find at the height of the tourist season.

- 5.5.43** While the thinking behind this request had some logic to it, in fact the C17 was only able to land at Hobart and in retrospect, TFS staff we spoke to thought that no time had been saved by flying the base camp down rather than trucking it in and using the Bass Strait ferry. Most of the base camp had to be trucked down anyway, as the C17 had insufficient capacity to carry it all and only flew the essential elements of it down. Set against the substantial cost of using the C17, we think that some after action review of this decision might be helpful to assess it for cost effectiveness.
- 5.5.44** Overall the Review team is satisfied that there is no evidence that ADF resources were overlooked during the 2016 fires. We cannot identify any function that the ADF was capable of carrying out, that went unfulfilled by civilian assets. The ADF had no capability to engage directly in firefighting and it would have been wrong to ask it to do so.
- 5.5.45** The Review therefore concluded that sufficient resources were brought in from interstate to fight these fires and that the resources brought in were appropriate.

### **Management of Interstate Deployments**

- 5.5.46** We turn to the question of the way in which the deployments themselves were managed, which the Review team considers to have demonstrated good practice and which could be used as a template for other jurisdictions considering the management of such deployments in the future.
- 5.5.47** The initial approach by TFS to Victoria for assistance led to liaison officers being deployed from Victorian agencies to take up position in TFS headquarters in Hobart. This represented a departure from previous practice. Under current agreed national arrangements for interstate deployment, a state is nominated as the 'co-ordinating jurisdiction' and will then be responsible for bringing together the effort of all states contributing to the deployment so that the receiving state is not having to deal with multiple jurisdictions all at once and can have a single point of contact.
- 5.5.48** This function has in the past been carried out by the co-ordinating state, from its home State Control Centre or equivalent. However, early in the current deployments Victoria, which was acting as the co-ordinating state, identified that the process would be streamlined if the co-ordination was actually carried out from the receiving state and accordingly the initial liaison officers were embedded at TFS headquarters on Hobart.
- 5.5.49** From that initiative, the concept rapidly developed of having a liaison unit in Hobart to which all states that were contributing to the interstate deployment effort could deploy a liaison officer and, if required, additional support staff. At the height of the deployments, some 20 interstate staff were deployed to this unit, which became known as the Interstate and International Liaison Unit (IILU).
- 5.5.50** The concept of the IILU was that it had a leader, representing the Tasmanian fire agencies, who would attend SFOC meetings every morning and could then brief back into the IILU. The State Resources Unit had a single point of contact into the IILU and could make resourcing requests that the IILU would then work out between the liaison officers present (in consultation with their home jurisdictions) and then support could be provided to the Tasmanian agencies in drafting formal request paperwork to initiate the further deployments necessary.
- 5.5.51** One area in which the support of the IILU was important was in managing the different lengths of deployment that different states (and sometimes different agencies) were offering. New Zealand, for example, offered crews to work for 7 days, two days off and then another 7 days. Other agencies deployed crews for a 5-day deployment, with a day each side for travel. Yet others, principally those drawing on volunteer resources, particularly once volunteer resources became scarce, offered 3-day deployments again with a day each side for travel.
- 5.5.52** This meant that there was significant complexity involved in aligning the working patterns of crews from different states of origin and from within Tasmania. We also heard feedback to the effect that the organisation of travel and accommodation was more complex and expensive for crews on short tours of duty than those on longer deployments and less time was available to those crews to familiarise themselves with local conditions. The liaison officers we spoke to agreed that these complexities existed although their view was that a well-functioning IILU could minimise the impact on incident controllers by co-ordinating the movement of crews carefully.
- 5.5.53** It was suggested to us that Australasian agencies should work to implement a 'standard' deployment length and one of 5 days with a day each side for travel was suggested. We agree that this would simplify matters for states receiving assistance. However the disadvantage would be that jurisdictions across Australia and New Zealand would have to do significant work to establish what effect that would have on their different industrial agreements. And while we were told that a 1-5-1 pattern would not necessarily exclude volunteers assuming that enough notice was given to allow them to make arrangements<sup>31</sup>, it is likely that 7-day absences would be more difficult for them to manage in terms of primary employment and fatigue management than 5-day absences.

31 We were advised that in the earlier stages, of the fires, volunteers were deploying on a 1-5-1 rota

- 5.5.54** We think that there is scope for Australasian fire and emergency service agencies to discuss in advance of an incident occurring what resources they can make available for deployment and what deployment lengths they are able to offer (having regard to flexibility within local workforce agreements). It would also be useful to draw comparisons between the relative advantages of deploying volunteers on a short rotation (requiring additional travel and accommodation costs and briefings) with deploying paid staff on longer rotations (where costs of wages, overtime and allowances, and backfilling of positions have to be considered). A state requesting assistance could then make its request – and consider offers of assistance – based on the availability of the required resources and the reimbursable costs involved.
- 5.5.55** We also note that in large part, assistance was arranged on a ‘state-to-state’ basis. As we have described above, Tasmania has joint control arrangements for major incidents and so resource requests were consolidated at a State level before being transmitted. And many supporting jurisdictions also had one point of contact within their state for considering and fulfilling these requests. We encourage this as good practice: a requesting state should not have to make contact with three or four different agencies within a supporting state in order to fulfil its needs if that can be co-ordinated at a central point of contact.
- 5.5.56** The consistent feedback provided to the Review team was that the ILLU worked effectively and efficiently to minimise the burden on the requesting state, allocate resource requests between supplying states and manage the administration and documentation required to support the complex resource movements involved.
- 5.5.57** The point was made to us that in addition to an ILLU liaison officer, a field commander was required for deployed resources to interact directly with personnel and manage issues which arose in the field. That could not be done effectively from a remote location and so ideally an ILLU liaison officer will be deployed in addition to a field commander – of course, the two would work closely together.
- 5.5.58** Overall, the ILLU appears to us to have been an important evolution coming out of the management of the Tasmania fires and we recommend that the Tasmanian agencies work at a national level to share the learnings of this event and to support steps to codify the workings, structure and reporting lines of an ILLU so that this model can be adopted for future complex deployments within Australia. This might be expected to exclude ‘simple’ deployments where there is only one supplying state (although that state would be well-advised to have a liaison officer in the requesting state): deployments to international locations other than New Zealand would be handled on a case-by-case basis.

### Recommendation 7

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.

## **5.6 TOR 7: The broad effectiveness of targeted community messaging and warnings specific for rural interface and wilderness environments.**

- 5.6.1** While this term of reference might at first sight appear to be directed to the sort of safety-specific messaging and warnings that have increasingly become a feature of emergency management in Australia, the Review team rapidly came to the view that there was more to it than that. In our view (and, from our reading of the relevant materials, it is the intent of the AIIMS system as well), the relevance of community messaging extends beyond safety-specific warnings and advice to encompass the whole range of ways in which emergency management agencies engage with the public as a whole.
- 5.6.2** We think that there are areas in which public engagement might be capable of being improved; not just during future emergency events, but before them as well. Although this report is provided for the Tasmanian fire agencies, we think that our observations in this regard are very likely to be relevant more broadly across the fire and emergency management sector as well.
- 5.6.3** We start with a consideration of the more narrowly focused safety messaging, which in our view went well. IMTs, Regional and State Controllers all appear, from the documentation we have reviewed, to have been sighted on the need for good safety-related public information and it seemed to us that the Public information requirements of AIIMS were well-met in this regard.
- 5.6.4** An unusual feature of these fires was the need to take into consideration people who might be using, or intending to use, wilderness country where by definition warnings might be very hard to disseminate. The Parks and Wildlife Service seemed to us to have paid a lot of attention to this requirement, using social media



to get messages out about areas or tracks that needed to be closed and in some cases visiting accommodation providers in order to get the message out to visitors as widely as possible. We are aware of reconnaissance flights having been tasked to identify people in remote areas who might be at risk and in one case an evacuation of walkers from a walking track was undertaken by helicopter.

- 5.6.5 The Review team considered whether the declaration of an area of extreme fire hazard in accordance with the *Fire Service Act 1979* might have assisted in prior regulation of visitor use to these remote areas. We appreciate that declarations of this kind bring challenges, particularly in the peak visitor season, and we do not think that the case for a declaration on this occasion is clear-cut. We have already discussed above the desirability of a multi-agency Preparedness Matrix and we think that the triggers for declaring an area of extreme fire hazard could usefully be included in a Matrix of that kind.
- 5.6.6 There was also a requirement for health-based messaging in some communities based on the risk from smoke, which was a significant factor in some phases of the fires. Again, on the information available to us, it appears that this requirement was identified and actioned appropriately.
- 5.6.7 We did identify an anomaly relating to the way in which the TFS website carries community information about fires. On the page entitled 'alerts list' there are a number of fires reported which are not out but which carry the descriptor 'no alert level'. We think that this is inconsistent with the Australian National Framework for Scaled Advice and Warnings to the Community (2009) as referenced in the ANZEMC National Review of Warnings and Information (2014) which envisages three levels of community messaging about bushfires: Emergency Warning, Watch and Act and Advice. Advice is defined as 'to keep people informed and up to date with developments'.
- 5.6.8 Many emergency service organisations carry lists of incidents on their website which are not there to 'keep people informed' as such but more to convey an understanding of current agency activity. These are not in our view Advice messages properly so called and may indeed qualify for a descriptor of 'no alert level'. But we think where a fire or incident is listed in order that the public may understand the location and nature of a fire and what it is doing, that is an Advice message and should be identified as such. We understand that additional thought is being given to these issues at a national level and we encourage the Tasmanian agencies to participate in that with a view to arriving at a national position on this question.
- 5.6.9 In our view, the much more significant learning out of the Tasmanian fires has more to do with community engagement generally and the identification of the 'community' in that context.
- 5.6.10 It is a matter of public record that a number of groups associated with a wish to preserve natural and wilderness values have criticised the handling of the 2016 Tasmania fires. These criticisms range from accusations that State fire agencies did not care about or try to protect those values sufficiently, to criticisms about the actual tactics and resources used to combat the fires.
- 5.6.11 We hope that in this report, we have explained why we think that many of these criticisms are unfounded. But in a number of places in the report, we have referred to the necessity for commentators, in order to make these judgements, to have a good understanding of what was being done and what the factors are that affect the way in which vegetation fires in remote and wilderness locations have to be managed.
- 5.6.12 In the course of our Review we engaged with representatives of the community with a particular interest in wilderness and conservation values. It appeared to us that, through no fault of their own, they had only a limited appreciation of what firefighting tactics could achieve in wilderness areas and what responsible and safe incident management in these cases would look like. Although we heard evidence that briefings had been provided to these stakeholder groups early in the course of the fires, it was unlikely that the breadth and depth of understanding required could successfully be imparted over the course of a single briefing.
- 5.6.13 This led us to two principal conclusions. Firstly, by engaging with these communities in advance of the fire season (should they be willing to be involved), their understanding could be improved and their feedback sought on certain issues on which they might hold expertise. Information exchange of this nature may be of value to firefighting agencies in developing incident control strategies including identifying values at risk.
- 5.6.14 Another aspect of this is that if consultation occurs throughout the year (to include pre-season briefings and debriefs in some busier years), then the community will have a better understanding of why certain strategies, tactics and approaches are employed. They would then have the chance to ask, away from the pressures of an actual incident, why certain things could not be done (for example, why fires resulting from lightning strikes cannot always be immediately detected and extinguished) which could help them in understanding the approach taken in actual incidents. It could also provide them with an opportunity to participate and contribute to regional and state-wide planning and policy development.

- 5.6.15** The second of our conclusions related to information flow while incidents are happening. Necessarily, priority needs to be given to safety-critical messaging. But if, as was suggested to us, there was some point of contact that could take inquiries about why certain things were or were not being done – or proactively could push this information out – that could go a long way to answering questions about fire suppression, the use of interstate resources and the like that in some cases seem to us still not to have been publicly addressed to date.
- 5.6.16** A good example of misconceptions that may have arisen in the context of the fires under review is the way in which the TFS website lists incidents together with the resources attending. What is not clear is that ‘resources’ in this case means ‘TFS trucks’. For a fire in the wilderness, there will by definition be no trucks attending, as there are no roads. But an observer might see the fire listed on the TFS website with ‘no’ resources allocated and think that that means that nothing is being done about it. In fact, that fire might be being water bombed, be under monitoring by an incident management team, or have Parks or Forestry Tasmania resources applied to it that don’t show up on the TFS system.
- 5.6.17** This last example is a recognised issue within the Tasmanian fire agencies and efforts are being made to rectify it. It demonstrates in our view that there were some communication problems in the management of the fires under consideration that may have given a false impression that it is now difficult to dislodge.
- 5.6.18** The Review team is very conscious, in reaching this conclusion, that staff of the fire agencies might feel that there is some unfairness about it. Much of the focus in Australasian fire and emergency agencies in the past decade has been around getting out safety-critical warnings to the public and the success in doing that both in Tasmania in the recent fire season and elsewhere in Australia, is testament to the dedication with which that effort has been pursued. In a sense, the current discussion could be seen as moving the goal posts and not giving credit for what has been done well.
- 5.6.19** We see this as an example of just how complex and mobile the emergency management field can be. It is notable to us that in the 2013 fires in Tasmania, a very large fire burned in the wilderness area<sup>32</sup> for weeks, with little being done in the way of suppression of it and no comment forthcoming from environmental or wilderness groups as a result. This is very likely because of the critical threat to life and communities that was presented by other fires in Tasmania at the same time. The absence of that threat in 2016 perhaps allowed for more space in which the threats to the environment could be appreciated.
- 5.6.20** Now that the issue has come up, we think that it is sensible to acknowledge it and to make suggestions as to how it can be mitigated. We do not, in doing that, want to lose sight of the great successes in the field of public information and elsewhere that the Tasmanian fire agencies have achieved. We would suggest that for the future, having an additional focus on what ‘Public Information’ might mean for different sections of the community and identifying where the resource might come from to meet those needs (for example, the Tasmanian government interoperability register discussed in a previous section), could only improve further the way in which Tasmanian (and no doubt other) fire agencies serve their communities.
- 5.6.21** We would like also to highlight in this context that TFS was making efforts and dedicating resource to informing the broader community about the current fire situation in the State. We have spoken to a senior TFS manager who was managing a mailing list with well over 100 recipients on it, who at the height of the fire events were receiving daily briefings on the current situation. We think that this pro-active move to distribute information is worthy of note and recognition.
- 5.6.22** It might be if that initiative was developed to become a web-based, open-access source of information it might prove to have even more value in the future. We recognise, as it was recognised by all concerned following the 2009 fires in Victoria, that there is some information that it will not be appropriate to share in the public domain for reasons of sensitivity to those affected by the fires, or other compelling reasons of safety or privacy. But we anticipate that it will be possible to filter information of that nature out of any public briefing and ensure that it is targeted on a strictly ‘need to know’ basis.
- 5.6.23** We also formed the view that best advantage was not made of networks that are available through peak groups such as the Tasmanian Beekeepers Association, Bushwalking Tasmania, Tasmanian Association for Recreational Fishing and the Tasmanian National Parks Association, by identifying the role of a Public Information Section within SFOC to keep these groups informed of incident arrangements. The SFOC should in our view play this role when stood up and managing multiple level 3 incidents across Tasmania. Apart from those centralised arrangements, RFOCs should keep as many locally based community groups and affected individuals informed as possible.

- 5.6.24** We did not see evidence of a clear communications strategy being developed which identified the stakeholders and outlined the actions and responsibilities, so that both SFOC and RFOC were clear on who was speaking to whom. If assistance could be provided from across broader Government to the SFOC during major incidents to bolster Public Information capability, the development and execution of a communications strategy would be an obvious role for such staff to take.

### Recommendation 8

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
- 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 serve 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.

## 5.7 TOR 8: The effectiveness of aviation management used in support of the fire response

- 5.7.1** The use of aircraft to fight the fires of 2016 was on a scale unprecedented in Tasmania. We pay tribute to those staff from both Tasmanian and interstate fire agencies who enabled this to happen.
- 5.7.2** Aircraft have been used, on a small scale, for firefighting purposes in Tasmania for a number of years. This reflects the difficult terrain of the State in the North and West, where there are few roads and some areas are not practically accessible on foot.
- 5.7.3** Aircraft involved in firefighting may be fixed or rotary wing. They may be used for reconnaissance, personnel transport, water bombing, or logistical support. Since 2003 the Australian Government has collaborated with state and territory jurisdictions to fund the National Aerial Firefighting Centre (NAFC). NAFC is responsible for managing the seasonal contracts for firefighting aircraft across Australia. Contracted aircraft are based in a particular state and that state pays a substantial proportion of the cost of the contract for that season. Contracted aircraft are, however, available to be redeployed to other states where the need is greater, so long as there is not an operational requirement for them in their home state.
- 5.7.4** In addition, each state and territory maintains a 'call when needed' register of private contractors (or similar arrangement), who are not guaranteed any work during the fire season, but who are known to be able to provide resources if requested. The cost of call when needed aircraft is typically higher than the cost of seasonally contracted aircraft on an hour by hour basis, reflecting the commercial and ad hoc nature of their engagement. NAFC is not currently involved in the administration of call when needed resources.
- 5.7.5** To give an idea of the scale of the aircraft operation in Tasmania in early 2016, there were seven aircraft contracted to work in Tasmania for the season: five rotary wing and two fixed wing water bombers. That was already more than Tasmania had typically used in the past and it should be understood that in some fire seasons, aircraft are hardly used at all. At the height of operations there were 47<sup>33</sup> aircraft working in Tasmania and that does not include commercial charter jets used to transport crew, or the Australian Defence Force C17 that was used to transport a base camp.
- 5.7.6** These additional aircraft came both from 'call when needed' registers in Tasmania and elsewhere, but also aircraft that were contracted to other states and could be redeployed to Tasmania because of more favourable fire conditions elsewhere. In our view it is important to take this substantial deployment of assets into account when considering the question of the adequacy of the interstate response. For safety reasons there are clear limitations on the numbers of aircraft that can be used in a given space at a given time and we have heard no suggestion from operational staff that there was a shortage of aircraft when needed.
- 5.7.7** This significant expansion in the size and complexity of the fleet understandably stretched the resources of the Tasmanian fire agencies to manage. Aircraft come with a pilot and sometimes (but not invariably) fuelling support, but a significant additional range of staff is required for air operations to work safely and effectively, including air attack supervisors, air observers, air base managers and air operations managers.

33 Based on the evidence available to us. We have not audited this figure.

- 5.7.8** Aircraft being used at an incident fit within the AIIMS incident management structure and we have already commented above on the importance of ensuring that incident management teams have air operations managers embedded within them where aviation resources are to be used and that aircraft are tasked by the incident management team and not some other body.
- 5.7.9** Tasmania did not have the resources to fill all these skilled positions and that is both understandable and appropriate given Tasmania's reasonably foreseeable requirements for business as usual. The required personnel were requested from interstate as part of the operation to support the management of the fires and New South Wales and Victoria both supplied significant numbers of staff to carry out these roles.
- 5.7.10** State air operations are usually managed from a desk at TFS headquarters in Hobart. The person fulfilling this role in 2016 had recently taken it up on temporary promotion. We feel it appropriate to pay tribute to that individual, together with a colleague from Forestry Tasmania, who ended up managing an operation with significant ability (with the valuable support of interstate colleagues) that would have challenged the most experienced of managers.
- 5.7.11** In discussing the standing arrangements in Tasmania with relevant staff, we learned that personnel who are identified as available to fill aviation-related roles including air attack supervisor and air operations manager, were not always in possession of the relevant qualifications to do so. That is not to say that they were unskilled in the role. There is however a nationally endorsed training framework for all aviation-related roles and we would expect that anyone who is going to be assigned to such a role would have successfully completed the relevant training.
- 5.7.12** It is also the case that the variable workload inherent in air operations in Tasmania means that many staff, even if they have obtained the relevant qualification, have limited opportunity to practice their skills. For that reason we think that it is important that staff who are identified as able to fulfil aviation-related roles in Tasmania should be given the opportunity to undertake secondments interstate in busier jurisdictions, in order to obtain practical experience in advance of an incident.
- 5.7.13** We heard of very few significant safety-related incidents involving aircraft during the 2016 Tasmania fires and given the numbers involved that reflects well on everyone involved in air operations. There were some lesser safety-related matters that we heard of and again the suggestion was made that a more experienced cadre of air base managers in particular might have been able to manage matters so as to avoid these occurrences.

#### **Recommendation 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.

- 5.7.14** So far as we were made aware, there is no written manual for how the Tasmanian State Air Desk should be run, what its functions are and checklists for its operation. Although the personal knowledge of individuals was successfully drawn on in 2016, we think that Tasmanian fire agencies should produce a formal manual for running the State Air Desk, which would enable personnel seconded from interstate to pick up this role if necessary. It may be possible to draw on material being used in other states, for inspiration.
- 5.7.15** On a related subject, our inquiries showed that while there is no formal nationally endorsed doctrine for air operations, the doctrine used by Victoria and New South Wales is accepted de facto as good industry practice in Australia. We think it would be sensible if Tasmania ensured that its air operations doctrine aligned with that of Victoria and New South Wales, which will facilitate interoperability in the future. In practice, we understand that there was little significant difference in any event.
- 5.7.16** We have already touched on one significant enhancement that we would suggest for Tasmanian state air operations management in the future and that is the use of a finance officer at the State Air Desk. Aviation is an expensive resource and is paperwork-heavy in that significant numbers of invoices and flight-related paperwork are generated. We consider that particularly during busy times, there should be an officer whose role is to track this paperwork on a daily basis, reconcile it and be able to provide an up to date account of what air operations have cost at any given stage.
- 5.7.17** While it is unlikely that incident controllers would be counting the cost of calling on aviation assets to support the initial attack on a fire, or to save imminently threatened life and property, there comes a time in an extended

period of operations where it is appropriate to consider whether aviation is a cost-effective tool in the firefight. To assess this it is necessary to know not only what it is costing, but what good it is doing.

- 5.7.18** It needs to be appreciated that water bombing of fires can be very effective, when it is integrated with the operations of ground crews and used in a targeted manner. However, it is not necessarily the case that more water is better. Many of the fires burning in Tasmania in 2016 were burning in organic peat-like soils, or under thick tree canopies. These fires can be very difficult to reach by water bombing from the air. Particularly in the case of peat fires, dropping water from above may do little good however much is applied, as a crust forms on the surface, causing water to run off while the fire continues to burn beneath.
- 5.7.19** It is therefore not the case that automatically 'more is better' and to go back to the question of adequacy of resources, we do not think that it can be shown that having more aviation assets available would have changed the outcome of the fires. Particularly in the early days after the lightning strikes, not all of the fires would even have been visible from the air and we do not think it is realistic to suggest that they could have been 'put out' if more aircraft had been flying around.
- 5.7.20** We think overall that it would be desirable to pay increased attention to obtaining reports of the outcomes of the use of aviation assets, in as close to real time as possible. In speaking with incident controllers and personnel who were responsible about making resourcing decisions at a State or Regional level, it was apparent that they placed significant reliance on air operations experts to advise them about how many and what type, of aerial firefighting resources to apply. There is no readily available source of information that would allow an incident controller to see, for example, how effective aerial operations had been at previous fires, or to assess whether one type of aerial support was preferable to another in given conditions.
- 5.7.21** A good example in the context of the 2016 Tasmanian fires is the use of Large Air Tankers (LATs) and the Very Large Air Tanker (VLAT) for dropping retardant or water. The LATs and the VLAT can be effective so long as they are being used appropriately. Their optimal use is in laying lines of retardant to prevent or slow fire spread in a particular direction, or to act as a control line for firefighters on the ground to work off. But they are expensive resources to utilise, costing tens of thousands of dollars per drop and so we think that it is important to be able to access information, when they are used, about whether it worked or not. We are unclear how much information of that sort was actually gathered in the course of the 2016 fires – although we know that it was asked for as a condition of allowing these resources to be deployed in the wilderness area – and further investigation into this by the fire agencies might be sensible.
- 5.7.22** A related subject is the use of the LATs and VLAT in the World Heritage and wilderness areas of Tasmania. As noted above, their use is most effective when they are dropping firefighting chemicals. This may have implications for the environment in wilderness areas. The general principle that we were told was applied to decision-making about the use of firefighting chemicals in the wilderness areas, is that it was appropriate to approve it, if the assets protected by doing so (for example very old or rare vegetation) outweighed the environmental impact (for example pollution, or damage to other vegetation).
- 5.7.23** This appears to us to be a justifiable approach and we noted that there was a good level of structure around the requirements to obtain permission for the use of firefighting chemicals in the wilderness. It required to be approved at very senior levels within the Parks and Wildlife Service and approvals had to be accompanied by mapping showing exactly where the chemicals were going to be used. But in the same way as the issue over cost-effectiveness, we heard that there was not always good information flow back about how effective these chemical drops had been. That is of course an important factor in deciding whether to approve future drops and we think that continuing attention should be paid to improving information flow in this area.

#### **Recommendation 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.



## **5.8 TOR 9: Comment on appropriateness of objectives and measures of success identified and any other factors to improve effectiveness of agency involvement before, during and after the fires.**

### **Objectives and measures of success**

- 5.8.1** The Review team identified some potential overlap between this term of reference and that discussed above, in relation to the way in which environmental values were taken into account in the course of managing the fires. In order to avoid duplicating that discussion, under this term of reference we look at what 'measures of success' might typically be expected to be applied to the handling of an event such as the 2016 Tasmanian fires and we discuss how the outcome of this event compares.
- 5.8.2** In 2014, AFAC published a discussion paper titled 'What is Operational Success for Fire and Emergency Services?' That paper identified five areas in which success could be measured: supporting resilient communities through risk reduction; providing trusted response; source of credible and timely information; effective governance and resource management; and informed by research.
- 5.8.3** It is a reflection on the variety of scenarios in which fire and emergency services might ask the question about 'what is success', that the context of the 2016 fires in Tasmania involves somewhat different considerations than have fires in other states (and past fires in Tasmania) where communities have been threatened, homes destroyed and life lost. But it is still possible to read across from these general themes to discuss the notion of how the performance of the Tasmania fire agencies in 2016 might be measured.
- 5.8.4** Although the threat to communities had limited prominence, it was still a feature, particularly in the early days of the fires. The Tasmanian fire agencies appear to us to have appropriately prioritised the protection of communities and the extensive work that went into controlling fires on the West Coast in the region of Zeehan and Strahan has not always received the recognition it deserves. Those fires were successfully controlled and a significant threat to the community of Zeehan in particular was mitigated, in our view, by the work that firefighters did in the early days of the 2016 campaign. We think that it is important that this factor is taken into account in discussing the overall success of the 2016 campaign, because there is a sense at times when looking at the public commentary that the focus on damage that has occurred in wilderness areas may have eclipsed to some extent the success of operations to defend communities in the early stages of this event.
- 5.8.5** Communities in the Meander Valley were also under threat for some days in January 2016 and the work that was done by more 'conventional' tanker-based firefighters to defend against this threat and support those communities should also not be forgotten when considering the campaign as a whole.
- 5.8.6** 'Risk reduction' is a complicated concept when talking about lightning-started fire in the wilderness areas of Tasmania. We have discussed above the significant work that has been done by Tasmanian agencies in relation to prescribed burning. However, introducing fire (albeit with the best of intentions) into the World Heritage area is necessarily going to be controversial and requires careful discussion with interested parties. We think that this is an area in which an open discussion between all interested parties could facilitate sensible and productive use of planned burning to reduce risk to the WHA in the future.
- 5.8.7** In relation to the provision of response, this report has covered this in some detail already. We summarise by saying that the response mounted by Tasmanian fire agencies to the 2016 fires was unprecedented in scale and appears to us to have been focused appropriately both on managing risk to communities and to addressing the threat to environmental and wilderness values. There is evidence that firefighting in remote areas contributed to saving sensitive and threatened vegetation and certainly the detailed strategic planning that was carried out was directed in large part to that aim. Overall it seems to us that without the firefighting effort, much more could have been lost.
- 5.8.8** We think that much was done by Tasmanian fire services to provide information to stakeholders during the 2016 fires. But it is perhaps in this field that we see the most significant opportunities for future improvement. Information management and dissemination is an evolving art across the fire and emergency sector in Australasia and we do not think that what was done in Tasmania in early 2016 was significantly different from what might have occurred in other places. We think, however, that there are lessons to be drawn from these events for Tasmanian and other, fire and emergency agencies.
- 5.8.9** Rightly, the focus on public information in the fire and emergency environment has been on disseminating life-saving and time-critical advice and warnings. But we consider – and events in Tasmania in 2016 bear this out – that there is significantly more to it than this in the 'information age'. As is their right, people increasingly expect to understand how publicly-funded organisations are acting in the community interest and where practical, to be involved in the decisions underlying those publicly-funded activities. The provision of information may now start long before the fire or emergency and may need to continue at a greater level of intensity than before.
- 5.8.10** We have already noted how fire and emergency service agencies, particularly smaller ones like the Tasmanian

fire agencies, can find the resourcing of this challenging at times of great operational pressure. We wholly endorse the notion that preservation of life comes first. But if the importance of information flow is properly appreciated in advance of an emergency, we think that there are a number of ways in which Public Information can be fully resourced using 'surge' capacity without compromising emergency response.

- 5.8.11** The Review team considers that significant thought has gone into governance arrangements for Tasmanian fire emergencies and the Tasmanian fire agencies have demonstrated good practice in arriving at logical, well-thought out structures for administering emergency response on a state-wide scale. There is still, in our view, some fine-tuning to do, particularly as regards the relationship between regional and State levels of control, with explicit reinforcement being desirable of how regional control relates to regional IMTs when they are set up, what the lines of reporting are and what role the RFOC plays when the regional level 3 IMT is managing the only significant operational activity in the region.
- 5.8.12** Although somewhat beyond our terms of reference, it also seemed to us that the legislation covering the fire services in Tasmania is now quite old and is due for a complete overhaul. This would present an opportunity to embed new arrangements whereby the State Emergency Service reports to the Chief Officer of TFS. We also think that it would be beneficial if the current interagency protocol and arrangements for appointment of State and Regional Fire Controllers and level 3 incident controllers were underpinned by legislation. We are not suggesting that the current arrangements lack legal standing, but a clear statement of the powers and responsibilities of the different participants in these arrangements would in our opinion add value.
- 5.8.13** A governance issue that also relates to community engagement is the representation of peak stakeholder groups on the State Fire Management Council and Fire Management Area Committees. Currently, these bodies have representation from the fire agencies, the Local Government Association and farmers and graziers. It seemed to us that representation from organisations representing the interests of those sections of the community that use and value the wilderness areas of Tasmania could offer a new perspective to the work of those groups. This is a proposal that would require statutory amendment and is not something that it is within the power of the fire agencies to mandate: we suggest, however, that if broader statutory reform is being considered, the fire agencies should encourage a discussion about broadening the makeup of those bodies.
- 5.8.14** Finally, we think that the work done by the State strategic planning unit to prioritise response to the Tasmanian fires, based on an understanding of the potential for fire spread and the values that this could threaten, that this could threaten, is a model that other states could usefully follow. While room was still allowed to IMTs to apply local knowledge and set their own priorities, the provision, from a central source, of an overview of priorities and an understanding of what was at stake, made the work of the IMTs easier and allowed the significant research on both fire behaviour and the unique conditions to be found in Tasmania's wilderness areas to be effectively applied to the management of the 2016 fires.
- 5.8.15** We were told that the lessons from the 2016 fires, particularly about the behaviour of some fuel types in the extreme drought conditions in the West of the State, will be applied going forward and that TFS remains keen to promote further research into these areas. This was fully consistent with our impression of the Tasmanian fire agencies as learning organisations and we commend this commitment.
- 5.8.16** There are dangers in talking about 'success' in relation to any set of circumstances in which lives and property have been lost, or environmental assets have been degraded. There will be losers in almost any emergency incident and in reflecting on 'success', or 'effectiveness', neither we nor the Tasmanian fire agencies would wish to deflect attention from that. But we think that Tasmanian agencies can take comfort from an assessment of their efforts against these nationally recognised criteria and we believe that they will genuinely take on board the learnings that inevitably arise from an incident of this magnitude.

### **Other factors to improve agency effectiveness**

- 5.8.17** In the remainder of this section we discuss some of the observations we have made in the course of our Review activity, which are not covered elsewhere.

#### ***Remote area firefighting***

- 5.8.18** We have discussed above the way in which firefighting in remote and wilderness areas needs to be carried out, including an overview of some of the tactics required and the difficulties inherent in mounting a response in this terrain. Key to being able to provide a response of this nature is the presence of trained and skilled personnel, along with the use of aviation assets as a means of transport.
- 5.8.19** Tasmania already has a cadre of skilled and trained remote area firefighters. Parks and Wildlife Service firefighters may have to work in arduous terrain and the relevant personnel are selected, trained and equipped accordingly. In addition, TFS wholetime staff have remote area training and provide a readily available supplement to the

Parks crews. We were also advised by Forestry Tasmania that between their permanent workforce and silviculture contractors, they can field around 200 firefighters experienced in working in forest environments. Together, these firefighters constitute a substantial force which can either deal with incidents from their own resources, or can act as a 'first wave' of remote firefighters pending the arrival of reinforcements from interstate.

- 5.8.20** We would emphasise that in all but exceptional seasons, the domestic capability of Tasmanian services to mount a remote area response is adequate, as demonstrated by the historical record. It is reasonable, and in accordance with national industry practice, to turn to interstate reinforcements in the case of unusually large events such as that of early 2016.
- 5.8.21** One possible area for attention is the provision of winch-capable crews. Where fires are burning in terrain inaccessible by ground (and this can mean inaccessible on foot, for all practical purposes), then helicopter access is required. Sometimes a safe place to land in open ground can be identified; or alternatively a technique known as 'hover exit' can be used where the helicopter hovers just above the ground as crews step down (nonetheless this requires specific safety training). Where neither of those tactics is possible, the next step is to winch an advance crew in that is capable of clearing vegetation to create a helipad.
- 5.8.23** Currently Tasmania has no winch capable crews and in the 2016 fires had to rely on crews from interstate with the necessary skills. Winch capability requires training, but this is well within the capability of crews who already have training in arduous conditions and have the relevant levels of fitness and safety awareness to complete. We think that the lack of winch capable crews is a gap in Tasmanian capability and recommend that sufficient Tasmanian firefighters are trained in winch operations to sustain a 'first strike' capability until, if necessary, they are reinforced by interstate capability.
- 5.8.24** Alongside that issue, we were advised that the Tasmanian fire agencies do not contract any winch capable aircraft through national arrangements – which is logical, if no staff have winch training. If, as we suggest, Tasmania develops a core winch capable firefighting workforce, attention will need to be given to the sourcing of a suitable aircraft, whether on contract or on a 'call-as-needed' basis.
- 5.8.25** Another training and capability issue we considered was the use of volunteer crews. In the 2016 fires, volunteer firefighters were deployed extensively as tanker-based firefighters both in the North-West, where the fires were accessible or threatened local communities, but also in the more populous South-East of the State, where many volunteer fire brigades are based.
- 5.8.26** We were advised that volunteer crews in Tasmania are not trained to operate as remote area firefighters. Reasons given included the requirement for remote area firefighters to demonstrate good levels of fitness by way of a test; the hours required to gain and maintain relevant skills; and a perceived reluctance of volunteers to leave their 'home' areas to carry out firefighting operations in remote and unpopulated areas. Additionally, because remote area firefighters may have to work long shifts in order to make efficient use of their time, there is uncertainty as to how long volunteers would be prepared to work away from home.
- 5.8.27** Set against that is that fact that some of the crews deployed to Tasmania from interstate were volunteers, to whom the same considerations would be assumed to apply. Tasmania has over 4,500 volunteer firefighters and it seems reasonable to think that a proportion of these at least would be able to demonstrate the necessary levels of fitness and to spare the time required for training and deployment. It may also be that if the opportunity to train in remote area firefighting was provided to volunteers, new volunteers might be attracted to that – for example, people who are already familiar with Tasmania's remote and wilderness areas as recreational users.
- 5.8.28** The Review team is clear that these are ultimately judgements that need to be made locally. Our reflections on the subject are driven in large part by the apparent anomaly whereby volunteers from interstate were deployed to do tasks that for whatever reason, no Tasmanian volunteers were trained to do. We would encourage a full reconsideration of the issue by the Tasmanian fire agencies and would suggest that it could be useful for them to compare notes with their counterparts interstate where volunteers do fulfil remote area firefighting roles.

#### **Recommendation 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.

#### **Recommendation 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.

### *Fire behaviour analysis*

- 5.8.29** In the course of this Review we heard a lot of evidence about the use of fire behaviour analysis to support strategic and incident planning; and we have discussed above how this reflects a willingness to use scientific research in support of incident management. We endorse the importance that the Tasmanian fire agencies have clearly applied to fire behaviour analysis.
- 5.8.30** More than one person we spoke to with knowledge of this issue described how fire behaviour models were not always successful in the course of these fires. Sometimes they underestimated fire spread because of unprecedented dryness in the fuel conditions: on other occasions we heard it said that they overestimated fire spread because Tasmanian fuels do not always behave in the same way as the fuels used to develop the fire behaviour models in question.
- 5.8.31** The people we spoke to with expertise in this area clearly understood the limitations of what fire behaviour analysis can do and the need for there to be further research based on the outcomes of this fire season to improve the Tasmanian fire behaviour models. We think it is useful to highlight that fire behaviour analysis provides a forecast, which still requires expert interpretation to make best use of it. We heard of reluctance in some quarters to make fire behaviour analysis widely available, for example on the WebEOC system, because of the tendency of some observers to assume that the analysis was a statement of reality rather than a best estimate.
- 5.8.32** While we expect that fire behaviour analysis will continue to play an important role in planning and intelligence inputs to incident management, we agree that users need to understand its limitations and support ongoing research which will improve the quality of the fire behaviour analysis outputs available to the Tasmanian fire agencies in future.

### *State Control Centre capacity*

- 5.8.33** Speaking with many of the personnel both from Tasmania and interstate who ended up working at the State Fire Control Centre in Hobart, it became clear that the physical size of the premises available was sufficient, but no more, for operational requirements. The Review team had the opportunity to view these premises and compared with the numbers of people reported to have been working there at the peak of operations, it appeared to us that there would have been little spare room.
- 5.8.34** Another issue drawn to our attention is that the State Strategic Planning Section had to work in its business-as-usual location, physically separated from the SFOC, owing to lack of space. Further to that, the Parks and Wildlife Service was apparently also conducting its own strategic planning, but in its own offices in a location separate both from TFS strategic planners and the SFOC. We think that it is important that strategic planners from different agencies should be co-located in future major incidents and work to produce a single agreed output.
- 5.8.35** While there is a State Crisis Centre located at Police headquarters, this is apparently no larger than the SFOC accommodation. The Review team considered that the available space did not compare favourably with that in other State Control Centres across Australia: and while Tasmania is a smaller jurisdiction than many, we could readily imagine a set of circumstances that would have started to stretch the capacity of the SFOC.
- 5.8.36** The Review team was not tasked with reporting on the capacity of current State arrangements to cope with the potential 'worst-case' demands of Tasmanian emergency management and we recognise that this is something that local agencies and State government are best placed to do. With the exception of the location of the Strategic Planning section away from the SFOC and separate location of Parks planners – which we do not think is ideal – our comments are based on the perception that the SFOC had approached physical capacity, not exceeded it.
- 5.8.37** For the future, our view is that Parks and TFS Strategic Planners should work at the same location and if possible this should be in the same building as the SFOC to allow for ease of information flow. This may involve some pre-planning to decant non-essential staff from their usual work locations at times of high operational activity to allow Strategic Planning staff to move in adjacent to the SFOC premises. We also encourage some reflection by the Tasmanian fire agencies on what a 'worst-case' operational scenario might look like and how the relevant personnel could be co-located in that case in order to provide the most effective response.
- 5.8.38** An extension of this theme is the physical space available at regional control centres. We heard that when flooding struck the North-East of the State at the same time that fires were still very active in the North-West, it was impossible for fire and SES incident management teams to share the same incident control centre in Youngtown (Launceston) and the SES had to use their own regional management facilities for incident control. This seems to us less than ideal, given that SES is now organisationally part of TFS and there were SES personnel who were working on the fires.

- 5.8.39** That is not to say that expensive new regional facilities are necessary to address this: rather, we encourage some thinking about how existing premises can be adapted in times of operational surge conditions to accommodate all agencies on the same site, if not necessarily under one roof. Options may include the use of demountable or other facilities: we think however, that having two separate IMTs on separate sites (even if they are managing different hazards) does not represent effective practice and should not be seen as the long term default position.

#### *Transition to recovery*

- 5.8.40** There is increasing recognition in the fire and emergency management sector that recovery is as important as incident response – and may be a much longer and more expensive process than the initial phase of mitigating and making safe the hazard. Incident management teams need to take account, as soon as possible, of the potential needs of the recovery phase and find a way of integrating recovery needs into the incident management team and incident action plan.
- 5.8.41** In many jurisdictions, including Tasmania, the agency responsible for recovery may not be the agency responsible for response: and so a managed way of transitioning to a formally constituted recovery team (perhaps operating in parallel with the incident management team to start with) needs to be identified. The recovery team will be best placed to establish its current and ongoing need for information and intelligence on which to base long-term recovery planning.
- 5.8.42** We were told that during February 2016, when numbers of fires were still burning and the response phase was still in full swing, a Bushfire Recovery Assessment Team came from interstate and carried out inquiries in relation to the Mersey Forest complex of fires, producing a report at the end of that exercise which we have seen. We understand that a similar exercise occurred in the North-West, but we have not seen any outcomes of that. We have the following observations on this process.
- 5.8.43** Firstly and recognising the need to prioritise recovery issues early, we think there is a difference between the sort of immediate information that an IMT requires (damage to infrastructure, casualties, ongoing hazards such as dangerous trees and structures) and the broader societal recovery information that the responsible recovery agency might require. We agree that it is entirely appropriate for an IMT to commission information gathering and analysis directed to the former, but we would encourage some further thought to be given to who should commission a broader study of impacts such as that represented by the report we have seen. For example, the interagency protocol or the TEMP could contain trigger points and lines of accountability for activity of this nature.
- 5.8.44** We would suggest that a good starting point is to identify, as early as possible, who will be responsible for directing (and funding) recovery activities once the response phase of an incident is complete. We do not think that this will usually be the IMT that is directing response. The recovery agency should then take control of giving direction to any information gathering and analysis exercise that is intended to inform future recovery activities.
- 5.8.45** We were advised that it was necessary to request interstate assistance to carry out this impact assessment work because insufficient Tasmanian personnel were trained in the relevant processes and procedures. We think that the application of local knowledge is as important in recovery operations as it is in the response phase of an incident. Our impression from reading the Mersey Forest report was that the team had had to draw extensively on local sources to compile the report, and it might be that with the appropriate training, those sources could have formed part of the assessment team. We would encourage the development of local capacity to carry out activities of this nature in the future.
- 5.8.46** Finally, we would suggest that future reports of this nature should not endeavour to set a financial value against the actions they identify as required to contribute to recovery. Assessments of that nature are in our view best left to the responsible organisation that will be commissioning the work in question, which will have the best access to information about the local costs of recovery work and can also make judgements about the prioritisation of recovery actions. While we understand that it will be necessary at some stage to analyse the financial implications of carrying out, or not carrying out, recovery activities, we consider that this analysis may be better managed as an exercise separate from the impact assessment itself.



## 6 CONCLUSION

- 6.1 We wish to finish this report as we started it: by paying tribute to the many people who went the extra mile to deliver a safe, effective response to the Tasmanian bushfires of early 2016.
- 6.2 Much about the 2016 fires was, literally, unprecedented. The weather conditions; the focus on the wilderness and heritage assets of the State; the scale of interstate assistance; and the interest from sections of the public in firefighting objectives and tactics were all novel.
- 6.3 The Review team considers it a credit to the Tasmanian fire agencies and their staff that this Review does not need to deal with issues of injuries or fatalities to the public who use Tasmania's extensive wilderness areas for recreation: that there were no fatalities among firefighters responding in arduous and remote locations and that injuries did not occur in significant numbers.
- 6.4 The firefighting agencies in Tasmania have shown their intent to learn from these unusual events both in commissioning this report and even while the fires were at their peak. There are things to learn: that is inevitable in an event of this scale. But we think that if the same incident had occurred elsewhere, similar learning points could have been identified regardless of the jurisdiction involved.
- 6.5 For the Review team, there are two points to highlight both for the benefit of Tasmanian agencies and the broader emergency management community. The first is that interstate assistance is changing: from a last resort, given to a crisis-stricken neighbour in their hour of need, to a mainstreamed, sensible way of sharing the load between jurisdictions in a part of the world where large-scale emergencies are commonplace, but happily do not often strike in multiple locations simultaneously. We think that the future will increasingly call for interstate assistance to have been planned months or years in advance, with consideration given to the most cost-effective ways of obtaining support and at the same time, sharing the opportunity to gain experience from combatting emergencies.
- 6.6 The second is that the fire and emergency sector should never under-estimate the hunger for information in this information age. 'Dealing with the emergency' is not a reason for not running a comprehensive and well-staffed information and communications operation: that is now part of dealing with the emergency and needs to be staffed just as much as more traditional incident management roles need to be. And with the media and communications resources employed by governments today, there is no reason why the staffing for emergency information operations cannot come from across government, instead of agencies having to stretch their finite resources to try to find the appropriate people.

## 7 GLOSSARY

<b>ADF</b>	Australian Defence Force
<b>AFAC</b>	Australian Fire and Emergency Service Authorities Council
<b>AIIMS</b>	Australasian Inter-Service Incident Management System
<b>ANZEMC</b>	Australia New Zealand Emergency Management Committee
<b>BOM</b>	Bureau of Meteorology
<b>CCOSC</b>	Commissioners and Chief Officers Strategic Committee
<b>CSIRO</b>	Commonwealth Scientific and Industrial Research Organisation
<b>DPIPWE</b>	Department of Primary Industries, Parks, Water and Environment, Tasmania
<b>EMV</b>	Emergency Management Victoria
<b>FBAN</b>	Fire Behaviour Analyst
<b>FFDI</b>	Forest Fire Danger Index
<b>IAP</b>	Incident Action Plan
<b>IC</b>	Incident Controller
<b>ICS</b>	Incident Control System
<b>IMT</b>	Incident Management Team
<b>LAT</b>	Large Air Tanker
<b>MAC</b>	Multi-agency Co-ordination Group
<b>NAFC</b>	National Aerial Firefighting Centre
<b>NERAG</b>	National Emergency Risk Assessment Guidelines
<b>NP</b>	National Park
<b>PWS</b>	Parks and Wildlife Service
<b>RFOC</b>	Regional Fire Operations Centre
<b>SES</b>	Tasmania State Emergency Service
<b>SFMC</b>	State Fire Management Council
<b>SFOC</b>	State Fire Operations Centre
<b>Sitrep</b>	Situation Report
<b>TasPol</b>	Tasmania Police
<b>TEMP</b>	Tasmania Emergency Management Plan
<b>TFB</b>	Total Fire Ban
<b>TFS</b>	Tasmania Fire Service
<b>TWWHA</b>	Tasmanian Wilderness World Heritage Area
<b>VLAT</b>	Very Large Air Tanker
<b>WHA</b>	World Heritage Area
<b>WebEOC</b>	An online incident support tool

# ANNEXE A: THE TASMANIAN FIRE AGENCIES

## THE COMMISSION, CHIEF OFFICER AND TASMANIA FIRE SERVICE

- A1.1** The Tasmania Fire Service and Fire Commission are established under ss 6 and 7 respectively of the *Fire Service Act 1979*. The Commission consists of the Chief Officer and Fire Service employee representatives. The Commission is responsible for the formulation of fire service policy, the co-ordination and development of all fire services throughout the State, the development of effective fire prevention and protection measures and the development and promulgation of the State Fire Protection Plan.
- A1.2** The Chief Officer is established under s.10 of the Act as the Chief Executive of the Tasmania Fire Service (TFS) and is responsible for the control and management of the firefighting resources of the fire service. TFS is responsible for all structural fire suppression in Tasmania and for fire suppression on all private lands, unallocated Crown Land and in Wellington Park. Where bushfires occur under conditions and in situations where there is an imminent risk to, or actual impact upon structures and communities, the TFS shall direct the response to those fires where practical. The TFS shall have responsibility for the issuing of all declarations and warnings.
- A1.3** Tasmania has three statutory geographical regions within the State – North, South and North West. Within these regions there are 233 TFS brigades. The Chief Officer TFS is responsible for 311 TFS full-time equivalent operational career employees and 178 non-operational career employees, 4047 operational volunteers and 1022 non-operational volunteers and 24 SES employees and 539 volunteers (News.com.au, 2016b).

## PARKS AND WILDLIFE SERVICE

- A1.4** The Parks and Wildlife Service (PWS) is a unit within the Department of Primary Industries, Parks, Water and Environment and has responsibility for the management of approximately 3.3 million hectares of parks and reserves across Tasmania including the Tasmanian Wilderness World Heritage Area.
- A1.5** Section 30 (3)(ca) of the *National Parks and Reserves Management Act 2002* gives authority to the PWS to: 'take any steps or undertake any activities that the managing authority considers necessary or expedient for the purposes of preventing, managing or controlling fire in reserved land, having regard to the management objectives for that reserved land'. As an occupier of land, the PWS also is obliged under s.64 of the *Fire Service Act 1979* to take diligent steps to extinguish the fire or to prevent it from spreading and to report the fire.
- A1.6** The framework for PWS fire management is as follows:
- PWS State Fire Management Policy (2014) is a high level document with 12 stated policy positions covering adopted principles, standards and approaches to fire management;
  - PWS State Fire Planning Policy (2014) provides the overall framework for fire management planning in PWS;
  - PWS Code of Practice: It is anticipated that a Code of Practice for Fire Management will be prepared by the PWS in the future. Authority for such a code is in section 88A of the *National Parks and Reserves Management Act 2002*. The purpose of a Code of Practice for Fire Management will be to establish principles, standards and guidelines that will apply to fire management on reserved land;
  - PWS Park and Reserve Management Plans (for example TWWHA Management Plan) contain a section dealing with fire management policies and actions that relate specifically to that park or reserve;
  - PWS Regional Strategic Fire Management Plans have been prepared for PWS regions being Northwest (PWS, 2012), Northern (PWS, 2009) and Southern (PWS, 2011). These plans are structured in accordance with PPRR.
  - Reserve fire management strategies: Reserve Fire Management Strategies (RFMS) are a category of fire management plan that may be prepared for land managed by the PWS. Such strategies may encompass single reserves; groups of reserves within a defined area; or groups of reserves and other tenure within a defined area. The purpose of the RFMS is to identify the fire management works program required within the defined area over a period of 5 to 10 years;
  - Annual Planned Burning Program and Fire Works Plans - These are prepared annually and identify and gain approval for all the planned burning and works programs that may be undertaken for the coming year;
  - Annual Fire Action Plan is prepared and updated on an annual basis and covers PWS arrangements across the State. The purposes of the Fire Action Plan is to identify the actions required by the PWS, on a routine daily and weekly basis, for the prevention and readiness to control bushfires and their impacts; to be a reference document for fire duty officers and regional staff.

## FORESTRY TASMANIA

- A1.7** Forestry Tasmania (FT) is a Tasmanian Government business enterprise responsible for sustainably managing approximately 800,000 hectares of public production forest (Permanent Timber Production Zone land). FT manages its land consistent with its obligations under the *Forest Management Act 2013*. This Act specifies that FT is required to make available at least 137,000 cubic metres of high-quality eucalypt sawlog each year.
- A1.8** In accordance with the Government Business Enterprises Act, a Ministerial Charter describes the operational scope and Government's broad expectations of FT. The Charter identifies fire management as one of FT's core activities and requires FT to *inter alia* act in accordance with the Inter-Agency Fire Management Protocol. Core activities and Non-commercial activities under fire management are included in Schedules 1 and 2 respectively and include fuel management, establishment and maintenance of fire breaks and the prevention, preparation for and suppression of wildfires; research and the preparation of regional fire management plans.
- A1.9** As an occupier of land, FT is also obliged under s.64 of the Fire Service Act to take such diligent steps as necessary during the fire permit period to extinguish or prevent any fires burning on that land from spreading and to report the fire. FT's approach to fire management is outlined in the Forest Management Plan (TF, 2014) and includes a PPRR approach in accordance with the following aims:
- Minimise the occurrence and impacts of bushfires;
  - Minimise the severity of bushfires through strategic fuel reduction burning;
  - Maximise Forestry Tasmania's readiness to respond to bushfires;
  - Minimise the severity of bushfires through coordinated, effective and efficient responses; and
  - Promote forest recovery after fires.
- A1.10** FT has a Strategic Fire Management Plan (statewide) under which sit Regional Fire Action Plans and Tactical Fire Management Plans. Operational Burn Plans are also prepared for every prescribed burning operation.

## ANNEXE B – THE REVIEW TEAM

**Bob Conroy** has more than 35 years of experience working in protected area management in both operational, senior management and executive roles including the management of world heritage properties and wilderness areas. Bob has had a long-standing interest in fire management strategy, policy and planning and represented the NSW National Parks and Wildlife Service for more than 10 years on the Bush Fire Coordinating Committee and the Australasian Fire and Emergency Service Authorities Council.

Bob is currently a Deputy Captain with the NSW Rural Fire Service, represents the Minister for the Environment on the NSW Bush Fire Coordinating Committee, is a member of the World Commission on Protected Areas and member of the NSW Nature Conservation Council Bush Fire Advisory Committee. As a Director of ARRDENT Pty Ltd, Bob has recently undertaken a major fire policy review for Parks Australia.

He is the recipient of the National Medal and AFAC Special Acknowledgement Award for Contribution to the Industry, is a Churchill Fellow and holder of tertiary qualifications in both environmental management and public sector management.

**Tom Dawson** commenced his fire service career with the Metropolitan Fire Brigade in Brisbane in 1981. He progressed through all ranks, fulfilling roles and responsibilities such as an Operational Shift Officer, Motor Officer (Aerial Appliances), Training Officer and BA Hazmat Officer.

From 1994 onwards, Tom worked as Acting District Officer, BA Hazmat Brisbane; Acting District Officer, Training Department Brisbane; and a temporary appointment as District Officer for the State Fire Investigation Unit. In 1999 Tom commenced acting Assistant Commissioner roles in Brisbane South Region, Brisbane Region, South East Region and South West Region, which led to his permanent appointment in 2006 and in 2016 as the Assistant Commissioner, Rural Fire Service Queensland.

Tom received the Australian Fire Service Medal in 1999 for his outstanding service to the State Fire Investigation Unit and the advancement of fire safety programs with non-English speaking communities. In 2004 he gained his Master of Public Management from Flinders University.

Tom has a keen focus on safety through effective and professional service delivery for all communities across Queensland. As an Assistant Commissioner working within the Emergency Service Volunteers (ESV) stream, he has a strong commitment to enhancing volunteerism and strengthening the capabilities of the service, in particular, the inclusive culture of Queensland agencies.

**Paul Considine** worked as a barrister in the UK for 12 years before coming to Australia in 2004. He has held a number of positions in Australian state and Commonwealth public services, including as a Director of Investigations in the office of the Commonwealth Ombudsman.

Paul joined the Australasian Fire and Emergency Service Authorities Council in 2010 as Manager, Operations (Urban Fire and State Emergency Services), where he worked on a number of projects including AFAC's submission to a Senate inquiry on the impacts of climate change. In 2013 he took up a two-year appointment as an Assistant Inspector of the Scottish Fire and Rescue Service, with HM Fire Service Inspectorate in Scotland: in that capacity he was lead inspector on a number of inquiries and reports into the SFRS, including the Service's preparedness for the 20th Commonwealth Games and its preparedness to respond to a serious flooding event.

Paul currently works for the National Aerial Firefighting Centre as Manager, National Resource Sharing Centre, working on policy and practice concerning the sharing of fire and emergency service resources within Australia and internationally.



# ANNEXE C

## ORGANISATIONS WHOSE STAFF CONTRIBUTED TO THE REVIEW

Tasmania Fire Service  
Parks and Wildlife Service Tasmania  
Forestry Tasmania  
Tasmania Police  
Tasmania State Emergency Service  
Department of Premier and Cabinet, Tasmania  
Tasmania Volunteer Fire Brigades Association  
The Wilderness Society Tasmania  
Australian Defence Force  
Emergency Management Victoria  
Country Fire Authority, Victoria  
Melbourne Metropolitan Fire Brigade, Victoria  
Rural Fire Service New South Wales  
National Parks and Wildlife Service NSW  
Taranaki Rural Fire Authority, NZ  
National Aerial Firefighting Centre  
Central Highlands Council  
Circular Head Council  
Meander Valley Council

We thank all the organisations and individuals that made the time to assist us with our work.

# REFERENCES

- ABC News (2015) Total fire ban declared in Tasmania's north and south as hot weekend looms 19 Dec 9:11am  
<http://www.abc.net.au/news/2015-12-18/total-fire-ban-declared-across-tasmania/7040666>
- ABC News (2016) Smoke alert issued for Hobart as firefighters battle dozens of blazes in remote areas By Ted O'Connor, Updated 18 Jan 2016, 8:26am <http://www.abc.net.au/news/2016-01-17/cradle-mountain-reopened-after-evacuation-due-to-fire-concerns/7093586>
- ABC News (2016) Tasmania fires: First images of World Heritage Area devastation emerge, show signs of 'system collapse' By Linda Hunt. Updated 31 Jan 2016, 8:44am. <http://www.abc.net.au/news/2016-01-30/fire-ravages-world-heritage-area-tasmania-central-plateau/7127300>
- ABC News (2016) Tasmania sweltered through warmest summer on record By Sam Ikin and Pablo Vinales, Tuesday March 1, 2016 - 15:46 EDT <http://www.abc.net.au/news/2016-03-01/tasmania-swelters-through-warmest-summer-on-record/7211264>
- ABC News (2016) Tasmania's Wilderness World Heritage Area fires to be subject of Senate inquiry. Updated Thu at 4:01pm. <http://www.abc.net.au/news/2016-03-17/senate-to-hold-inquiry-into-tasmanias-world-heritage-fires/7255128>
- ACE CRC (2010) *Climate Futures for Tasmania general climate impacts: the summary*, Antarctic Climate and Ecosystems Cooperative Research Centre, Hobart, Tasmania.  
[http://www.dpac.tas.gov.au/\\_\\_data/assets/pdf\\_file/0019/134209/CFT\\_Summary\\_-\\_General\\_Climate\\_Impacts.pdf](http://www.dpac.tas.gov.au/__data/assets/pdf_file/0019/134209/CFT_Summary_-_General_Climate_Impacts.pdf)
- AG (2015a) National Emergency Risk Management Guidelines. Handbook 10. Australian Emergency Management Series. Attorney-General's Department. Australian Government. <https://www.ag.gov.au/EmergencyManagement/Tools-and-resources/Publications/Documents/Handbook-series/NERAG-Handbook10.pdf>
- AG (2015b) National Emergency Risk Management Guidelines: Practice Guide. Handbook 11. Australian Emergency Management Series. Attorney-General's Department. Australian Government. <https://www.ag.gov.au/EmergencyManagement/Tools-and-resources/Publications/Documents/Handbook-series/NERAG-Handbook11.pdf>
- Gill, A.M. (1996) How Fires Affect Biodiversity. Australia's Biodiversity. Australian National Botanic Gardens.  
[https://www.anbg.gov.au/fire\\_ecology/fire-and-biodiversity.html#TAS](https://www.anbg.gov.au/fire_ecology/fire-and-biodiversity.html#TAS)
- Bowman, D.J.M.S. and W.D. Jackson (1981) Vegetation succession in Southwest Tasmania. *Search* 12:358-362.
- BoM (2016a) December rainfall has little impact on rainfall deficiencies. Issued 8 January 2016. Bureau of Meteorology. Australian Government. <http://www.bom.gov.au/climate/drought/archive/20160108.shtml>
- BoM (2016b) Southern Oscillation Index (SOI) since 1876. Bureau of Meteorology. Australian Government.  
<http://www.bom.gov.au/climate/current/soi2.shtml>
- BoM (2016c) February rainfall has some effect on rainfall deficiencies.  
<http://www.bom.gov.au/climate/drought/>
- Bowman D (2016) Fires in Tasmania's ancient forests are a warning for all of us. *The Conversation*, 29 January 2016. Accessed at <https://theconversation.com/fires-in-tasmanias-ancient-forests-are-a-warning-for-all-of-us-53806>.
- Business Insider Australia (2016) Tasmania has issued a 4-day fire ban that could hamper Australia Day celebrations Olivia Chang Jan 23 2016, 5:00 AM  
<http://www.businessinsider.com.au/tasmania-has-issued-a-4-day-fire-ban-that-could-hamper-australia-day-celebrations-2016-1>
- Chladil, M. (2016) Season 2015-16. Background Information. Situation Briefing. Mark Chladil. Week Ending 10 Jan 2016. Tasmania Fire Service.
- CCOSC (2015) Arrangement for Interstate Assistance Fire and Emergency Services. Fire and Emergency Services. Version 2.2. 22 December 2015. Commissioners and Chief Officers Strategic Committee.  
<http://files.em.vic.gov.au/ILLU/Tasmania-2016/InterstateAssistance.pdf>
- Climate Council (2016) The influence of climate change is unfolding as bushfires ravage Tasmania. Climate Council 13th January 2016. <https://www.climatecouncil.org.au/uploads/a7c207eabe95f3284262766c13e29cce.pdf>
- CNFMAC (2015) Central North Fire Management Area Fire Protection Plan. Central North Fire Management Area Committee. State Fire Management Council. Tasmanian Government.  
[http://www.sfmcc.tas.gov.au/sites/sfmcc.tas.gov.au/files/fire\\_protection\\_plans/Executive%20Summary\\_CentralNorth\\_0.pdf](http://www.sfmcc.tas.gov.au/sites/sfmcc.tas.gov.au/files/fire_protection_plans/Executive%20Summary_CentralNorth_0.pdf)
- CSIRO and BoM (2015) Climate change in Australia: Projections for Australia's NRM regions, Technical Report, CSIRO and Bureau of Meteorology, Australia. <http://www.climatechangeinaustralia.gov.au/en/publications-library/technical-report/>
- DPAC (2016) *Impacts of Climate Change*.  
[http://www.dpac.tas.gov.au/divisions/climatechange/climate\\_change\\_in\\_tasmania/impacts\\_of\\_climate\\_change](http://www.dpac.tas.gov.au/divisions/climatechange/climate_change_in_tasmania/impacts_of_climate_change)
- DPIPWE (2014) Draft Tasmanian Wilderness World Heritage Area Management Plan,  
 Department of Primary Industries, Parks, Water and Environment, Hobart.
- DPEM (2015) Tasmanian Emergency Management Plan Issue 8: Department of Police and Emergency Management. Tasmanian Government.  
<http://www.ses.tas.gov.au/assets/files/Plans/State/Tasmanian%20Emergency%20Management%20Plan%20-%20Issue%208.pdf>

DPIPWE (2015) Evaluation Report November 2015: Fire management in the Tasmanian Wilderness World Heritage Area. Department of Primary Industries, Parks, Water and Environment. Hobart Tasmania. <http://www.parks.tas.gov.au/file.aspx?id=41886>

DPIW (2014) Land Tenure Dataset. March 2014. Department of Primary Industry and Water. Tasmanian Government. [http://listdata.thelist.tas.gov.au/public/LIST\\_Land\\_Tenure\\_information.pdf](http://listdata.thelist.tas.gov.au/public/LIST_Land_Tenure_information.pdf)

FT (2014). Forest Management Plan. Forestry Tasmania, Hobart. [http://cdn.forestrytasmania.com.au/uploads/File/pdf/pdf2014/fmp\\_17\\_november\\_2014.pdf](http://cdn.forestrytasmania.com.au/uploads/File/pdf/pdf2014/fmp_17_november_2014.pdf)

Gill, A.M. (1975) "Bushfire and the Australian flora: a review." *Australian Forestry*, 38, 4-25.

Gill, A.M. and Bradstock, R.A. (1993) Extinction of Biota by Fires. Abstract in 'Conserving Biodiversity: Threats and Solutions' p.24. New South Wales National Parks and Wildlife Service, Sydney.

Hyde, M. (2013) 2013 Tasmanian Bushfires Inquiry. Published October 2013. Tasmanian Government.

ILU (2016) Interstate and International Liaison Deployment Plan – National Deployment to Tasmania January – March 2016. SCC ILU. Interstate Support Plan Version 3.4 1st March. <http://files.em.vic.gov.au/ILU/Tasmania-2016/DeploymentPlan.pdf>

Marsden-Smedley J.B. (2007) Fire management in the Tasmanian Wilderness World Heritage Area: report for the World Heritage Committee. Unpublished report prepared for the Parks and Wildlife Service, Hobart, Tasmania.

Marsden-Smedley J.B. (2009) Planned burning in Tasmania: operational guidelines and review of current knowledge. Fire Management Section, Parks and Wildlife Service, Department of Primary Industries, Parks, Water and the Environment, Hobart, Tasmania. <http://www.fire.tas.gov.au/userfiles/stuartp/file/Publications/PlannedBurningInTasmania.pdf>

Mercury (2015a) Total fire ban for Tasmania's north and south this weekend. December 18, 2015 3:06pm. Alex Luttrell. <http://www.themercury.com.au/news/tasmania/total-fire-ban-for-tasmanias-north-and-south-this-weekend/news-story/67316f95834db3e1e98f755fef9afb21>

Mercury (2015b) Tasmania Fire Service expects total fire ban on Christmas Day. December 25, 2015 12:00am. Andrew Drummond AAP. <http://www.themercury.com.au/news/tasmania/tasmania-fire-service-expects-to-announce-total-fire-ban-on-christmas-day/news-story/6767fbd9655b1852ea7217bd224bc54d>

MFMAC (2015) Midlands Fire Management Area Fire Protection Plan. Midlands Fire Management Area Committee. State Fire Management Council. Tasmanian Government. [http://www.sfmcc.tas.gov.au/sites/sfmcc.tas.gov.au/files/fire\\_protection\\_plans/Executive%20Summary%20SFMCC%20Midlands\\_0.pdf](http://www.sfmcc.tas.gov.au/sites/sfmcc.tas.gov.au/files/fire_protection_plans/Executive%20Summary%20SFMCC%20Midlands_0.pdf)

News.com.au (2016) Watch and act alert on bushfire at Cradle Mountain. January 16, 2016 9:25pm Alex Luttrell and Ben Waterworth, Mercury <http://www.news.com.au/national/tasmania/watch-and-act-alert-on-bushfire-at-cradle-mountain/news-story/47eba72078d443447bdf950a5e0f594>

News.com.au (2016b) New Tasmania Fire Service chief officer preaches united front from emergency services in face of extreme climate events. March 20. 6:40pm. <http://www.news.com.au/national/tasmania/new-tasmania-fire-service-chief-officer-preaches-united-front-from-emergency-services-in-face-of-extreme-climate-events/news-story/77178f3fac4b5fdaa125082fded066f8>

PWS (1999) Tasmanian Wilderness World Heritage Area Management Plan. Parks and Wildlife Service. Part of the Department of Primary Industries, Water and Environment. Published by: Parks and Wildlife Service, GPO Box 44A Hobart TAS 7001. <http://www.parks.tas.gov.au/file.aspx?id=6364>

PWS (2009) Northern Region Strategic Fire Management Plan. Department of Primary Industries, Parks, Water and Environment. Hobart Publication Date: November 2009. <http://dipw.tas.gov.au/Documents/PWS%20Northern%20Region%20Strategic%20Fire%20Management%20Plan.pdf>

PWS (2011) Southern Region Strategic Fire Management Plan. Department of Primary Industries, Parks, Water and Environment. Hobart Publication Date: June 2011. <http://dipw.tas.gov.au/Documents/PWS%20Southern%20Region%20Strategic%20Fire%20Management%20Plan.pdf>

PWS (2012) Northwest Region Strategic Fire Management Plan. Department of Primary Industries, Parks, Water and Environment. Hobart Publication Date: January 2012. <http://dipw.tas.gov.au/Documents/PWS%20North%20West%20Region%20Strategic%20Fire%20Management%20Plan.pdf>

PWS (2014a) Fire Planning Policy. Parks and Wildlife Service. Department of Primary Industries, Parks, Water and Environment. Hobart. <http://dipw.tas.gov.au/Documents/PWS%20Fire%20Planning%20Policy%202014.pdf>

PWS (2014b) Fire Policy. Parks and Wildlife Service. Department of Primary Industries, Parks, Water and Environment. Hobart. <http://dipw.tas.gov.au/Documents/PWS%20Fire%20Management%20Policy%202014.pdf>

PWS (2016) Fire Situation in national parks and reserves Updated. 10th March 2016. <http://www.parks.tas.gov.au/?base=41548>

Price, C. and Rind, D. (1994) "Possible implications of global climate change on global lightning distributions and frequencies". *Journal of Geophysical Research*, Vol 99, No. D5, pp: 10823-10831.

(RFS, 2016) From the Commissioner. eBulletin - Issue 41 - March 2016, NSW Rural Fire Service. [enews@rfs.nsw.gov.au](mailto:enews@rfs.nsw.gov.au).

SFC (2015) State Fire Commission Annual Report 2014-15. Tasmania Fire Service. Tasmanian Government. [http://www.fire.tas.gov.au/userfiles/tym/file/AnnualReport/150453\\_TFS\\_AR\\_2015\\_resize.pdf](http://www.fire.tas.gov.au/userfiles/tym/file/AnnualReport/150453_TFS_AR_2015_resize.pdf)

SFMAC (2015) Southern Fire Management Area Fire Protection Plan. Southern Fire Management Area Committee. State Fire

Management Council. Tasmanian Government. [http://www.sfmcc.tas.gov.au/sites/sfmcc.tas.gov.au/files/fire\\_protection\\_plans/Executive%20Summary%20SFMCC%20Southern\\_1.pdf](http://www.sfmcc.tas.gov.au/sites/sfmcc.tas.gov.au/files/fire_protection_plans/Executive%20Summary%20SFMCC%20Southern_1.pdf)

SFMC (2014) Bushfire in Tasmania: A new approach to reducing our state-wide relative risk. State Fire Management Council Unit, Tasmania Fire Service, Hobart, Tasmania.  
[http://www.sfmcc.tas.gov.au/sites/sfmcc.tas.gov.au/files/Bushfire\\_In\\_Tasmania%20V1.2%20pdf%20web%20version\\_LOW.pdf](http://www.sfmcc.tas.gov.au/sites/sfmcc.tas.gov.au/files/Bushfire_In_Tasmania%20V1.2%20pdf%20web%20version_LOW.pdf)

SFMC (2014) Central North Fire Management Area Fire Protection Plan 2014-2015. State Fire Management Council.  
[http://www.sfmcc.tas.gov.au/sites/sfmcc.tas.gov.au/files/FPP\\_Central\\_Nth\\_%20Endorsed.pdf](http://www.sfmcc.tas.gov.au/sites/sfmcc.tas.gov.au/files/FPP_Central_Nth_%20Endorsed.pdf)

TAO (2015) Report of the Auditor-General No. 4 of 2015-16. Follow up of four reports published since June 2011. October 2015. Tasmanian Government.

TasAlert (2016) Tasmania's Official Emergency Information Source. Bushfires. Tasmanian Government.  
<http://www.alert.tas.gov.au/prepare/Pages/Bushfire.aspx>

TFS (2013) State Fire Protection Plan. State Special Emergency Management Plan. Issue 2.2, May 2013.  
[http://www.fire.tas.gov.au/userfiles/stuartp/file/Publications/StateFireProtectionPlanVersion2\\_2.pdf](http://www.fire.tas.gov.au/userfiles/stuartp/file/Publications/StateFireProtectionPlanVersion2_2.pdf)

TFS (2014) State Bushfire Safety Policy Version 1.0. Tasmanian Fire Service. State Fire Commission. Tasmanian Government.  
[http://www.fire.tas.gov.au/userfiles/stuartp/file/Miscellaneous/SFC\\_04\\_14\\_StateBushfireSafetyPolicy.pdf](http://www.fire.tas.gov.au/userfiles/stuartp/file/Miscellaneous/SFC_04_14_StateBushfireSafetyPolicy.pdf)

TFS (2015) Scaling Fire Restrictions in Response to Increased Fire Danger. Internal Paper, December 2015. Tasmanian Fire Service. Hobart.

TFS (2016) State Strategic Bushfire Control Plan Version 3. 1/03/2016 7:45 AM Copy: Uncontrolled. Tasmania Fire Service.

TFS (2016a) Chronology of Response to Tasmanian Bushfires January 2016. Version 0.G 2/03/2016 4.39pm. Tasmanian Fire Service. Marked for Internal Use Only. Tasmanian Government.

TFS (2016) Bushfire fuels, Weather. Internal Paper. Tasmania Fire Service. 22nd January 2016.

TFS (2016) 14th January N/W RFC Briefings/ SFOC EOC/ RFOC IMT Handover Circular Head 20160115.docx IAP 4 Hour 1 PAGE.doc NWRFOC Operations Briefing Document\_20160114 1200hrs.docx NWRFOC Operations Briefing Document\_20160114 1830hrs.docx NWRFOC Operations Briefing Document\_20160114.docx RFOC IMT Handover \_West\_Coast.docx. S: Drive 12th March 2016.

TFS (2016) Incident Files/IMT/Rehabilitation/IMPACT ASSESSMENT v3 template.docx; State rehab op framework approved.pdf; 2014\_Rehab\_template\_15 Feb 2016.docx; IMPACT ASSESSMENT Induction Package.docx. Tasmanian Fire Service. SFOC EOC/S: Drive 12th March 2016.

TFS (2016) Incident Files/IMT-Planned burn intent 2016/FMU\_Statewide.shx, FMU\_Statewide.cpg, FMU\_Statewide.dbf, FMU\_Statewide.prj, FMU\_Statewide.sbn, FMU\_Statewide.sbx, FMU\_Statewide.shp, FMU\_Statewide.shp.xml. Tasmanian Fire Service. SFOC EOC/ S: Drive 12th March 2016.

TFS (2016) 2015-16 Season/Intelligence/Technical Advice/BRRAT/Tasmania North West Complex Deployment/Wuthering Heights/ Tasmania-Wuthering Heights Fire 2016-BRRATS- Request Scope\_20160220.docx, 236341 - Wuthering Heights Event Exposure Report 2016-02-19 1305.pdf PRELIMINARY PROTECTION WORKS.docx Response of orchids to bushfire VBRRA-P27-web-rev.pdf. SFOC EOC/ S: Drive 12th March 2016.

TFS (2016) N/W 13th January Regional Fire Controller Briefings/NWRFOC Operations Briefing Document 20160113 1700hrs.docx NWRFOC Operations Briefing Document 20160113.docx NWRFOC Operations Briefing Document 20160113 1300.docx NWRFOC Operations Briefing Document 20160113 1500hrs.docx. Tasmanian Fire Service. SFOC EOC/ S: Drive 12th March 2016.

TFS (2016) Incident Files IMT/235892 West Coast Complex Zeehan/PLANNING/Plans/IAP/IMT 239892-West Coast Complex IAP Day 03-20160115/IMT 239892-West Coast Complex IAP Day 9-20160121/West Coast Complex IAP Day 9-20160121.docx, Draft IAP 4 West Coast Complex Day 8-20160119 .docx, IAP 1 Day 3 15 Jan 2016.docx, IAP 1 West Coast Complex Day 6-180116.docx, IAP 1 West Coast Complex Day 8-20160120.docx, IAP 4 West Coast Complex Day 8-20160120.docx. Tasmanian Fire Service. SFOC EOC/ S: Drive 12th March 2016

TFS (2016) 2015-16 Season/GIS/236151-Gordon River Road Southwest/Planning/Intelligence/Modelling and Predictions/Fire Behaviour Spreadsheets/Gordon River Rd\_FBCalcs\_Australia\_20160123.xlsm. Tasmanian Fire Service. SFOC EOC/ S: Drive 12th March 2016

TFS (2016) SFOC Files/2015-16 Season/Safety Alert/Hydration doc2.doc, recovery plan template (3).docx, Safety Alert - 022016 Dangerous Trees and Winching doc2.doc. Tasmanian Fire Service. SFOC EOC/ S: Drive 12th March 2016

TFS (2016) SFOC Files/2015-2016 Season/Planning/1 January 2016/SFOC Appointments 21012016.pdf, SFOC Appointments 24 Jan 2016.pdf, SFOC Appointments 25 Jan 2016.pdf, SFOC Appointments 26 Jan 2016.pdf, SFOC Appointments 27 Jan 2016.pdf, SFOC Appointments 28 Jan 2016 0900hrs.pdf SFOC Appointments 29 Jan 2016 0900hrs.pdf SFOC Appointments 30 January 2016 .pdf SFOC Appointments 31 January 2016.pdf. Tasmanian Fire Service. SFOC EOC/ S: Drive 12th March 2016

TFS (2016) SFOC Files-2015-16 Season-Briefings-SFOC Briefing February/ State Fire Operations Briefing -03022016 1030.docx State Fire Operations Briefing -04022016 1030.docx State Fire Operations Briefing -05022016 1030.docx State Fire Operations Briefing -06022016 1030.docx State Fire Operations Briefing -07022016 1030.docx State Fire Operations Briefing -08022016 1030.docx State Fire Operations Briefing -09022016 1030.docx State Fire Operations Briefing -10022016 1030.docx State Fire Operations Briefing -11022016 1030.docx State Fire Operations Briefing -12022016 1030.docx State Fire Operations Briefing -13022016 1030.docx State Fire Operations Briefing -14022016 1030.docx State Fire Operations Briefing -15022016 1030.docx State Fire Operations Briefing -16022016 1030.docx State Fire Operations Briefing -17022016 1030.docx State Fire Operations Briefing -18022016 1030.docx State Fire Operations Briefing -19022016 1030.docx State Fire Operations Briefing -20022016 1030.docx State Fire Operations Briefing -20022016 1030.docx

State Fire Operations Briefing -21022016 1030.docx State Fire Operations Briefing -22022016 1030.docx State Fire Operations Briefing -23022016 1030.docx State Fire Operations Briefing -24022016 1030.docx State Fire Operations Briefing -25022016 1030.docx State Fire Operations Briefing -26022016 1030.docx State Fire Operations Briefing -29022016 1030.docx State Fire Operations Briefing -01022016 1030.docx State Fire Operations Briefing -02022016 1030.docx. Tasmanian Fire Service. SFOC EOC/ S: Drive 12th March 2016

TFS (2016) 2016-IMT Lake Bill 20160119-Planning-Plans/SignedIAP12\_WEST\_NR\_MerseyComplex\_for20160131.pdf, SignedIAP12\_EAST\_NR\_MerseyComplex\_for20160131.pdf, SignedIAP12\_NR\_MerseyComplex\_for20160131.pdf. Tasmanian Fire Service. SFOC EOC/ S: Drive 12th March 2016

TFS (2016) Incident Files IMT- 235892 West Coast Complex Zeehan/INCIDENT CONTROLLER/Letters of Appointment/Smithton IMT - Letter of Appointment\_20160115.pdf. Tasmanian Fire Service. SFOC EOC/ S: Drive 12th March 2016

TFS (2016) Facebook Page 15th March 2016 <https://www.facebook.com/TasmaniaFireService/>

TFS (2016) State Strategic Bushfire Control Plan. Version 3 1/03/2016 11:00 AM. Tasmanian Fire Service.

TFS, PWS, FT (2015) Fire Season Contacts Directory & Interagency Protocol 2015 – 2016. Contacts Updated to October 2015. Tasmanian Fire Service, Parks and Wildlife and Forestry Tasmania. Tasmanian Government.

The Advocate (2016) Smoke Warning as Fires still pose threat. Baz Ruddick 8th February 2016. <http://www.theadvocate.com.au/story/3715055/smoke-warning-as-fires-still-pose-risk/>

The Examiner (2016) Health warning on Launceston smoke haze By Chris Clarke. Jan. 19, 2016, 2:33 p.m. <http://www.examiner.com.au/story/3673463/health-warning-on-launceston-smoke-haze/>

WFMAC (2015) Western Fire Management Area Fire Protection Plan. Western Fire Management Area Committee. State Fire Management Council. Tasmanian Government. [http://www.sfm.tas.gov.au/sites/sfm.tas.gov.au/files/fire\\_protection\\_plans/Executive%20Summary\\_Western\\_0.pdf](http://www.sfm.tas.gov.au/sites/sfm.tas.gov.au/files/fire_protection_plans/Executive%20Summary_Western_0.pdf)

Whight, S. (2016) Future of the Statewide Strategic Risk Assessment. Internal Memo. Sandy Whight, State Intelligence. Tasmanian Fire Service.

## MAPS

[https://commons.wikimedia.org/wiki/File:Tarkine\\_land\\_tenure\\_Tasmania.jpg#/media/File:Tarkine\\_land\\_tenure\\_Tasmania.jpg](https://commons.wikimedia.org/wiki/File:Tarkine_land_tenure_Tasmania.jpg#/media/File:Tarkine_land_tenure_Tasmania.jpg)



Possum near Dip Falls. Photo: Alan Bradley



**AFAC Limited** (ABN 52 060 049 327)

Level 1, 340 Albert Street  
East Melbourne Victoria 3002  
Telephone: 03 9419 2388  
Facsimile: 03 9419 2389  
Email: [afac@afac.com.au](mailto:afac@afac.com.au)  
Web: [www.afac.com.au](http://www.afac.com.au)



© 2016