



Emergency
Services
Commissioner

Review of the **Tostaree Fire**

Report

25 July 2011

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Foreword

From the experience of the past, we derive instructive lessons for the future.

- John Quincy Adams

The Tostaree fire was the most significant bushfire experienced in the 2010-11 Victorian fire season and since the February 2009 fires. It occurred while many parts of the State were impacted by floods.

Since February 2009 there have been many changes to the Victorian Command and Control Arrangements and considerable adjustments to fire and emergency services preparedness and response arrangements. New warning systems were developed and implemented in very tight timeframes. The Tostaree fire tested many elements of these new arrangements.

The Fire Services Commissioner requested that I review the Tostaree fire as it provided the first opportunity to assess the impact of new processes and make recommendations to guide continued improvements.

Despite extreme weather conditions, there were many positive actions in the response to the Tostaree fire and the review found that the community was well prepared. However, there will always be opportunities for improvement.

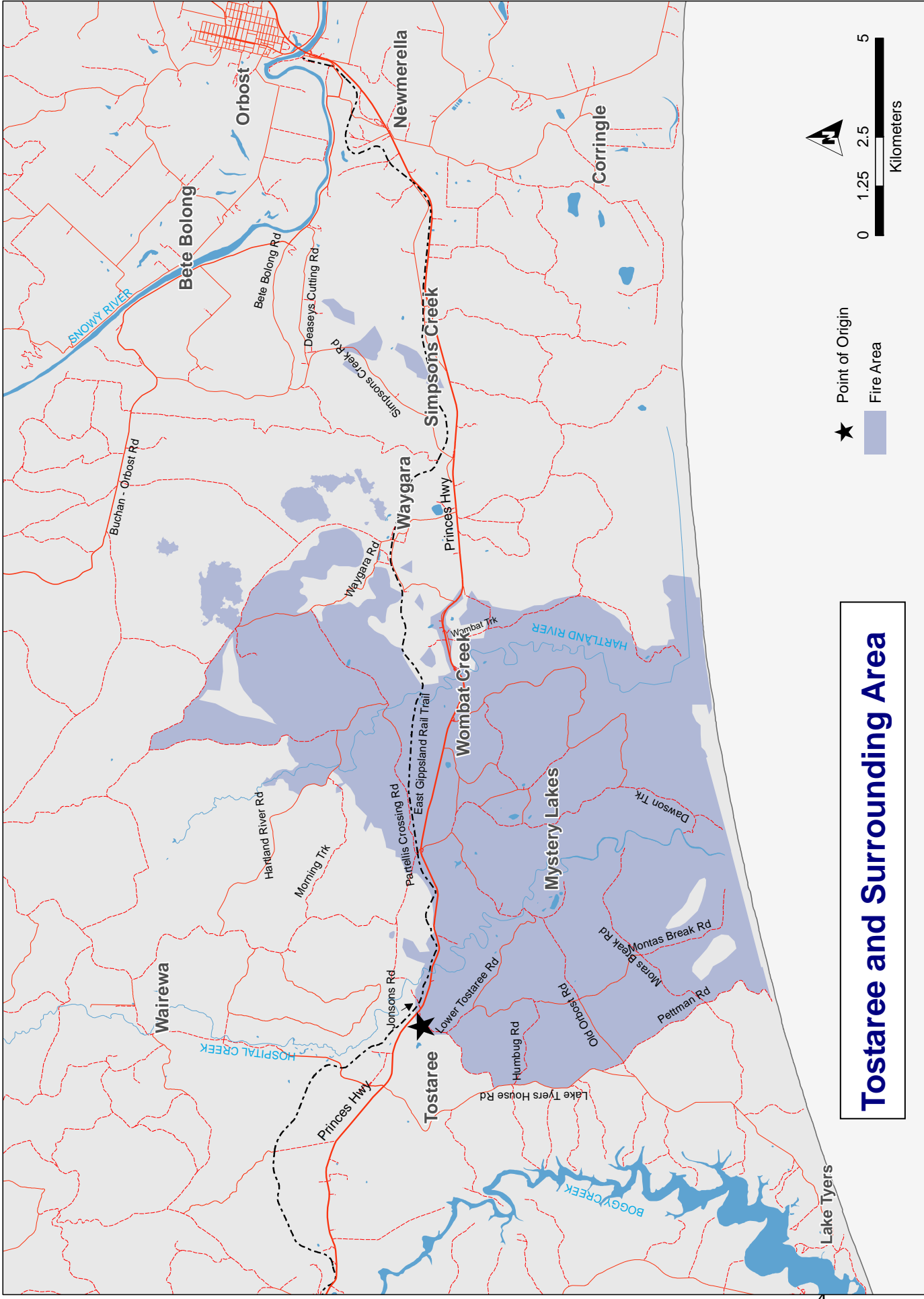
Therefore, I was keen to ensure that the review engaged the community and stakeholders, was balanced, evidence-based, and focused on learning and improving. I also wanted to ensure there was clear acknowledgement of the work of operational decision makers, in particular where decisions are made under considerable time pressure with only the limited information and observations available at a point in time.

Significant work is already underway to enhance the emergency management and fire arrangements in Victoria, and change is occurring. The recommendations made by this review aim to strengthen fire response, facilitate enhanced joint operations and co-ordination, and improve communication within agencies and with the community. I encourage the fire and emergency services agencies and the community to consider the findings and recommendations in the spirit of ongoing learning and improvement.

I would particularly like to thank the community, fire and emergency service organisations, the volunteers and other organisations for their contributions and willingness to assist in an open and constructive manner to identify opportunities to improve the management of similar fires in the future.



Joe Buffone
Acting Emergency Services Commissioner



- ★ Point of Origin
- Fire Area

Tostaree and Surrounding Area

Executive Summary

The Tostaree fire started in East Gippsland on 1 February 2011. The Fire Services Commissioner, with approval from the Minister for Police and Emergency Services, requested that the Emergency Services Commissioner conduct this review of the fire.

The terms of reference for the review included: command and control arrangements in the preparation for, and response to, the fire; the effectiveness of community information and warnings to assist the community make informed decisions regarding their safety; and the level of fire-safety preparedness in communities affected.

Vegetation management was an issue consistently raised at community meetings, by agency personnel and through public submissions. Due to its relevance to community preparedness and fire mitigation, the review team were obliged to consider and report on vegetation management.

The review team found many positives in the response to the Tostaree fire. The personnel involved at all levels of the incident control structure performed well considering the extreme weather conditions and the resources they had.

Preparedness in the State and Regional Control Centres and Bairnsdale Incident Control Centre was generally in accordance with the State Command and Control Arrangements for Bushfires in Victoria and Joint Standard Operating Procedures. In general, personnel worked within the arrangements and used the new information and warning systems.

However, the review found a number of areas where the agencies could have worked in a more integrated manner.

DSE and CFA personnel on the fireground acted in accordance with their respective standard operating procedures but without integrating effectively. Interoperability at the Tostaree fire appeared to be hampered by confusion in relation to fireground command and control, the volatility and rate of spread of the fire, and some confusion with radio communication.

A structured command and control on the fireground in the initial stages of the fire may have resulted in a more integrated escalation to the Bairnsdale level 3 incident management team. There was also room for improvement in the integration of joint functions within the IMT. Some CFA personnel felt the need to assert their positions in order to fully understand what was occurring.

Staffing of IMTs was identified as an issue, particularly the Information Section, which is now a highly specialised and accountable function. The rostering of volunteer personnel for the pre-formed IMT at Orbost was reported as problematic due to their brigade operational commitments.

The review found that the flow of information within a line of control between the Incident Controller, Regional Controller and State Controller worked well. There is, however, some uncertainty about the inter-relationship between key positions in the arrangements and key positions within the agencies.

The review found that the control strategies developed and implemented during the Tostaree fire generally aligned to the State Controller's Intent, with the key focus on protection of life, property and key infrastructure.¹ The initial response of ground crews was timely and an attempt was made to suppress the fire in the paddock where it started. Local fire behaviour analysis and intelligence, the network of previous fuel-reduction burns in and around Tostaree, and the use of aircraft were major elements of the control strategy for this fire.

The co-location of the Municipal Emergency Co-ordination Centre with the Bairnsdale Incident Control Centre worked effectively for this event and was instrumental in expediting the re-opening of the Princes Highway and the re-instatement of power. Although the closure of the Princes Highway was in accordance with relevant guidelines, the review found there was scope for improved management of consequences. (The welfare of persons and livestock stranded at roadblocks, for example.)

The review team conducted a detailed analysis of information and warnings issued for the Tostaree fire, including a comprehensive analysis of the national Emergency Alert system and the Victorian One Source, One Message system. There was a clear commitment by the Fire Services to warn the community and provide the best information that was available to them at the time. The review found some issues with the timeliness, relevance and clarity of messages across all warning systems. This was reflected in the information provided to websites, social media and emergency broadcasters.

The review found that the level of community preparedness in the Tostaree area was commensurate with a self-reliant, experienced rural population living in a fire-prone area.

The management of vegetation on roadsides, public land and service easements is a major concern to the community and many fire brigades. The review heard that roadside vegetation, particularly along the Princes Highway and around power lines, is a high risk that is not being managed appropriately. Vegetation clearance is currently managed independently by various organisations and lacks a rigorous, risk-based approach.

Although significant fuel-reduction burning has occurred in the Tostaree area, the community is not fully aware of its scope and does not believe that it has been given the opportunity to contribute to the planning process.

The intention of the review has been to identify the lessons to be learned from this event so that improvements can be made to reduce risk, improve response arrangements and procedures, and help agencies be more prepared for the next fire season and future fire events.

Agency personnel and the community are encouraged to consider the review findings and recommendations in the spirit of learning and improvement.

¹ Fire Services Commissioner's Policy FSCPOLICY001/2011

Recommendations

Command and Control

1. The Fire Services, and other emergency management agencies, use the Tostaree fire as a scenario exercise to improve understanding of fast-running fires and enhance interoperability and control strategies.
2. The Fire Services Commissioner ensures that there is a comprehensive understanding of the State Command and Control Arrangements for Bushfires in Victoria across the Fire Services.
3. The Fire Services ensure that agency specific operational procedures fully align with the arrangements.
4. The Fire Services Commissioner ensures that joint fireground command and control, integration and escalation procedures are developed, particularly for 'fast-running' fires.
5. The Fire Services expedite programmed work on joint operational command and control, including standards, procedures and training.
6. The Fire Services enhance and increase joint training and exercise programs at all levels of command and control, including the State Control Centre. (These programs need to enable volunteer participation.)
7. The Fire Services, as part of the regular review of Incident Management Teams – Readiness Arrangements, reassess current resource sustainability and identify opportunities for a more flexible application.
8. The Fire Services continue to develop fire behaviour analysis and predictive science capability by ensuring the Fire Behaviour Analysis Team is appropriately resourced with accredited staff and available to provide services to the IMT.
9. The Fire Services ensure that an incident action plan (summary) is developed in accordance with the Standard Operating Procedure J3.03.
10. The Fire Services develop a joint protocol for each Fire Service to notify the other of fires reported from fire towers.
11. The Fire Services introduce systems, procedures and operational training that promote information sharing and consistent situational awareness at every level, including to and from the fireground. This should include agencies such as police members on duty at roadblocks.
12. The Fire Services continue working towards a common and integrated information and communication platform to improve interoperability at state, regional and local levels.
13. The Fire Services move towards a common and more disciplined approach to fireground communications.
14. The Fire Services investigate the reported technical communication issues for this fire.

15. Incident Controllers ensure that Emergency Management Teams consider, provide advice, and manage the broader consequences of actions, such as re-opening roads, the resumption of public transport and school buses, and the welfare of those impacted by traffic management points.

Community Information and Warnings

16. The Fire Services, in consultation with media outlets, develop a more effective strategy for informing the community of Total Fire Ban days.
17. The Fire Services evaluate the new information and warning systems to identify ways to integrate them and improve their capacity to issue timely, relevant and tailored messages. This should include the use of social media.
18. The Fire Services recognise the specialised role of Information Sections and enhance training and resources accordingly.
19. The Fire Services Commissioner ensures that the inter-relationship between Information Sections at all levels is understood.
20. The Fire Services ensure that information and warnings are developed in accordance with the Victorian Warning Protocol.
21. The Fire Services Commissioner requests the Federal Government to revise the National SEWS Guidelines.
22. The Fire Services develop a program that enables all communication mediums, including social media and agency websites, to be monitored in real time to provide quality assurance for outgoing messages and additional sources of information and intelligence relating to an emergency.
23. The Fire Services ensure information and warning projects are able to be integrated with a common operating platform.

Community Preparedness

24. The Fire Services, in consultation with the community, develop a methodology for measuring community preparedness. They should also develop tailored education and information sharing opportunities to improve community understanding of bushfire risk, mitigation and preparedness.
25. The Fire Services identify opportunities for the community to learn about, engage with and influence local emergency management planning.

Vegetation Management

26. The Fire Services Commissioner leads a task force to:
 - a. identify legislation, policies and guidelines that impact on vegetation management and recommend necessary changes
 - b. develop a set of risk-based standards for vegetation management with respect to strategic firebreaks and the assets being protected

- c. integrate maintenance standards across all areas of responsibility and tenure.
27. Energy Safe Victoria ensures that the standards for vegetation clearance around power lines consider the impact of fire on electrical infrastructure and the risk of loss of electricity supply to the community.
28. Victoria Police, under the auspice of the Regional Emergency Response Plan, lead a task force to ensure that the Princes Highway is treated as an asset of significance and an appropriate risk-based approach is adopted to minimise the impact of fire. This approach is to be integrated into regional and municipal fire management plans.
29. DSE enhance community engagement programs in East Gippsland to ensure that local communities are more informed about the complexities and interdependencies of prescribed burning and encourage local input.

1. Introduction

On 1 February 2011 a fire started at Tostaree in the East Gippsland region of Victoria. The fire burned an area of 11,365 hectares with a perimeter of 111 kilometres. Two houses, a number of sheds and livestock were destroyed. On 11 February 2011 the fire was declared under control.

The Tostaree fire was the most significant of the 2010-11 fire season. The new State Command and Control Arrangements for Bushfires in Victoria, and new warning and information systems, were applied in operational fire conditions.

The fire had many elements that tested the arrangements and systems.

- It had a rapid onset and was fast-moving.
- It crossed land tenures.
- It required a multi-agency response.
- The fire impacted communities and infrastructure.
- It affected the broader community, beyond the direct threat of the fire.
- There was a south-westerly wind change during the fire.
- There were areas of previous fuel-reduction burning within the fire footprint.

The Tostaree fire presents an opportunity for the relevant agencies and the community to examine the preparedness and response to this fire with a view to learning and improving fire response in the future.

As a result, the Fire Services Commissioner, with approval from the Minister for Police and Emergency Services, requested that the Emergency Services Commissioner conduct this review of the Tostaree fire.

1.1 Terms of reference

The review examined:

- The control strategies implemented by the Incident Controller for this multi-agency level 3 fire.
- The 'line of control' that was established at the incident, regional and state level, and the multi-jurisdictional mechanisms implemented to consider and deal with the broader consequences of this major fire.
- The effective issuing of Community Information and Warnings to assist the community make informed decisions regarding their safety.
- The fire-safety preparedness levels of communities affected by this event.

Vegetation management was an issue consistently raised at community meetings, by agency personnel and through public submissions. Due to its relevance to community preparedness and fire mitigation, the review team were obliged to consider and report on vegetation management.

1.2 Review methodology

The review team comprised Office of the Emergency Services Commissioner staff with skills and experience in emergency management, the fire services, community engagement and information systems.

Dr Christine Owen of the University of Tasmania assisted in the conduct of the review. Dr Owen has undertaken a number of research and consultancy projects in fire and emergency management.

The review methodology incorporated a number of steps.

- The terms of reference and the approach to the review were confirmed with stakeholders.
- Information was collected relating to fire science, fire behaviour and modelling, weather conditions, area of impact, terrain and vegetation, and included field visits.
- Information and warning systems used during the fire were evaluated.
- The response to the fire was examined through document review, the fire investigation report and interviews.
- Community meetings and surveys were conducted to understand the community impacts.
- Public and agency submissions were invited.
- Analysis of information and data.
- Advice from specialists in the field about fire behaviour and incident command and control.
- Stakeholder engagement continued throughout the review.
- The preliminary findings were workshopped to inform the development of recommendations.
- Community briefings.

The review was conducted in accordance with the following principles:

- acknowledgement that decisions are made with the information and observations available at the time
- continuous improvement through learning
- evidence-based and consultative
- strong community engagement
- findings determined and reported without bias
- lessons will be used to reduce risk, improve preparedness and response arrangements and procedures.

Community meetings were held at Newmerella and Wairewa. The review received 15 written submissions from stakeholders and the community. A list of public submissions to the review is at Appendix 2.

Community surveys were undertaken to evaluate the level of fire-safety preparedness in the communities that were impacted by the Tostaree fire and the effectiveness of emergency alerts, information and warnings.

The review team conducted a workshop with the relevant agencies in Gippsland to inform the development of the recommendations.

The review team then hosted a community meeting at Nowa Nowa to share the review's preliminary findings and proposals.

The recommendations developed by the review need to be considered and implemented where possible through existing projects and programs, particularly those initiated as a result of the 2009 Victorian Bushfires Royal Commission.

1.3 The role of the Emergency Services Commissioner

The Emergency Services Commissioner provides advice to the Minister for Police and Emergency Services on any issue in relation to emergency management. The role is established by the *Emergency Management Act 1986*. Section 21C(1) sets out the prescribed functions of the role:

- (a) *to establish standards for the prevention and management of emergencies to be adopted by all emergency services agencies (other than fire services agencies);*
- (ab) *to monitor and investigate the performance (in matters that are not financial matters) of the Emergency Services Telecommunications Authority in relation to the provision of services by the Authority to emergency services and other related services organisations;*
- (aba) *to monitor the performance of emergency service agencies against standards prepared under section 21D;*
- (abb) *without limiting paragraph (aba), to monitor the performance of fire services agencies against performance standards developed by the Fire Services Commissioner under section 19 of the Fire Services Commissioner Act 2010;*
- (ac) *to make recommendations to the Minister about matters arising from any monitoring or investigation of the Emergency Services Telecommunications Authority;*
- (b) *to advise, make recommendations and report to the Minister on any issue in relation to emergency management;*
- (c) *to encourage and facilitate co-operation between all agencies to achieve the most effective utilisation of all services;*
- (d) *to act as the Executive Officer of the [Victorian Emergency Management] Council;*
- (e) *any other function conferred on the Commissioner by or under this or any other Act.*

1.4 2009 Victorian Bushfires Royal Commission

On 16 February 2009, the Victorian Government established the 2009 Victorian Bushfires Royal Commission to investigate the causes and responses to the bushfires which swept through parts of Victoria in January and February 2009.

The Commission released its interim report on 17 August 2009, making 51 recommendations, and its final report on 31 July 2010 with a further 67 recommendations.

It is not the aim of this review to re-state recommendations that have already been made and that are in the process of being implemented. However, the review's findings can inform that implementation work.

The review team is also mindful of the extensive work that has already been undertaken by agencies or that is underway, and it is not intended that these findings or recommendations reinvent or duplicate that work.

1.5 Review Report

This report provides an overview of the Tostaree fire. It then addresses the terms of reference in the following sections: command and control, including resourcing, escalation, interoperability and multi-jurisdictional mechanisms; community information and warnings; and community preparedness. A section on vegetation management has also been included as this was a major issue that arose during consultations conducted as part of the review.

2. The Tostaree Fire

On 31 January 2011, the Bureau of Meteorology issued the following weather prediction for East Gippsland for 1 February 2011:

Severe Fire Danger is forecast for the following forecast district: East Gippsland.

Maximum temperatures around 41 degrees, relative humidity down to 12% and winds averaging 40 km/hr are expected. CFA and DSE advise that some fires will be uncontrollable and fast moving.

The forecast [Forest] Fire Danger Index for East Gippsland was 50 and a Fire Danger Rating of Severe.²

As a result of the forecast the state, regional and Incident Control Centres implemented preparedness procedures and a day of Total Fire Ban was declared for East Gippsland for 1 February 2011.

1 February 2011

On 1 February 2011 high temperatures and strong winds combined to form dangerous fire weather conditions in East Gippsland.

The State Control Centre preparedness level was Code Orange in accordance with Joint Standard Operating Procedure 1.01 *State Control Centre Preparedness Levels*. The preparedness level at all Incident Control Centres in East Gippsland, including Bairnsdale was increased by the Area Duty Officer based on information from the State Control Centre and the fact that local conditions were more severe than forecast by the BoM.

At 1.04 pm the fire tower at Mt Nowa Nowa reported a smoke sighting near the Princes Highway at Tostaree to the DSE Nowa Nowa work centre. Resources from Nowa Nowa consisted of four slip-on units, one mid-range tanker, one heavy tanker, a first attack bulldozer (D4), and 16 personnel. These resources were dispatched and arrived at the fire at about 1.15 pm. Another Nowa Nowa slip-on unit returning from park inspections was near the fire and arrived within five minutes of the fire being reported.

The first slip-on unit was already in the paddock when the other Nowa Nowa resources arrived. On arrival, the DSE operations officer estimated the fire to be 1-2 hectares in size, burning intensely in thick dry grass about 200 metres from a forested area south of the paddock. He assessed the situation and deployed resources to the flanks of the fire, as conditions were considered too volatile for a direct attack on the head of the fire. The DSE Area Duty Officer requested aerial support after receiving intelligence from the fireground. Two helicopters, a fixed-wing aircraft, aerial bombers and an air attack supervisor were dispatched, with the first aircraft arriving at the scene at around 1.35 pm.

The Emergency Services Telecommunications Authority received reports of the fire through the triple-zero (000) service and dispatched the Newmerella and Wairewa CFA fire brigades at 1.08 pm.³ The tanker and forward command vehicle from

² Weather detail report – Bureau of Meteorology

³ ESTA is responsible for call taking and dispatch of Victoria's emergency service organisations, including the CFA.

Newmerella and a tanker from Wairewa arrived at the scene between 1.20 and 1.30 pm.

After a discussion with the DSE operations officer, the CFA Newmerella captain assumed the role of Incident Controller as the fire was located on privately owned land. The DSE operations officer then resumed the role of managing the DSE crews. The Incident Controller requested additional tankers.

The Wairewa and Newmerella CFA tankers were initially deployed to the private paddock and shortly after redirected to the Jonsons Road area north of the highway for asset protection. CFA tankers from Orbost and Toorloo arrived a short time later and joined the Wairewa and Newmerella tankers. DSE crews moved south to concentrate on the forested area where fire had crossed Lower Tostaree Road and was in the bush. The Incident Controller had by then determined that the fire 'was gone' and made a request for further resources.⁴

The fire spread rapidly towards the Princes Highway, albeit against the prevailing wind. Its movement was attributed to the local topography and gully winds. This area was of particular concern due to traffic on the highway and properties around Jonsons Road.



Figure 1: 1.57 pm 1 February 2011. The fire has moved into the forest to the south-east of its original ignition point in grass. (Photo: Brian Gustus Air Observer DSE Nowa Nowa.)

At about 1.30 pm a DSE slip-on unit was sent to Mystery Lakes where two properties were at risk. Residents had activated their fire plans and were preparing to defend their properties.

⁴ Interview with the initial CFA Incident Controller.

An Advice message was sent to emergency broadcasters at 1.36 pm through the One Source, One Message (OSOM) system for dissemination to the community. This was the first official community warning.⁵ (See Community Information and Warnings for explanation of OSOM and Emergency Alert systems)

Victoria Police closed the Princes Highway and established traffic management points at Nowa Nowa and Newmerella at around 1.45 pm.

At 2.04 pm Emergency Alert was used for the first time to send a Watch and Act message to local residents.

The fire was now estimated to be 25 hectares in size with reported flame heights of 20 metres. DSE crews attempted to hold it in a gully along the Lower Tostaree Road while CFA crews worked in the Jonsons Road area north of the highway. Air support was concentrated in the Jonsons Road area.

Aircraft observers reported that the fire was spotting and had passed the Mystery Lakes area and was spreading rapidly towards the coast.



Figure 2: 4.13 pm 1 February 2011. The fire reached the coast at about 4.10 pm. (Photo: Brian Gustus Air Observer DSE Nowa Nowa.)

Between 2.30 and 3.00 pm, following consultation with the Operations Officer in the Bairnsdale incident management team, DSE resources were consolidated and relocated to Wombat Creek. The DSE crews conferred with property owners who were activating their fire plans and preparing to defend their properties. Victoria

⁵ Bushfire warning messages fall into three categories: Advice, Watch and Act and Emergency Warning. (See Glossary under Warning Types)

Police were 'door knocking' other residents in Wombat Creek, along with residents at Partellis Crossing and Simpsons Creek.

At about 3.00 pm the fire damaged eight or nine poles that carried the 66-kilovolt power lines that service the area east of Nowa Nowa. This caused approximately 4,500 customers around Orbost, Cann River and Mallacoota to lose power.

Additional DSE slip-on units arrived from Bairnsdale and were initially tasked to Jonsons Road, but by 4.00 pm they had joined the other DSE crews at Wombat Creek. Later in the afternoon strike teams were being formed and sectors organised.

The fire, which was about 2 kilometres across, reached the coast at around 4.10 pm.

Emergency broadcasters were notified via OSOM at 4.14 pm with the first of four Emergency Warning messages. An Emergency Alert message to the community followed shortly afterwards at 4.19 pm.

A south-westerly wind change arrived at about 5.20 pm as predicted by the BoM, with wind gusts up to 70 kilometres an hour. Fire crews had been forewarned and were prepared for the change.



Figure 3: 5.18 pm 1 February 2011. The fire's convection column is affected by the strong south-westerly wind change. (Photo: Brian Gustus Air Observer DSE Nowa Nowa.)

The eastern flank of the fire became a large firefront (7 kilometres across) and developed a large smoke plume. The extreme conditions drove the fire quickly inland, burning into the crowns of trees and spotting up to 10 kilometres ahead. It is estimated that the forward rate of spread after the change was 6-8 kilometres an hour, twice that of the south-easterly run of the fire.

After the fire front passed, crews focussed on protecting private property. Joint action by DSE and CFA crews and local residents successfully defended private assets. This included the use of privately owned earth-moving equipment.

Two houses and a number of outbuildings in the Wombat Creek area were destroyed. One of the houses was derelict and the other was a weekend residence unoccupied at the time.

At 6.53 pm a Watch and Act message was issued to the community through Emergency Alert. At 7.55 pm emergency broadcasters were sent the final Emergency Warning message via OSOM. At 10.53 pm emergency broadcasters were sent a message downgrading to Watch and Act level. Subsequent messages to emergency broadcasters throughout the night and the following morning remained at Watch and Act level.

At 7.15 pm fire crews investigated a reported gas leak at the Patricia Baleen gas-metering station near Newmerella. The leak was actually due to an air compressor venting and the situation was declared safe at 10.00 pm.

Weather conditions became more moderate later in the evening. This allowed ground crews to place mineral earth control lines around the most important sections of the fire perimeter. There was no further significant fire spread that night.

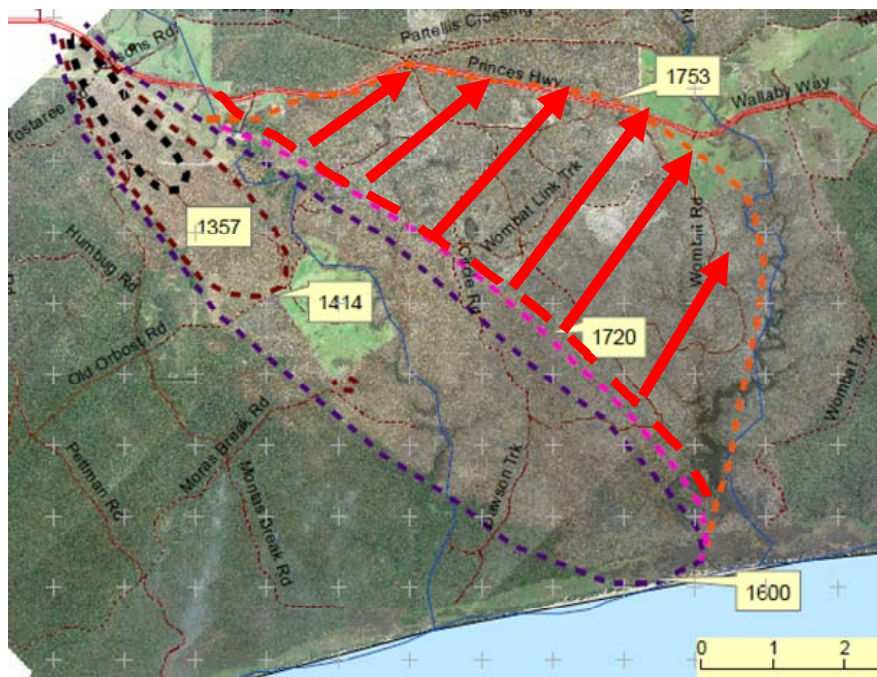


Figure 4: Fire spread between 1.57 pm and 5.53 pm (1 kilometre grid). (Source: Greg McCarthy, Tostaree fire – origin, progress and suppression, including effect of fuel-reduction burns, Tostaree and Waygara State Forest.)

2 February 2011

Milder weather conditions on 2 February allowed crews to continue to contain the fire, clear the highway and help to restore power supplies.

VicRoads crews were given access to the highway at 8.00 am and worked throughout the day to make the highway safe for traffic.

Victoria Police continued to maintain roadblocks at Nowa Nowa and Newmerella. All traffic, including heavy transport vehicles, was diverted through the Buchan-Orbost Road.

The CFA and DSE continued to inform the community through Watch and Act messages via the One Source One Message system. In addition, messaging, media interviews, media releases and community information documents were released.

During the morning, DSE crews worked on securing the western flank of the fire south of the highway. CFA crews worked on spot fires in the Wombat Creek and Simpsons Creek areas. By mid-afternoon fire crews had commenced back-burning along Old Tostaree Road in a southerly direction towards Lake Tyers House Road.

At 5.45 pm emergency broadcasters were notified that the warning had been downgraded to Advice level. The Princes Highway was re-opened at 5.45 pm with reduced speed limits in place. SP AusNet worked throughout the day installing generators in affected communities and by 9.00 pm electricity had been restored for about 2,000 customers, leaving around 1,800 still without power.

Throughout the day back-burning continued along the south-west flank of the fire down Pettman Road to the coast. It was completed by the following morning. The remaining areas of unburnt forest were burned out the following day.

3 February – 22 February 2011

The focus on 3 February was the continued fire activity on the fire's north-west flank. Strategic back-burning helped secure the fire. The remaining edges were tracked and crews continued to mop up. Information provided to the emergency broadcasters was maintained at Advice level.

SP AusNet restored power at approximately 2.00 pm.

The perimeter of the fire was deemed contained at 3.00 pm on 4 February.

In the days that followed crews continued to patrol the fire area and black out hotspots in order to make the fire safe. Rain during the following two weeks helped suppress the fire but hampered controlled burning activities.

The focus for the remaining days was on blacking out hot spots and undertaking environmental assessments, removing dangerous trees and re-opening tracks. The emergency broadcasters continued to receive information from the agencies via email at Advice level for the remainder of the incident.

The fire was declared safe on 22 February and a final Advice message was sent to the emergency broadcasters.

3. Command and Control

A suite of policies and guidance notes underpin bushfire command and control arrangements in Australia and Victoria. The 2009 Victorian Bushfires Royal Commission also provided guidance on command and control arrangements in its recommendations.

This section outlines these arrangements and describes how they were implemented during the Tostaree fire. It then provides analysis on a range of issues associated with command and control during the Tostaree fire, including: resourcing, control strategies, escalation, interoperability and multi-jurisdictional mechanisms.

3.1 Command and Control Arrangements for Bushfire in Victoria

The State Command and Control Arrangements for Bushfire in Victoria became effective on 17 November 2010. They aim to provide 'clear and unambiguous command and control of, preparedness for, and response to, bushfires in Victoria'.⁶

The arrangements detail the roles, responsibilities and reporting requirements at the state, regional and area of operation level. The roles and responsibilities of the State Controller for Fire, Fire Agency Commanders, State and Senior Duty Officers, State Control Centre Manager, Regional Controller and Incident Controller are specified in the arrangements.

The arrangements should be read in conjunction with other arrangements detailed in the State Emergency Response Plan and the *Emergency Management Manual Victoria*. A number of additional policy and guidance notes are pertinent. These include:

- Strategic Control Priorities – State Controller's Intent
- Fire Services Commissioner – Guidance Note – Incident Management – Incident Controllers Guide
- DSE-CFA Joint Standard Operating Procedure J2.03: Incident Management Team – Readiness Arrangements.

3.2 Australasian Inter-service Incident Management System

The foundation for command and control of an incident in Victoria is based on the Australasian Inter-service Incident Management System. AIIMS describes the structure to be applied for the management of incidents from simple responses to the actions required for larger, more complex incidents.

AIIMS is underpinned by three key principles.⁷

- Management by objectives (all personnel involved in the incident work from a common set of objectives and complementary incident action plans for achieving those objectives).
- Functional management which includes utilisation of four specific functions (control, planning, operations, and logistics) within an incident management team tasked with managing the incident.
- Span of control (within incident control structures, as an incident escalates, a supervising officer's span of control should not exceed five reporting groups).

⁶ State Command and Control Arrangements for Bushfire in Victoria, 17 November 2010

⁷ AFAC 2005 – The Australasian Inter-service Incident Management System manual. At the time of publication of this report the AIIMS Manual was under review.

The role of the Incident Controller is to take responsibility for managing all activities related to an incident.

AIIMS is scalable, meaning the organisational arrangements grow in size and complexity in parallel with the incident. As incidents grow in size and/or complexity their management becomes more demanding and the Incident Controller needs to consider the delegation of responsibility. According to the AIIMS manual, a level 1 incident is able to be resolved through the use of local or initial response resources only. Control of the incident is limited to the immediate area.

A level 2 incident is more complex either in size, resources or risk. Level 3 incidents are characterised by degrees of complexity that may require the establishment of Divisions for effective management of the situation. These incidents will usually involve delegation of all incident management team functions.⁸

The Tostaree fire was a Level 3 fire.

3.3 Command and Control for the Tostaree fire

State Control Centre

In the days before the Tostaree fire the DSE Fire Behaviour Analysis Team identified 1 February as a day of potentially high fire danger in East Gippsland. This assessment was based on fire modelling using weather predictions from the BoM and advice about local conditions from regional agency personnel.

On 31 January the State Fire Control Team met and confirmed that the following readiness arrangements were in place at the State Control Centre and the Gippsland Region:

- A Code Orange preparedness level was set.
- Relevant sections were staffed including the Fire Behaviour Analysis Team, the Situation Unit, and the State Air Desk.
- A Gippsland Regional Controller was nominated.
- Level 3 incident management teams were pre-formed in readiness using the identified Incident Control Centre footprint model for the region. (Bendoc, Swifts Creek, Cann River, Orbost and Bairnsdale.)
- Local CFA brigades advised that 1 February would be a 'hot day response', that is, an increased initial response.
- Aircraft were on standby.

The State Emergency Management Team was briefed on the potential for fires in the east of the State.

When the Tostaree fire started the State Control Centre was already in full operation due to widespread floods in Victoria. The Fire Services Commissioner assumed his role as State Controller for fire; DSE, CFA Agency Commanders and Duty Officers were on duty.

Those interviewed believed that the State Control Centre continued to function effectively during fire and flood operations and were satisfied with the level of control of the fire at incident and regional level.

⁸ Functions incorporated into the AIIMS system: Control, Planning, Operations and Logistics.

Regional Control Centre

The Regional Controller and his support team were located at the Regional Control Centre in Traralgon. DSE and CFA Agency Commanders were on duty at the Traralgon RCC. The DSE Area Duty Officer and CFA District Duty Officer were on duty at Bairnsdale.

On the morning of 1 February a Regional Emergency Management Team teleconference was held with agency/organisational personnel and the Incident Controllers for the pre-formed incident management teams at Bairnsdale, Orbost, Cann River, Bendoc and Swifts Creek.

At 1.03 pm the Regional Controller advised the Regional Emergency Management Team that the weather was delivering a far greater Fire Danger Index than forecast with very strong north-west winds across most of Gippsland. He confirmed the arrangements at the Incident Control Centres and was confident that the preparedness levels were higher than required. He noted a weather briefing issued that day that indicated a fire danger less than that predicted the day before, which did not align with actual conditions.

Those interviewed reported that the linkages between regional control and the incident management team functioned effectively with intelligence passing quickly between the Incident Controller and Regional Controller. The Regional Controller appeared to be a clear conduit to and from the State Controller.

On 1 February there were fires at Manns Beach and Licola at about the same time as the Tostaree fire. The Regional Controller maintained an overview of the fires, prioritised resources (including aircraft), and monitored control strategies.

The Regional Controller also established a position for quality assurance of information and warnings. However, this may not have been communicated to information sections at the state and incident control level.

Incident Control Centre

On 1 February the preparedness level at the ICC in Bairnsdale was increased by the DSE Area Duty Officer. This was based on intelligence from the State Control Centre Fire Behaviour Analysis Team and local conditions on the day exceeding those forecast. The IMT was briefed at 10.00 am.

The review team heard that the Bairnsdale IMT assumed control of the fire after receiving situation reports that indicated the fire could not be contained to the paddock and would quickly spread into public land to the south. The review team was also informed that the IMT met at 10-minute intervals during the first hour to discuss incoming intelligence and develop strategies.

Incident management teams had been pre-established at Orbost and Bairnsdale. As the fire was within the Bairnsdale ICC footprint, control was assigned to the Bairnsdale IMT after consultation between the DSE Area Duty Officer and Incident Controller. The Orbost IMT remained available in the event of other fires starting in the eastern part of the region.

The Level 3 Incident Controller established a Divisional Command point at Orbost as the fire was heading in that direction. The Orbost team members understood the area and were better located to manage the eastern side of the fire.

Local Command and Control

DSE resources began arriving at the fire at about 1.10 pm; CFA resources between 1.20 and 1.30 pm. As the fire had started on private land, the senior CFA volunteer officer assumed the role of Incident Controller on arrival. Within a short time, he was engaged in direct asset protection.

Communication and information about the fire initially flowed through the Orbost group for the CFA and the Nowa Nowa work centre for DSE. On arrival at about 2.00 pm, the Lakes Entrance forward command vehicle was established as 'Tostaree Control' and began consolidating and co-ordinating resources. Communication between Tostaree Control and the IMT at Bairnsdale was established via DSE radio channel 184 and telephone.

At various stages throughout the day, communication from the fireground passed through the CFA Orbost group, the DSE Nowa Nowa work centre, Tostaree Control and directly to the Bairnsdale ICC. These multiple lines of communication reportedly created some confusion.

At about 7.30 pm Tostaree Control was transferred from the Lakes Entrance forward command vehicle to the CFA mobile communications vehicle. There were some communication difficulties between CFA resources on the fireground and the control point during the transfer due to technical and setup issues.

The initial spread of the fire into forested public land and the need to protect assets to the north resulted in a 'default' sectorisation of the fire. CFA resources were positioned to the north, and DSE resources to the south, of the Princes Highway.

A staging area was established at Nowa Nowa near the DSE work centre during the evening of 1 February 2011. Sectors were established for the Waygara, Lower Tostaree, Highway and Wombat Road areas. An additional sector (Simpsons Creek) was included on 2 February.

The day shift incident shift plan for 2 February indicated that CFA strike teams were also sent to the Waygara and Simpson Creek Road sectors on 2 February.

3.4 Analysis

The review team analysed the evidence provided in interviews and organisational documentation, and obtained an analysis of the fire's behaviour and spread from the point of ignition to the edge of the forest. The review team also considered the written submissions it received and the feedback provided at community meetings.

Overall the review team found that many things worked well. These are outlined below. The personnel involved at all levels of the incident control structure performed well under the conditions and with the resources they had.

Despite the intensity of the fire, there was no loss of life and limited asset loss and damage, but there were a number of systemic issues and areas that could be improved. These related to local command and control, and interoperability. These issues need to be addressed and the review has examined them in detail to ensure we learn from what occurred in order to drive continuous improvement.

3.4.1 Command and Control

The assessment, consultation and consequent decision to treat 1 February as having a higher level of fire danger than predicted, enacting a higher level of preparedness, worked particularly well. This process involved assessment from a state level, combined with timely and accurate local information. In this respect the recommendations made by the 2009 Victorian Bushfires Royal Commission about preparedness were implemented. The new arrangements served to strengthen Victoria's readiness.

A core incident management team at Bairnsdale was in position under the leadership of an accredited level 3 Incident Controller. The IMT had met by 10.00 am, ensuring it was fire-ready prior to the fire start. The IMT had an Information Officer and a Deputy Incident Controller who – in line with the VBRC recommendations – had specific tasks and were engaged.

3.4.2 Command and Control on the fireground

The review team found that there was considerable confusion and frustration amongst those on the fireground about the establishment and transition of control for the Tostaree fire. This is not to detract from the effort and success of the CFA and DSE fire crews involved. However, the aim is to establish local command and control so that it leads to effective escalation.

The review heard that the Bairnsdale IMT assumed control of the fire within about 20-30 minutes of resources arriving at the scene and this was formally communicated to the fireground. It appears, however, that some CFA personnel remained unaware of the escalation, including the senior CFA volunteer officer who had initially assumed Incident Control.

It was not until 2.00 pm that 'Tostaree Control' was established. The establishment of a control point in the initial stages of the fire may have resulted in a more integrated escalation to the IMT.

Shortly after, Tostaree Control was hampered by a breakdown of technology (the portable field kit failed) and limited resources for monitoring and tracking. This restricted its ability to operate effectively.

The review team heard that all personnel involved in 'command and control' were operating in accordance with agency procedures, but there was limited integration between the agencies operating on the fireground. This may be attributed to the severity of the situation they were facing at the time and local operational practices. However, it reinforces the need to improve the way in which agencies establish and engage in 'local command and control' at joint operations.

A staging area was established in Nowa Nowa on the evening of 1 February. The review heard that issues with logging of vehicles and personnel contributed to ongoing difficulties in managing CFA resources on the fireground. Those interviewed also reported inadequate briefings and deployment issues, for example, crews unexpectedly arriving on the fireground.

There were also issues associated with catering and a lack of cool drinking water. The review team was informed that food did not arrive until about 11.00 pm on 1 February and was of poor quality.

3.4.3 Resourcing

The review team heard the view that the work of the State Control Centre is becoming more complex with a greater need for quality control, but that the SCC is losing experienced personnel. It was felt that an enhanced program of regular practice drills and joint training involving multiple fires was required.

Some people who were interviewed believed that a more demanding fire day, combined with the floods, would have been problematic as the SCC is not equipped or large enough for multi-hazard events.

Concern was also expressed about the sustainability of incident management teams in terms of resourcing, particularly in the Information Section. (The Information Section is referred to in more detail in the section about community information and warnings.)

The challenge is to manage increasing expectations and to identify the best way to use resources at a state, regional and local level. Consideration should be given to scenario testing the IMT readiness arrangements in order to reassess resource sustainability and identify opportunities for a more flexible application through ICC designated footprints.

The rostering of volunteer personnel for the pre-formed IMT at Orbost was also reported as problematic as these personnel undertake senior operational roles within brigades. It is difficult for volunteer personnel to fill these roles when their focus is clearly on brigade and community, particularly when their own properties may be in jeopardy.

Some volunteer personnel rostered for duty on 1 February at the Orbost Incident Control Centre were engaged in fireground activities and the operation of the ICC may have been compromised if the IMT had been activated at Orbost.

3.4.4 Escalation

The review found that the flow of information through a line of control between the Incident Controller, Regional Controller and State Controller worked well.

As noted above, the review found the escalation of command and control arrangements from the fireground through to the level 3 IMT could have been better integrated. A more structured fireground command and control arrangement in the initial stages of the fire may have improved the transition.

The review also found that joint functions within the IMT did not appear to have been well integrated. For example, some CFA personnel spoke of the need to assert their positions in order to be more fully informed about what was occurring.

Concerns were also raised about Area Duty Officers changing from active engagement to passive observation and feeling marginalised from the line of control between Incident and Regional Controllers. A similar concern was voiced by a State Duty Officer at the SCC who felt 'in charge until something big happens and then they are out of the loop'.

Others at state level reported confusion about the inter-relationship between the State Commanders and State Fire Control Team, and between the State Commanders and agency Chief Officer/Chief Fire Officer.

These issues are indicative of a lack of clarity and/or understanding of the roles as described in the arrangements. They may also be an indicator of a need for further integration across the agencies.

The arrangements detail roles, responsibilities and the reporting arrangements of key positions for bushfire operations across the State. The arrangements had only recently been implemented and personnel had not previously applied them operationally. There is now an opportunity to undertake further training and exercises to ensure the arrangements are well understood, particularly at the incident and regional control levels.

FINDINGS

Readiness and preparation levels in the State and Regional Control Centres and Bairnsdale Incident Control Centre were generally in accordance with the arrangements and joint Standard Operating Procedures.

The fire agencies prepared to a higher level than that required by the predicted fire conditions.

The agencies and personnel operated within the parameters of the new arrangements. However, there was evidence that the arrangements were not understood in a consistent way.

Personnel involved in command and control operated as they believed appropriate and in accordance with procedures.

The application and escalation of fireground command and control was not fully integrated for a level 3 incident.

The structure and resourcing of the Bairnsdale incident management team was not fully integrated with CFA operations.

The rostering of volunteer personnel for the pre-formed IMT at Orbost was reported as being problematic as these personnel undertake senior operational roles within brigades.

RECOMMENDATIONS

1. The Fire Services, and other emergency management agencies, use the Tostaree fire as a scenario exercise to improve understanding of fast-running fires and enhance interoperability and control strategies.
2. The Fire Services Commissioner ensures that there is a comprehensive understanding of the State Command and Control Arrangements for Bushfires in Victoria across the Fire Services.

3. The Fire Services ensure that agency specific operational procedures fully align with the arrangements.
4. The Fire Services Commissioner ensures that joint fireground command and control, integration and escalation procedures are developed, particularly for 'fast-running' fires.
5. The Fire Services expedite programmed work on joint operational command and control, including standards, procedures and training.
6. The Fire Services enhance and increase joint training and exercise programs at all levels of command and control, including the State Control Centre. (These programs need to enable volunteer participation.)
7. The Fire Services, as part of the regular review of Incident Management Team-Readiness Arrangements, reassess current resource sustainability and identify opportunities for a more flexible application.

3.4.5 Control strategies

Strategic Control Priorities

The Fire Services Commissioner's *Strategic Control Priorities – State Controller's Intent*, supports the implementation of the arrangements and provides a focus for strategic planning and the development of control strategies.

The strategic control priorities provide direction and guidance for Incident Controllers, Regional Controllers and the State Controller and form the basis of incident strategies and incident action planning.

The control strategies developed for an incident should be commensurate with the control priorities which are:

- protection and preservation of life is paramount
- issuing of community information and community warnings
- protection of critical infrastructure and community assets
- protection of residential property
- protection of assets supporting individual livelihoods and economic production
- protection of environmental and conservation values.

Control strategies applied to the fire

The control strategy employed by the DSE operations officer on arrival at the fireground was to assess the fire and if possible, contain it to private property. It was soon evident that the fire was spreading rapidly towards the highway to the north and the forest to the south. Initial control strategies were developed from the first assessment of the fire based on the prevailing conditions and the resources available at the time.

The fire attack was originally concentrated toward the highway but this strategy quickly changed to enable CFA resources to protect assets north of the highway. DSE resources were deployed to the south in an attempt to slow the fire's spread towards the forest.

Fire situation reports confirm that the first priority was a 'direct attack in the paddock, [and an] attempt to halt the spread in open country'.⁹ Once the fire entered the forested area, the priority became the protection of life and property.

There is a perception amongst some members of the Tostaree community that delays occurred in the reporting of, and response to, the fire. Based on the evidence from official logs, interviews with CFA and DSE first responders, the fire investigation report, aerial GPS logging of the DSE large tanker, and independent fire science analysis, the review has found that the response was rapid and an attempt to suppress the fire in the paddock was undertaken.

The review engaged Kevin Tolhurst, an expert in fire science and management, to analyse and model the fire's behaviour from point of ignition to its spread into the forest. He concluded that the fire would have been uncontrollable by direct attack within 15-20 minutes of ignition.

DSE crews, after being notified of the fire at 1.04 pm, began arriving at the fire between 5-10 minutes later. The first of the CFA crews arrived between 1.20 and 1.30 pm.

The first attack was made in the private paddock with crews attacking the fire flank burning towards the Princes Highway and to the south-west. Both the CFA and DSE commended the first attack crews.

The review notes the lack of a formal protocol for the CFA and DSE to notify each other of fires reported to their respective agencies, particularly from fire towers. Although notification may occur, it appears to be done in an ad hoc manner.

The incident management team played a key role in issuing information and warning messages, with oversight at the regional level. Information and warnings are discussed in detail later in this report.

Following activation of the IMT, objectives and control strategies were documented in strategic plans and incident shift plans.

Local fire behaviour analysis and intelligence was an essential element in the development of strategies for this fire. The Incident Controller identified the value of predictive science and the need for it as an integral part of decision-making in the IMT.

The network of previous fuel-reduction burns in and around the Tostaree area was an important element of the control and containment strategies used on the fire. This was supported by a planned back-burning operation to the west of the fire and burn-out of unburnt vegetation.

Aircraft deployed to both defend assets and gather intelligence were also a key control strategy in the initial stages of the fire. The review team found that aerial support was deployed rapidly, provided intelligence and helped to prevent the loss of assets. The air observer was in constant communication with the Incident Control Centre and this provided valuable situational awareness.¹⁰ Convair fire bombers

⁹ DSE Fire Situation Report as at 1.21 pm, 1 February 2011.

¹⁰ The review did not undertake a comprehensive analysis of the effectiveness of aircraft operations.

were initially deployed to the Manns Beach fire due to its higher potential for community impact. This decision was made by the Regional Controller in consultation with the respective Incident Controllers. The review team notes that the deployment of Convair fire bombers was subject to the need to reload retardant/water at Avalon Airfield, near Geelong.

In written submissions and interviews with the review team concerns were raised about the deployment of heavy earth-moving equipment to help manage the fire. DSE has strict protocols in relation to the engagement and deployment of private contractors who use heavy earth-moving equipment at fires, and these were adhered to during the fire. The decision about whether to deploy this equipment is an operational one. Nevertheless, the review team is of the view that there is scope to explore potential deployment strategies for this type of equipment, which could be included in future joint exercises and scenarios.

On the first day of the fire the Incident Action Plan summary was documented, however, the detail, information and dissemination of the IAP were inadequate. The review team found that there was limited knowledge of the existence of the plan among operational personnel.

Nevertheless, the Regional Controller was confident that strategies and objectives for the management of the fire existed based on the information he was receiving. A one-page strategic plan was developed by the day shift IMT and included strategies and objectives for the management of the fire.

Standard Operating Procedures require an incident action plan summary to be developed within four hours of a fire starting. The review team heard that the need for quickly documented strategies for this type of rapid-onset fire is problematic.

FINDINGS

Control strategies developed and implemented during the Tostaree fire generally aligned to the State Controller's Intent. The key focus was on protection of life and property and on critical infrastructure.

The initial response of crews was timely and an attempt was made to suppress the fire.

Initial notification of fires between agencies, particularly from fire towers, is ad hoc and lacks a formal protocol.

Fire behaviour analysis and predictive science is a crucial element of preparedness, fire response, and in the issuing of information and warnings to the community.

The use of information about fire mitigation work plays a crucial role in developing response strategies. In this instance fuel-reduction burns in and around the Tostaree area were an important consideration.

Aerial support was deployed rapidly, provided intelligence and assisted in preventing the loss of assets.

The Incident Action Plan (summary) did not fully meet the requirements of Standard Operating Procedure J3.03.

RECOMMENDATIONS

8. The Fire Services continue to develop fire behaviour analysis and predictive science capability by ensuring the Fire Behaviour Analysis Team is appropriately resourced with accredited staff and available to provide services to the IMT.
9. The Fire Services ensure that an incident action plan (summary) is developed in accordance with the Standard Operating Procedure J3.03.
10. The Fire Services develop a joint protocol for each Fire Service to notify the other of fires reported from fire towers.

3.4.6 Interoperability

A number of people interviewed commented that the CFA and DSE normally work and co-ordinate activities well together. However, various issues were raised with the review team that indicated there is room for improvement based on how the two agencies worked together during the Tostaree fire.

The review team recognises that the agencies operate within their respective cultures but their differences should not impede the successful integration of command and control, and interoperability.

Concept of operations

The attack on the fire was described by many as lacking integration with each agency operating independently. A number of reasons were suggested for this.

- The volatile behaviour of the fire and the rate of spread towards local assets north of the Princes Highway caught people 'on the hop'.
- Confusion with radio channels.
- Limited co-ordination of resources.
- Confusion in relation to incident control and divisional command.

It became evident during interviews that the CFA and DSE use similar language to refer to different concepts of operation. Different concepts are also used for different kinds of fires, for example, a 'campaign' fire and a 'rapid-onset' fire. It should be noted that the quick establishment of local command and control arrangements for rapid-onset fires is imperative.

The DSE fireground organisation occurs on boundaries, which are typically linear, scope the perimeter of the fire and are identified to achieve the planned containment of the fire. The second approach, which appears to have been used by the CFA, is arguably more organic and dynamic. Brigades deploy according to the immediate needs of the situation and do not necessarily rely on direction from an incident management team.

Evidence received by the review team supported the view that different organisational cultures may also have played a part. DSE is said to be more process and systems driven, whereas the CFA is regarded as more flexible in its approach,

sometimes adopting what was referred to as 'guerrilla fire fighting'. The review team understands this to mean a decentralised decision-making approach, however guerrilla fire fighting is not an endorsed Fire Service term. This approach has resources self-responding for asset protection and as a consequence makes them more difficult to track.

The review team was informed that the last significant 'rapid onset' fire was the 1978 fire that started east of Bairnsdale on the Princes Highway and spread rapidly towards Paynesville. These types of fires present challenges for incident management teams.

The review team acknowledges that 'one size does not fit all' and that there is a need to have a different concept of operations for rapid-onset fires. But there should also be a unified view about the operational response employed. Both agencies need to accept a shared operational strategy when engaged in joint operations.

The approach to a campaign fire may be more process and hierarchically driven, which may be considered a disadvantage when fighting a fast-moving fire. However, a number of those interviewed from the CFA and DSE believed that there is a fine line between decentralised and empowered local decision-making on the one hand, and ad-hoc self-deployment on the other, which could be a safety risk.

The challenge is to be structured without being bureaucratic so that fireground crews can operate in a more flexible and responsive manner, for example, by establishing sectors/divisional command points. However, for this approach to be robust greater attention to training is required (particularly in communicating situational awareness and in leadership). Processes to enable awareness about personnel on the fireground during dynamic fire conditions are also necessary.

Moreover, how the rest of the incident command and control structure gains its situational awareness during a fast-moving fire remains problematic and requires attention. It was pointed out that during a fast-moving fire a formal incident action plan is not easily achievable.

FINDINGS

The value and importance of interoperability is well recognised and accepted. However, there are systemic, policy and procedural issues that impede the full operational integration of the fire agencies.

This fire highlighted the challenges associated with a response to a rapidly developing bushfire, in particular receiving and disseminating situational awareness.

The CFA and DSE each applied a different 'concept of operations', which contributed to a lack of integration on the fireground.

There is scope for a higher degree of planning for 'joint' fireground operations and local command and control.

RECOMMENDATION

11. The Fire Services introduce systems, procedures and operational training that promote information sharing and consistent situational awareness at every level, including to and from the fireground. This should include agencies such as police members on duty at roadblocks.

Communications

Technologies

The interoperability of different technologies continues to be problematic. The suite of technologies available at the state level need to be better integrated across agency functions to improve the way they are accessed and used (for example, fire mapping and modelling).

Difficulties associated with different technologies also need to be resolved so that they are accurate and responsive to the potential needs of users.

The Fire Behaviour Analysis Team uses tools such as Phoenix RapidFire that are linked to the DSE fire reporting system. A predictive run is automatically triggered for every incoming report of a fire. Several reports relating to the same fire may enter the system, generating several runs for the same fire. This wastes resources and delays modelling that may be used for strategic decision-making.

The capacity of the Phoenix Rapidfire tool and other systems to produce intelligence and modelling accurately and quickly is compromised by the lack of a manual or technical means of filtering and triaging inputs. To enable efficient use of such systems it is important to clarify whether the incident is a duplicate before the tool is employed.

The review team also heard that the roles linked with the use of fire modelling technology and the way these are embedded within State Control Centre decision-making is fairly new. Comments made by people associated with 'predictive services' suggested that their products could better support strategic decision-making, particularly in relation to community warnings.

Radio communications

According to evidence provided to the review radio communication was an issue during the Tostaree fire for a variety of reasons. These included: location and topography affecting coverage, confusion in relation to the elected fireground channel, and agency specific lines of communication. In District 11 the CFA have channel 44 allocated as a 'command channel' and channel 45 as the 'fireground channel'.

DSE also use dedicated radio channels on the fireground and for normal business, and rely heavily on the trunk radio system for communications back to the work centres and Incident Control Centres. Although channels 44 and 45 were used on the fireground, channel 184 (the DSE command channel) was used for communication between Tostaree Control and the ICC at Bairnsdale. A large volume of radio communication traffic followed local practice and was not integrated.

Confusion with radio channels created a perception for some that there was a lack of information about fire behaviour on the fireground and that this affected the tactical response. Personnel from the CFA and DSE each reported that the other agency had a lack of discipline in adhering to radio protocols. It was also noted that DSE personnel refer to each other by personal names rather than call signs over the radio, and use trunk radio which may be problematic.

FINDINGS

A common information and communication platform would significantly assist interoperability.

The current technical systems, for example, Incident Management System; FireWeb; ESTA CAD data; fire prediction and analysis; One Source, One Message; Emergency Alert are not sufficiently integrated.

Communication on the fireground was affected by 'black spots', fire conditions, congestion and confusion.

RECOMMENDATIONS

12. The Fire Services continue working towards a common and integrated information and communication platform to improve interoperability at state, regional and local levels.
13. The Fire Services move towards a common and more disciplined approach to fireground communications.
14. The Fire Services investigate the reported technical communication issues for this fire.

3.4.7 Multi-jurisdictional mechanisms

The term 'multi-jurisdictional mechanisms' is derived from the review terms of reference. It refers to the supporting agencies and organisations involved in this event and their respective responsibilities and accountabilities.

The Municipal Emergency Co-ordination Centre was co-located with the Incident Control Centre. This meant that the Municipal Emergency Response Co-ordinator and Municipal Emergency Resource Officer worked jointly from the Bairnsdale facility and supported the incident management team.

The review heard that the early establishment of the Emergency Management Team and its co-location with the MECC and ICC worked well. This facilitated situational awareness and decision-making, and the rapid flow of information with key stakeholders.

However, there were some doubts that this approach would work successfully in other areas or under different circumstances. Issues to consider include the size and layout of the building and impact on routine business activity.

Feedback from a community meeting indicated that there needed to be better communication and information flow about the operation of school bus services in areas that had been affected by the fire. Although the highway was re-opened to traffic, there were concerns about the potential for dangerous trees near bus stops to endanger children. Issues such as these should be considered by the IMT and EMT in the development of control strategies and the management of road closures.

The review team heard that a VicRoads representative was not formally notified of the fire until about 12.10 am on 2 February.

Collaboration between the IMT and EMT enabled electrical crews to enter the fire-affected area under fire brigade escort, which enabled early assessment and evaluation of loss, and the repair of critical infrastructure.

Traffic management points

The Incident Controller at Bairnsdale requested Victoria Police to establish roadblocks due to fire around the Princes Highway. Victoria Police established traffic management points at Nowa Nowa and Newmerella. The road closures were in accordance with the *Guidelines for Operation of Traffic Management Points during Wildfires*, which were developed following the 7 February 2009 bushfires.

Some of the key concerns raised by the community about the road closures were:

- the location of the closures
- the lack of facilities
- information flow about the fire and its impact on the road closure locations
- the welfare of people and animals
- the reluctance of people stopped at the roadblock to move to areas with better facilities in order to retain their position in the 'queue'
- the inflexibility of police regarding property owner/occupier access.

The Incident Controller was aware of the angst caused by the roadblocks but insisted the traffic management points be rigorously managed due to the potential consequences of the fire. He was also conscious of the Western Australian Coroner's report into the Boorabbin fire in 2007 and the deaths of three truck drivers.

The Incident Controller stressed the importance of the Coroner's report and findings in relation to traffic management during fires, and strongly suggested that all Incident Controllers be made aware of this report.

The Incident Controller requested that the Buchan-Orbost Road be used as an alternative route during the closure of the Princes Highway and it became operational at 8.00 am on 2 February. The diversion remained operational until the Incident Controller gave approval for the highway to be re-opened at 5.45 pm.

Electricity supply

In this instance the fire damaged the 66-kilovolt power lines that service the area east of Nowa Nowa. About 4,500 customers around Orbost, Cann River and Mallacoota lost power as there are no alternative supplies east of Nowa Nowa.

SP AusNet worked throughout the day on 2 February installing generators in affected communities. By 9.00 pm 2,000 customers had their power restored, leaving around 1,800 still without power. Power was eventually re-instated on 3 February 2011.

Gas incident

During the fire, crews responded to a reported gas leak at the Patricia Baleen gas pipeline metering station located on the Princes Highway near Newmerella. Further investigation by technicians from the gas plant determined that the gas leak was actually an air compressor relief valve activating.

A public submission was received from the Site Supervisor at the Patricia Baleen Gas Plant who identified issues with their procedures for notification of emergencies. As a result, further work has been undertaken by the plant's management and the Municipal Emergency Response Co-ordinator in relation to emergency management procedures for bushfire preparedness and response.

FINDINGS

The co-location of the MECC, EMT and the ICC operated effectively for this fire.

The early identification and assessment of critical infrastructure was instrumental in the rapid restoration of power and the Princes Highway reopening.

Although the closure of the Princes Highway accorded with the *2009 Traffic Management Guidelines* and the diversion of traffic accorded with VicRoads' *Emergency Management Plan*, there were issues in relation to the strategic placement of roadblocks. The availability of information and measures to address the welfare of people and livestock stranded at the roadblocks were limited.

RECOMMENDATION

15. Incident Controllers ensure that Emergency Management Teams consider, provide advice, and manage the broader consequences of actions, such as re-opening roads, the resumption of public transport and school buses, and the welfare of those impacted by traffic management points.

4. Community Information and Warnings

4.1 Background

A forensic analysis of community information and warnings was conducted as part of the review and provided comprehensive and detailed evidence that underpins the findings and recommendations.

The current suite of community warning systems were developed shortly after the February 2009 bushfires. The agencies used the new systems to provide information and warnings to the community during the Tostaree fire. The warnings were prepared based on the best information available in the respective control centres at the time of issue.

Emergency Alert, the national telephone-based warning system, was developed during 2009 and commenced live operation in December 2009. Emergency Alert sends alerts to communities via landline telephones based on the location of the handset, and to mobile phones based on the service address of the phone.

One Source, One Message is the principle system used by fire services in Victoria to issue information and warnings to the community. OSOM was developed during 2009 within similar timeframes to Emergency Alert. It aims to provide simultaneous warnings and information to the community via emergency broadcasters, the CFA and DSE websites, and other information mediums.

The Fire Danger Rating system was reviewed nationally, changed, and incorporated into community information and warnings throughout 2009 and 2010. This underpins the information that OSOM uses to generate messages.

Emergency Alert and OSOM both use the three nationally agreed categories for fire warnings, which are, in order of severity: Advice, Watch and Act, Emergency Warning. The OSOM system is used in Victoria, while Emergency Alert is used nationally. The two systems are currently not integrated. The review notes the existence of a project to integrate both systems.

Information Officers use OSOM to author and publish warnings from Incident Control Centres directly on to the CFA and DSE websites, after approval by the Incident Controller. The warnings are also sent to the Victorian Bushfire Information Line and emergency broadcasters, such as ABC Local Radio, for dissemination to the community. The system is designed to ensure that the community, emergency services and support organisations receive the same information at the same time, from the same source.

The review included the first external examination of the performance of OSOM in an emergency since its implementation.

The review team collated and cross-referenced messages from multiple sources including: the OSOM system, fire agency documents (including press releases), the OSOM management team and the CFA social media team. Audio recordings of warnings broadcast by emergency broadcasters were provided by radio stations and sourced through private media monitoring providers.

During the Tostaree fire there were:

- three Emergency Alert messages
- 41 OSOM messages (over 22 days)
- over 40 hours of content from radio stations
- 57 tweets
- eight Facebook posts
- eight media releases.

The review team was advised by the emergency broadcasters that the information and warnings provided by the fire agencies were adequate. However, a number of issues arose in debriefs with emergency broadcasters, interviews with Information Officers and in the analysis of the warnings themselves. The following is an analysis of the major themes.

4.2 Analysis

4.2.1 Integration of Emergency Alert and OSOM

On 1 February three Emergency Alert messages were sent to Tostaree and surrounding communities. However, two of these messages were inconsistent with the fire warnings being distributed to emergency broadcasters through the OSOM system.

Radio station TRFM advised the review team that they were not told when the three Emergency Alert messages had been issued.

As the systems currently operate independently, a manual process is required to ensure consistency of notification to emergency broadcasters, as required under the Practice Note – *Emergency Broadcasters*.

4.2.2 Content and timing of warnings

Interviews conducted with emergency broadcasters and community feedback indicated that warnings were some way behind the actual events taking place on the ground. Analysis of OSOM by the review team confirmed this.

It should be noted that agency spokespeople did provide information through the ABC and other broadcasters during this period, but not all broadcasters were given the same information or interviews.

The review identified a number of discrepancies and inconsistencies in the messages sent through OSOM. Examples were fire names, fire size and email headings.

The review found there were periods where limited or no new information was provided to the community. OESC research indicates that people in emergencies are constantly seeking information from a number of sources and even a repeated warning can fill the information vacuum. The format of warnings should indicate when new information is added or when information is changed.

Community members in the Tostaree area highlighted the crucial nature of information for those who are not under direct threat from the fire, but are near the incident. Fire agency personnel also indicated that communication could have been more effective with communities that were not under direct threat.

Relevance of language and terminology in warnings

The terminology used by fire agencies to describe fire behaviour does not reflect the plain language requirement for best-practice emergency communications. Language

used to describe a fire and threat level, such as 'being controlled' and 'contained', is specific to the fire services but does not clearly indicate a threat level for the community.

The review also found that language is used inconsistently across the various systems, including OSOM, FireWeb and CFA incident pages and websites.

Closing the information loop

The *Victorian Warning Protocol* highlights that the information loop created when a fire agency issues a warning is only closed once the community has been advised the fire is no longer a threat. The OSOM warnings in relation to the Tostaree fire did not include this 'all clear' message.

In Victoria emergency broadcasters and the community assume that the threat has passed when a message is reduced to Advice level or is no longer played on the radio.¹¹ However, to close the information loop, the community should be advised when the threat is reduced.

4.2.3 Warning formats

Really Simple Syndication feed

RSS is a family of web feed formats used to publish and automatically update blog entries, news headlines, audio and video, in a standardised format.

The community, and media outlets that are not official emergency broadcasters including all free-to-air TV stations and online news sources, are requested to find their emergency information via the CFA website or the OSOM RSS feed.

The review found that the list of warnings provided by the OSOM technical team did not fully match the warnings available on the OSOM RSS feed. There was also a delay in the timing of messages through the RSS feed and OSOM email messages. This may be a technical issue and requires further investigation.

Standard Emergency Warning Signal

Use of the SEWS is governed by the *National SEWS Guidelines* which were re-issued after the 7 February 2009 fires. Victoria developed specific SEWS guidelines based on the national guidelines. The Victorian guideline states that the use of the SEWS in an incident is at the discretion of the Incident Controller and the request to use the SEWS should be provided to emergency broadcasters through warning messages based on established templates.

The review team found that the contrast between prescriptive and discretionary requirements within the SEWS guidelines created confusion among emergency broadcasters. During the fire, three of the four Emergency Warnings issued through OSOM required the use of the SEWS. The first Emergency Warning requested the SEWS to be played twice every five minutes. The second and third Emergency Warnings requested that the SEWS be played twice every 30 minutes. The fourth Emergency Warning did not refer to the SEWS at all.

Emergency broadcasters advised the review team that there was insufficient time to broadcast the warning message and play the SEWS twice within five minutes. As a result, the requirements of the SEWS guideline were not achievable. Broadcasters were also not formally notified to discontinue the use of the SEWS.

¹¹ Bushfire warning messages fall into three categories: Advice, Watch and Act and Emergency Warning.

Social media – Facebook and Twitter

During the Tostaree fire the CFA Facebook account was used primarily to engage people and direct them to other sources of information. The Facebook page was updated with official posts three times on 1 February and twice on 2 February.

The CFA uses two Twitter accounts for emergency-related information. One account is used as a primary source of public information and warnings. The other account is used to update followers with general CFA information. In this instance, the general information account was also used to provide warning information in some instances.

The information on Twitter mirrored the information being provided by media officers to media outlets, including emergency broadcasters. The review found inconsistencies between information on Twitter, OSOM and the CFA website.

The CFA website

A detailed analysis of content on the CFA website drew on an internal CFA debrief and the OSOM warnings log, which lists website posts.

Website discrepancies were largely based on the issues identified above. There was also a delay in updating the warnings summary page in at least one instance. In addition, warning messages remained on the CFA website after their 'expiry' time.

The CFA also noted discrepancies between the main CFA website and the mobile website, which is a streamlined version of the site accessible through smartphones and other devices.

4.2.4 Performance of emergency broadcasters

A thorough analysis was conducted of the performance of the emergency broadcasters in the Tostaree area. These included ABC Local Radio, TRFM (a local commercial radio station), Sky News Australia and Radio Sport National. The review found that broadcasters managed quite well under the circumstances and areas for improvement were identified.

4.2.5 Information Officers

The review found that the Incident Control Centre Information Section, with its depth of local knowledge, was integral to the issue of warnings. However, both State Control Centre and ICC Information Sections believed they were not sufficiently resourced when the fire commenced.

At times there was an overlap of functions across Information Sections at all levels of control. This issue is discussed in the command and control section above.

The function of Information Officers and Information Sections is developing into a highly specialised and accountable role that requires specific skills in the collection, analysis and assessment of information. Therefore, Information Officers need to be highly skilled in those areas, and in the development of relevant, timely and tailored information and warning messages.

4.2.6 Other matters

The media management and provision of information by local DSE media staff received positive feedback from broadcasters.

It was apparent at the community meetings facilitated by the review team at Wairewa and Newmerella that information about the declaration of a Total Fire Ban day was not readily available to the community. This suggests that further work needs to

occur with all media outlets (TV, online, weather pages in print and radio), not just emergency broadcasters, to make this information more readily available.

Feedback from emergency broadcasters included a request for the phone numbers of Incident Control Centres and the State Control Centre to be provided in all OSOM warnings.

Community members also indicated that they would like access to DSE fire maps via a website or in hard copy.

All communication channels, including social media and agency websites, should be monitored in real time to provide quality assurance for outgoing messages and additional sources of information and intelligence relating to an emergency.

Broadcasters noted that the VicRoads website did not contain a map of closed roads, only a listing, and that a map with both fire and road closure information was preferable.

The review found that the *Victorian Warning Protocol*, which was signed off by all relevant agencies in 2009, has not been fully embedded in all areas of the fire agencies.

FINDINGS

There was a clear commitment by the Fire Services to warn the community and provide the best information that was available to them at the time.

Emergency Alert, OSOM, the Fire Danger Rating warning system, social media and emergency broadcasters were all used during the Tostaree fire.

The community identified that the declaration of the Total Fire Ban day was not adequately communicated.

OSOM warnings were inconsistent with Emergency Alert messages and some emergency broadcasters were not notified of the Emergency Alert messages being sent.

There were inconsistencies in the timeliness, relevance and clarity of messages across all warning systems. This was reflected in the information provided to websites, social media and emergency broadcasters.

The relevance and timeliness of emergency information and warning messages is directly related to the information and intelligence available to the Incident Controller and Information Section.

An official 'all clear' message was never issued through OSOM, leaving the information loop open.

The function of Information Officers and Sections is developing into a highly specialised and accountable role that requires specific skills in the collection, analysis and assessment of information. Therefore, Information Officers need to be highly skilled in those areas, and in the development of relevant, timely and tailored information and warning messages.

The contrast between prescriptive and discretionary requirements within the SEWS guidelines created confusion.

Information about fire conditions, such as anticipated wind changes, would assist the community to make decisions in relation to a fire.

The use of fire names and the development and issue of information and warnings was not fully compliant with the Victorian Warning Protocol and Incident Naming Procedure.

RECOMMENDATIONS

16. The Fire Services, in consultation with media outlets, develop a more effective strategy for informing the community of Total Fire Ban days.
17. The Fire Services evaluate the new information and warning systems to identify ways to integrate them and improve their capacity to issue timely, relevant and tailored messages. This should include the use of social media.
18. The Fire Services recognise the specialised role of Information Sections and enhance training and resources accordingly.
19. The Fire Services Commissioner ensures that the inter-relationship between Information Sections at all levels is understood.
20. The Fire Services ensure that information and warnings are developed in accordance with the Victorian Warning Protocol.
21. The Fire Services Commissioner requests the Federal Government to revise the National SEWS Guidelines.
22. The Fire Services develop a program that enables all communication mediums, including social media and agency websites, to be monitored in real time to provide quality assurance for outgoing messages and additional sources of information and intelligence relating to an emergency.
23. The Fire Services ensure information and warning projects are able to be integrated with a common operating platform.

5. Community Preparedness

5.1 The fire-safety preparedness of affected communities

Fire-safety preparedness is difficult to measure given that levels of vulnerability and awareness will vary between individuals, households and communities. It is also common for perceptions of preparedness to vary in relation to an event that is anticipated and one that has actually been experienced. Some individuals or households may perceive themselves to be well prepared prior to an event, but find their levels of preparedness to be less than adequate in hindsight. The reverse can also be true.

In order to measure the fire-safety preparedness of the communities affected by the Tostaree fire, data was drawn from a range of sources. This included feedback from community meetings, advice and information from fire services in the East Gippsland region, and results from a telephone survey conducted by Quantum Market Research (Australia) Pty Ltd. The survey included specific questions about fire preparedness.

5.1.1 Community feedback

Community meetings were held as part of the review process. During the meetings a number of positive comments were made by community members about fire preparedness, which included:

- Being prepared with our fire plan.
- Having a safe place to go at our neighbours.
- Having a four-wheeler tractor with plenty of water.
- Using a CFA pager and/or listening set.
- Receiving communication from friends and neighbours.
- The arrival of private individuals with a water supply to protect the house.
- We made [personal] fire preparations.
- Individuals must be responsible for fire prevention and preparation for summer – this will assist whole communities [to be safe] from serious fire attacks.

See Appendix 1 for a summary of the key themes from the community meetings.

5.1.2 Information from the Fire Services

Over the past five years, the CFA has undertaken 73 education and preparedness activities in the East Gippsland area. These were attended by more than 1,130 residents. Activities included Fire Ready Victoria and Community Fireguard events, community displays and school-based activities.

5.1.3 Quantum telephone survey

Quantum Market Research (Australia) Pty Ltd was engaged to conduct a telephone survey targeting residents in the three areas to which Emergency Alert warnings were directed during the Tostaree fire. Telephone interviews were conducted between 20 and 29 April 2011. The survey received 62 responses from a maximum of 140 and involved residents from a number of communities in the Tostaree, Simpsons Creek and Waygara areas.

Of the respondents, 82% were aged over 45 years, with the largest group (37%) aged between 55 and 64 years.



Figure 5: Community meeting at Wairewa (Photograph: Office of the Emergency Services Commissioner).

Questions relating to preparedness

Prior to a fire happening, did you prepare a bushfire survival plan?

Yes, for my household	74%
Yes, for my farm	40%
Yes, for my business	6%*
No	26%

* Low number likely to reflect the number of businesses in the relevant area.

While 75% of the people surveyed reported having a bushfire survival plan, just over one in four people did not. Of those who reported having a plan, only 20% had written it down.

Where they were identified, bushfire survival plans comprised:

Discussion with family/neighbours	78%
Plans to stay during the emergency	76%
Plans to leave household during emergency	70%
Identifying sources of fire information	57%
When, where and how to move equipment	57%

Clean-up and preparation activities

While only 20% of respondents had a written fire plan, almost nine in ten (89%) reported having undertaken fire preparation works and two-thirds (66%) had purchased emergency response equipment.

Involvement in bushfire information programs

Twenty-four per cent of respondents reported having attended an information program run by either the CFA or DSE in relation to bushfires or bushfire risk.

5.2 Analysis

The number of respondents who had a written fire plan (20%), or who had attended an information program (24%), was quite low. This may be attributed to respondents having a long, potentially generational link with the area, and a consequent clear understanding of the need for fire preparedness, rather than indicating a lack of preparedness.

This is supported by the high proportion (89%) of respondents who reported having undertaken seasonal clean-up and preparation activities and the two-thirds of respondents who had purchased emergency response equipment.

The survey results, together with the feedback from agency staff and the community meetings, appear to indicate a level of preparedness that was commensurate with a self-reliant, experienced rural population living in a fire-prone area.

FINDINGS

Measuring and assessing levels of community preparedness can be difficult and subjective.

The data and evidence available indicated a level of community preparedness that was commensurate with a self-reliant, experienced rural population living in a fire-prone area.

RECOMMENDATIONS

24. The Fire Services, in consultation with the community, develop a methodology for measuring community preparedness. They should also develop tailored education and information sharing opportunities to improve community understanding of bushfire risk mitigation and preparedness.
25. The Fire Services identify opportunities for the community to learn about, engage with and influence local emergency management planning.

6. Vegetation management

An area of continued concern for the community and many fire brigades is the management of vegetation on public land, roadsides and service easements, particularly in locations where vegetation is dense. Vegetation management is currently undertaken by a number of organisations and agencies independently of each other, resulting in variable levels of fire hazard.

This was highlighted at the community meetings about the Tostaree fire and in many of the public submissions received by the review team. These issues were also raised at local fire brigade debriefing sessions following the fire.

The 2009 Victorian Bushfires Royal Commission (as well as other reviews) made recommendations about land management and bushfire risk mitigation. A number of programs to improve the management of vegetation in Victoria have commenced as a result.

There are a number of constraints relating to vegetation management that need to be understood. These constraints include:

- state and federal legislative requirements
- native vegetation removal policies
- the resources required to implement landscape vegetation management
- funding arrangements
- the restrictions on safe prescribed burning as a result of weather patterns
- potential impacts on tourism, agriculture, horticulture and viticulture.

Land managers are required to work within these constraints.

The feedback received by the review team indicates a lack of community awareness about the progress made to date in relation to this issue. The feedback may also reflect the fact that local input was neither sought nor acted upon. This reinforces the importance of engaging with the community and ensuring mechanisms to enable credible, local input in planning for bushfires. Such an approach also provides a way to increase community awareness.

The Tostaree area has been subject to a comprehensive fuel-reduction program, with 11 fuel-reduction burns occurring between Tostaree, Orbost and the coast since 2007. The review has not assessed the strategic value or effectiveness of fuel-reduction burns. However, a prescribed burn carried out in 2010 south of Waygara and the Princes Highway appears to have reduced the forward rate of spread of the Tostaree fire.¹²

The review heard that fire brigades and the community generally believe that vegetation on roadsides, particularly the Princes Highway, is a high risk that is not being managed appropriately.

The Princes Highway is an important strategic asset as it provides access and egress for emergency services and communities. It is also a major transport and supply route with essential services running alongside it. The highway traverses large areas of high fire-risk terrain. This is further complicated by limited options for traffic diversion and a lack of redundancy for essential services, such as power.

¹² Reports from interviews and review team observations.

The VicRoads *Road Fire Risk Assessment Guidelines* are under development. However, they are being trialled in East Gippsland Shire as part of the development process.

The review team heard that the timely issuing of 'permits to burn' is a concern for fire brigades as it inhibits their ability to carry out fuel reduction on roadsides.

The review also heard that there is significant community concern about the bushfire risk associated with power lines, particularly in relation to vegetation management under power lines. The community view is that not enough is being done about this issue.

The process of clearing vegetation under and around power lines is constrained by legislation¹³. However, a risk-based approach that included consideration of the consequences of power loss would benefit this process. In areas of high bushfire risk the assessment of vegetation under power lines should also include the impact of fire on electrical assets.

The current regulations in relation to the removal of vegetation near power lines mainly relate to the risk of bushfire ignition from power lines rather than the potential impact of fire on electricity infrastructure.

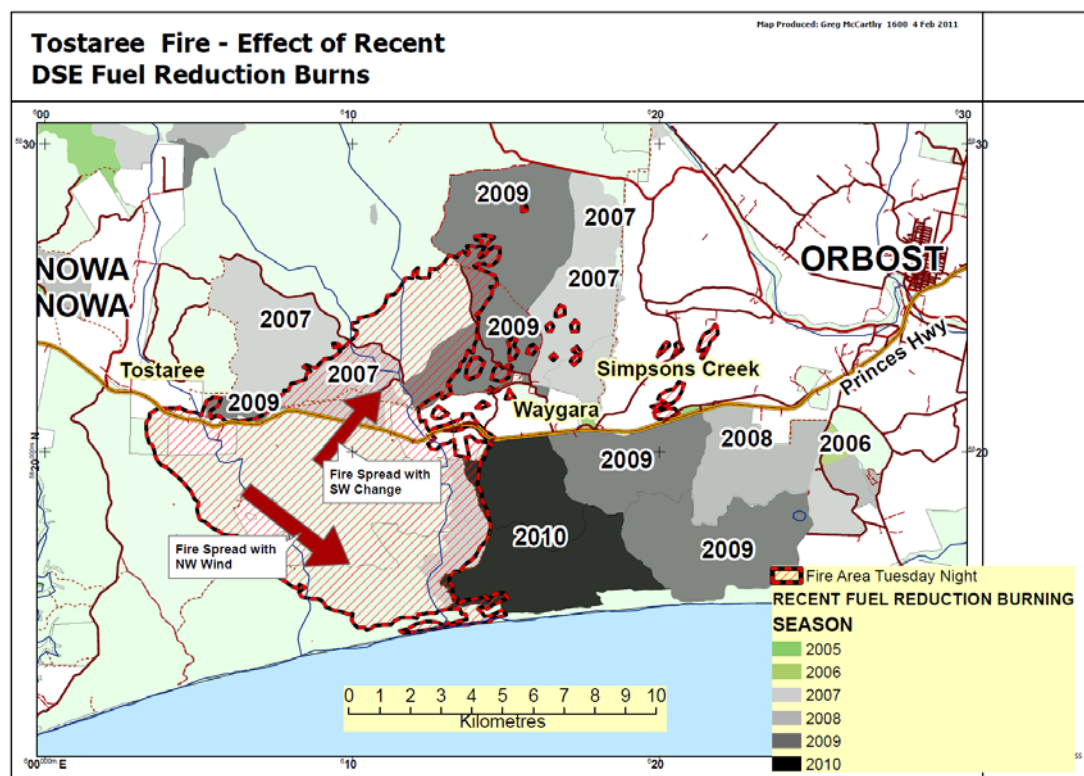


Figure 6: Fuel-reduction burns carried out in the Tostaree area. (Source: Greg McCarthy DSE)

¹³ Electricity Safety (Electric Line Clearance) Regulations 2010.



Figure 7: Roadside vegetation along Princes Highway, Tostaree (Office of the Emergency Services Commissioner: April 2011)



Figure 8: Vegetation under power lines along Princes Highway near Wombat Creek (Office of the Emergency Services Commissioner: April 2011)

FINDINGS

Current standards for the management of vegetation under non-transmission power lines do not consider the impact of fire on electrical infrastructure.

The management of vegetation along roadsides and around critical infrastructure such as power lines would benefit from a rigorous, risk-based approach.

Clearance of vegetation is currently managed independently by different organisations and agencies, resulting in variable levels of fire hazard.

The perceived lack of fuel-reduction burning is a significant issue of concern within the community.

Previous prescribed burns in the Tostaree area were a significant factor in limiting the intensity and spread of the fire.

Management of vegetation on roadsides remains a significant factor in fire mitigation, preparedness and response.

CFA brigades report that the process for issuing permits for fuel reduction alongside roadsides, rail and utility easements constrains their ability to conduct fuel-reduction activities.

RECOMMENDATIONS

26. The Fire Services Commissioner leads a task force to:

- a. identify legislation, policies and guidelines that impact on vegetation management and recommend necessary changes
- b. develop a set of risk-based standards for vegetation management with respect to strategic firebreaks and the assets being protected
- c. integrate maintenance standards across all areas of responsibility and tenure.

27. Energy Safe Victoria ensures that the standards for vegetation clearance around power lines consider the impact of fire on electrical infrastructure and the risk of loss of electricity supply to the community.

28. Victoria Police, under the auspice of the Regional Emergency Response Plan, lead a task force to ensure that the Princes Highway is treated as an asset of significance and an appropriate risk-based approach is adopted to minimise the impact of fire. This approach is to be integrated into regional and municipal fire management plans.

29. DSE enhance community engagement programs in East Gippsland to ensure that local communities are more informed about the complexities and interdependencies of prescribed burning and encourage local input.

7. Conclusion

The review of the Tostaree fire focussed on the line of control in place at incident, regional and state levels; the control strategies and broader consequences; and multi-jurisdictional mechanisms.

The review also focussed on the fire-safety preparedness of affected communities and the degree to which community information and warnings issued during the fire enabled the community to make informed decisions.

The intention of the review team has been to identify the lessons to be learned from this event so that improvements can be made to reduce risk, improve response arrangements and procedures, and help agencies to be better prepared for the next fire season and future fire events.

Overall, the Tostaree fire was managed in accordance with the new arrangements and there were many examples of actions and activities that went well. There are, however, areas that would benefit from improvement and these can be addressed by agencies working in a more integrated manner.

Agency personnel and the community are encouraged to consider the findings and recommendations in the spirit of learning and improvement.

Appendices

Appendix 1: Community meetings

Three community meetings were conducted as part of the review. Meetings were held on 27 and 28 April 2011 at Newmerella and Wairewa to hear community views about what worked and what did not work in relation to the Tostaree fire, as well as suggestions about what should be done differently in the future.

The two meetings began with an overview of the terms of reference of the review by the Acting Emergency Services Commissioner. This was followed by a facilitated discussion that sought to connect with, and be informed by, the community's unique perspective, experience and local knowledge.

The discussions generated acknowledgement of a number of positive outcomes as well as issues, concerns and suggestions for the future.

Community feedback

A number of key themes emerged at the community meetings:

Prevention

- vegetation management
- resourcing and funding
- support for prevention and preparedness
- fuel-reduction burning

Preparedness

- information
- pre-emptive actions
- resources
- relationships
- communication of Total Fire Bans

Response

- relationships and collaboration
- incident management
- warnings and information
- roadblocks
- air support

Recovery

- information, relationships and personal support
- clean up
- plans, services and infrastructure
- ongoing management of incident

A follow-up presentation of the draft findings and proposed direction of recommendations was held on 29 June 2011 at Nowa Nowa.

Approximately 100 people attended the three meetings overall.

Appendix 2: Public submissions to the review

Chris Filmer

David Craigie

East Gippsland Wildfire Taskforce

Elizabeth Blakeman

Greg and Vicki Geddes and Family

John Van Der Werf

Mack Stagg

Maurie Killeen

Mick Camilleri

Mt Taylor Fire Brigade

Nick Barton

Peter Camilleri

Peter Vaughan

Sarsfield Fire Brigade

Stratford Fire Brigade

Appendix 3: List of documents

Appointment of Incident Controllers JSOP 3.08 v2 (13/12/2010)
CFA District Operations Management Plan – District 11
CFA Chain of Command SOP 8.00 v4 (14/02/2011)
CFA Commander (CFA as Support Agency) SOP 8.01 v2 (14/02/2011)
CFA Division Command Points SOP 9.05 v1 (1/7/2005)
CFA Fire Investigation Report for the Tostaree Fire
CFA Incident Controller (CFA as Control Agency) SOP 8.02 v3 (14/02/2011)
CFA Transfer of Control SOP 8.04 v3 (14/02/2011)
Determining the Control Agency JSOP 3.01 v3 (13/12/2010)
DSE Approved Fire Operations Plan – East Gippsland Area (2010-2013)
DSE Fire Readiness & Response Plan – East Gippsland 2010/2011 (December 2010)
East Gippsland Shire Council – Municipal Emergency Management Plan November 2009
East Gippsland Shire Council – Municipal Fire Management Plan (Draft) March 2011
East Gippsland Shire Council – Municipal Fire Prevention Plan October 2009
Emergency Management Act 1986 Version No. 043
Emergency Management Manual Victoria October 2009
Endorsement of Incident Management Team Members - CFA SOP 8.03 v3 (14/02/2011)
FESA Major Incident Review of Toodjay Fire December 2009
Fire Services Commissioner Act 2010 Version No. 001
Guidelines for the Operation of Traffic Management Points During Wildfires (Oct 2009)
Incident Action Planning JSOP 3.03v3 (13/12/2010)
Incident Communications Plans JSOP 2.02 v2 (13/12/2010)
Incident Management Teams – Readiness Arrangements SOP J2.03 v3 (13/12/2010)
Incident Naming Procedure – CFA/DSE SOPJ3.02 version 1 (28/09/2007)
Local Mutual Aid Plans JSOP 2.01 v2 (13/12/2010)
Local Mutual Aid Plan – Gippsland Region 2010/2011 Fire Season
Memorandums of Understanding with Emergency Broadcasters
National SEWS Guidelines
Practice Note- Emergency Broadcasters
Redsocks Consulting Report on Level 3 [IMT] Exercises (December 2010)
State Command and Control Arrangements for Bushfire in Victoria (17 November 2010)
State Control Centre Preparedness Levels JSOP 1.01 v1 (01/02/2010)
State Control Centre Total Fire Bans SOP 4.01 v1 (16/02/2010)
Safety Officer JSOP 3.04 v2 (13/12/2010)
The Australasian Inter-service Incident Management System (AIIMS)– Third edition 2005
Tostaree Fire - early development - a preliminary analysis by Kevin Tolhurst (3 June 2011)
Tostaree Fire (Bairnsdale Fire 13) - 1 Feb 2011 Fire Origin, Progress and Suppression Including Effect of Fuel Reduction Burns Tostaree and Waygara State Forest. Greg McCarthy, Landscape Burn Co-coordinator, DSE East Gippsland Area Orbost (Draft 28 June 2011)
Victorian Bushfires Royal Commission Interim Report 2009
Victorian Bushfires Royal Commission Final Report 2010
VicRoads Roadside Fire Risk Assessment Guidelines (Draft)
Victorian SEWS Guidelines
Victorian Warning Protocol, version 1 November 2009

Abbreviations

ABC	Australian Broadcasting Corporation
AIIMS	Australasian Inter-service Incident Management System
BoM	Bureau of Meteorology
CAD	Computer Aided Dispatch
CFA	Country Fire Authority
DSE	Department of Sustainability and Environment
EMT	Emergency Management Team
ESTA	Emergency Services Telecommunications Authority
ICC	Incident Control Centre
IAP	Incident Action Plan
IMT	Incident management team
IMS	Incident management system
MECC	Municipal Emergency Management Centre
MERC	Municipal Emergency Response Co-ordinator
MERO	Municipal Emergency Resource Officer
OESC	Office of the Emergency Services Commissioner
OSOM	One Source One Message
RCC	Regional Control Centre
RSS	Really Simple Syndication
SCC	State Control Centre
SEMT	State Emergency Management Team
SEWS	Standard Emergency Warning Signal
SOP	Standard Operating Procedure
VBRC	2009 Victorian Bushfires Royal Commission

Glossary of terms

This glossary defines or explains terms which have a restricted or technical meaning in the context of the emergency management arrangements in Victoria.

Agency

A government agency or a non-government agency.

Command

The direction of personnel and allocation of resources in the performance of an agency's role and tasks. Authority to command is established in legislation or by agreement within an agency. Command relates to agencies and operates vertically within an agency.

Commander

A person within an agency empowered to direct the personnel and resources of the agency in the performance of its role and tasks. A functional commander can direct the personnel and resources of more than one agency in accordance with pre-determined arrangements.

Control

The overall direction of response activities in an emergency. Authority for control is established in legislation or in an emergency response plan and carries with it the responsibility for tasking other agencies in accordance with the needs of the situation. Control relates to situations and operates horizontally across agencies.

Control agency

An agency nominated to control the response activities for a specified type of emergency.

Control centre/command centre (for example, Incident Control Centre)

Facilities from which site, region/area of operations, and state level functions can be carried out. Accordingly, response agencies should provide appropriate physical and technical infrastructure to support those personnel appointed as Incident Controllers, Agency Commanders, and representatives of the organisations that support them. Any centre established for this purpose shall be named based on the function it supports, for example, control centre, command centre, operation centre.

Co-ordinate/co-ordination

Co-ordination involves the bringing together of agencies and resources to ensure effective response to, and recovery from, emergencies. The main functions of co-ordination are:

- in relation to response, ensuring that effective control has been established and maintained
- the systematic acquisition and allocation of resources in accordance with the requirements imposed by emergencies.

Co-ordination operates throughout the management of response and recovery activities. Victoria Police is the co-ordination agency for response and the Department of Human Services is the co-ordination agency for recovery.

Emergency

An event which in any way endangers or threatens to endanger the safety or health of any person in Victoria or which destroys or damages, or threatens to destroy or

damage, any property in Victoria, or endangers or threatens to endanger the environment or an element of the environment, including:

- an earthquake, flood, wind-storm or other natural event
- a fire
- an explosion
- a road accident or any other accident
- a plague or an epidemic
- a warlike act, whether directed at Victoria or part of Victoria or at any other State or Territory of the Commonwealth
- a hi-jack, siege or riot
- a disruption to an essential service.

Emergency broadcasters

Media outlets who have entered into agreements with the Victorian Government to broadcast emergency messages immediately, repeatedly, and for as long as necessary, as requested by Victoria's emergency services.

Emergency management

The organisation and management of resources to deal with all aspects of emergencies. Emergency management involves the plans, structures and arrangements which are established to bring together the normal endeavours of government, voluntary and private agencies in a comprehensive and co-ordinated way to deal with the whole spectrum of emergency needs including prevention, response and recovery.

Emergency management team

An emergency management team is the team which assists a controller in formulating a response strategy and its execution by all agencies, and which assists the Emergency Response Co-ordinator in determining resource acquisition needs and in ensuring a co-ordinated response to the emergency. (*See also State Emergency Management Team.*)

Emergency Response Co-ordinator

A member of the Victoria Police appointed as state, regional, municipal or field emergency response co-ordinator, whose role is to co-ordinate the response to an emergency.

Fire Services

The fire services include the CFA, DSE and where appropriate, the MFESB.

Fire Services Commissioner

The person appointed under the *Fire Services Commissioner Act 2010* whose key functions are to:

- work with the fire service agencies to enhance their individual and collective capacity to prepare for the response to days on which it is forecast there is a high risk of major fires occurring
- develop and maintain standards for the performance of functions by the CFA and the MFESB and for the performance of fire suppression functions by the Secretary, DSE
- develop and maintain incident management operating procedures for the planning, preparation and response to major fires
- have overall control of the response to major fires and manage the State's primary control centre for the response to major fires
- promote and lead a program of reform to improve the operational capability of fire service agencies.

Incident

The word incident has the same meaning as emergency. The term incident management and related terms, such as Incident Controller, are used in response management to clearly differentiate between the activities involved in incident management and the activities of emergency management as a whole.

Incident Controller

The Incident Controller is a member of the control agency whose role is to provide leadership and management to resolve the emergency at the incident site. This is the agency forward controller and operates in close proximity to the incident.

(See also Regional Controller and State Controller)

Incident management system

A system used by agencies undertaking their management responsibilities in response to an emergency. An incident management system is not a fixed set of rules, but rather a flexible and dynamic methodology that can cater for an escalation or change in the severity of any emergency. The system is established by a response agency and will involve use of personnel for the various functions which may need to be individually managed. Incident management functions might include, but are not limited to: control, planning, operations, logistics, intelligence, information, investigation, finance or administration.

Incident management team

An IMT comprises the Incident Controller and the personnel responsible for the other functions (principally planning, operations and logistics) forming the incident management system.

Mitigation

Measures taken in advance of, or after, a disaster (emergency) aimed at decreasing or eliminating its impact on society and the environment.

Municipal Council (or Council)

The local government body for a municipal district.

Municipal Emergency Co-ordination Centre

A MECC is a facility which brings together key agencies to coordinate the provision of council and community resources during an emergency for the response and recovery effort. The MECC facilitates the activities of key personnel from local and state government agencies, emergency services and others required to assist.

Municipal Emergency Resource Officer

A municipal appointee responsible to the municipal council for ensuring the co-ordination of municipal resources to be used in emergency response.

Municipal Emergency Response Co-ordinator

A member of Victoria Police appointed to a municipal district as the Municipal Emergency Response Co-ordinator. In response to an emergency this role:

- ensures the Municipal Emergency Resource Officer is advised of the emergency, and is available to provide access to municipal resources if required
- ensures the Municipal Emergency Resource Officer is receiving information as appropriate
- attends at the Municipal Emergency Co-ordination Centre, if activated
- advises the Regional Emergency Response Co-ordinator regarding emergencies which have the potential to require supplementary resources from outside the municipal district.

Prevention

The elimination or reduction of the incidence or severity of emergencies and the mitigation of their effects.

Regional Controller

The role of the Regional Controller is to provide leadership and management across a series of emergency sites within a Victorian Government region. The Regional Controller operates regionally and may be appointed by the State Controller or self-initiated prior to State Control being established.

Regional Emergency Response Co-ordinator

A commissioned officer of Victoria Police appointed for a Victorian Government region as Regional Emergency Response Co-ordinator. The role includes:

- effective co-ordination of resources or services within the emergency response region
- in an emergency, arranging to provide regional resources requested by a Municipal Emergency Response Co-ordinator to response or recovery agencies
- in circumstances where requested resources are not available within the region, to request the resources through the State Emergency Response Co-ordinator.

Response

The combating of emergencies and the provision of rescue and immediate relief services.

Response agency

An agency having a role or responsibility under the State Emergency Response Plan or the response arrangements. Response agencies can be control or support agencies for different emergencies.

State Controller

The role of the State Controller is to provide strategic leadership for the response to emergencies across Victoria. This role is performed by the Fire Services Commissioner (or a delegate) in the context of fire.

State Emergency Response Co-ordinator

The State Emergency Response Co-ordinator is the Chief Commissioner of Police. Under the State Emergency Response Plan the State Emergency Response Co-ordinator is responsible for the co-ordination of activities of agencies having roles or responsibilities in relation to the response to emergencies. (*See also Emergency Response Co-ordinator.*)

State Control Centre

See control centre/command centre.

State Emergency Management Team

The SEMT may be formed in the event of a significant emergency involving a multi-agency response, by the State Controller (or their representative) or the State Emergency Response Co-ordinator (or their delegate/representative). The SEMT comprises senior representatives from response, recovery and other agencies. The function of the SEMT is to:

- facilitate a discussion to enable agencies to develop a consistent situational awareness regarding the emergency
- identify and manage strategic risks and consequences
- develop a plan outlining the high-level actions of all agencies.

Support agency

An agency that provides services, personnel, or material to support or assist a control agency or affected persons.

Warning types

There are three distinct levels of alerts which are to be used for community warnings within Victoria. The decision-making process will identify which of the following levels of alert will need to be issued to the community.

Advice – General information to keep you up-to-date with developments.

Watch and Act – It is likely that you may be impacted by the emergency. You may be in danger and should start taking action to protect your life and your family.

Emergency Warning – You will be impacted by the emergency. You are in danger and must take action immediately. This message may be preceded by the Standard Emergency Warning Signal.