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VICTORIA

Emergency Management Operational Review 2015-16

Acknowledgment of Country
EMV acknowledges Aboriginal and Torres Strait Islander people as the Traditional Custodians of the land. EMV also acknowledges and pays respect to the Elders, past and present and is committed to working with Aboriginal and Torres Strait Islander communities to achieve a shared vision of safer and more resilient communities.

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Cover photo: Scotsburn - Finns Road Fire Community Meeting, December 2015

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Message from Craig Lapsley

Emergency Management Commissioner

Driven by the 2009 Victorian Bushfires and other major emergencies, Victoria is continuing to reform its emergency management sector. These drivers are the catalyst for significant change and continuous improvement that is evidence based and sector wide.

The progressive shift from an 'all hazards all agencies' concept has matured to the "all communities, all emergencies" approach that puts the community at the centre of how we manage emergencies like never before.

One of the critical factors of this success has been the identifying, sharing and learning lessons from a range of events to continually improve the way Victoria manages before, during and after emergencies.

Victoria's emergency management sector is moving beyond responding to recommendations towards a learning and continuous improvement culture through identifying lessons, moving beyond reports and towards case studies, and away from tracking actions to monitoring improvement.

Over the past year, Victorians have demonstrated their resilience when faced with significant emergencies including storms, floods, blue-green algae and both bush and structure fires.

The emergency management sector has managed these emergencies well, with a strong focus on Victoria's emergency management priorities through collaborative incident management and community involvement. Victoria's approach to managing emergencies has strengthened over the past year and will further improve as we continue to identify lessons and share our learning.

The Emergency Management Operational Review 2015-16 highlights lessons from the past year and provides a further opportunity to share our learning, demonstrating how well the sector has worked together – before, during and after emergencies.

Executive Summary

The Emergency Management Operational Review (Operational Review) is part of a two year cycle of learning and improvement, and aims to highlight good practice, changes and improvements that have occurred across the Victorian emergency management sector during 2015-16. Assurance activities occur throughout the year and the outcomes of these activities are then collated to analyse and identify best practice and opportunities for learning and improvement. These insights are then available to Departments, agencies, teams and committees to utilise the information provided in the Operational Review to inform any continuous improvement activities.

The scope of this report includes operational activities within the 2015-16 financial year with input from the State Review Team (SRT) which has representatives from more than 14 organisations. The SRT is the overarching leadership group that provides guidance and coordination of review, debrief, monitoring, lessons management activities and performance improvement across the sector for all hazards.

The Operational Review includes a narrative in Section 1 highlighting the broad range of operational activity that occurred during 2015-16 and provides a broad picture of emergency management within Victoria. This includes the range and diversity of activities that have been experienced and the high level of support the entire sector provides to ensure "safer and more resilient communities". Key statistics from the Operational Review includes:

- The State Control Centre (SCC) conducted a range of training activities to support the management of the SCC over the summer emergency season which saw 298 personnel attend training for SCC functional roles, incident management roles and operational systems.
- Country Fire Authority (CFA), Department of Land, Water and Planning (DELWP), Metropolitan Fire Brigade (MFB) and Victoria State Emergency Service (VICSES) responded to more than 7,500 incidents every month.
- More than 2.1 million Victorians used the VicEmergency website.
- Triple Zero (000) received over 2.5 million calls for assistance.
- There were 5 Telstra outages that affected Victorian emergency services and infrastructure.
- There were 10 days where Heat Health Alerts were issued.
- The Victorian community received a total of 2,936 warnings and community notifications.
- There were 19 incidents of State significance and 8 interstate/international deployments.
- The State Control Centre was activated a total of 309 days and there were 6 months where the SCC was activated for the entire month.
- Real Time Monitoring and Evaluation was deployed 5 times to support real time continuous improvement and capturing of innovative and good practice.

Section 2 includes 14 case studies providing learnings about a range of operational activities during the financial year including the Portland Ship Fire, managing very high tree hazard risk, rapid onset storm events, Exercise Red Alert and State Control Centre learning and improvement. Observations were collected from all tiers of emergency management through individual observation collection, monitoring, debriefing and review activities. This data set was analysed and provided in Section 3 highlighting good practice, changes and improvements since the Emergency Management Operational Review 2014-15.

Overall this report supports assurance activities and improvement processes throughout the year, with insights provided to emergency management planning across the sector.

Introduction

The Emergency Management Operational Review is a summary of the operational activities undertaken by Victoria's emergency management personnel across the 2015-16 financial year. This report supports the continuous improvement of the sector by sharing lessons. The Operational Review is divided into three sections:

- Section 1 provides an overview and narrative outlining the operational activities experienced during 2015-16.
- Section 2 includes a range of case studies of operational incidents.
- Section 3 provides an update on the themes and insights identified during 2014-15 and highlights good practice, changes and improvements from 2015-16 as part of the two year cycle of learning and improvement.

Australia's Deployment to Fiji, October 2015

Background

In previous years, the Post Season Operations Review was focused on the operations of fire services across the summer emergency season. The Emergency Management Operational Review was introduced in 2014-15 to reflect a broader focus of:

- Year-round – broadened timeframe from the fire season to financial year,
- Multi-hazard – expanded beyond bushfire incidents,
- All-phases – expanded beyond the response phase, and
- Multi-agency – expanded beyond responder agencies.

Purpose

The purpose of this report is to provide an overview of the operational activities in the emergency management sector across the 2015-16 financial year. This is supported by Section 3 which provides insights relating to key themes to inform continuous improvement processes across the Victorian emergency management sector. In particular this report aims to highlight good practice, changes and improvements since the Emergency Management Operational Review 2014-15 as part of the two-year rolling cycle of learning and improvement. Overall this report supports assurance activities and improvement processes throughout the year, with insights incorporated into emergency management planning across the sector.

Scope

The scope of this report includes emergency management operational activities undertaken during the 2015-16 financial year. The information provided in this report reflects the activities overseen by the State Review Team (SRT) during the 2015-16 financial year.

The SRT is the overarching leadership group that provides guidance and coordination of review, debrief, monitoring, lessons management activities and performance improvement across the emergency management sector for all hazards. The SRT's primary objective is to promote consistent sector wide continuous improvement in a coordinated and effective manner.

Organisations that are members of the SRT and supported the development of this report include:

- Ambulance Victoria (AV);
- Australian Red Cross (ARC);
- Country Fire Authority (CFA);
- Department of Economic Development, Jobs, Transport and Resources (DEDJTR);
- Department of Environment, Land, Water & Planning (DELWP);
- Department of Health and Human Services (DHHS);
- Emergency Management Victoria (EMV);
- Emergency Services Telecommunications Authority (ESTA);
- Inspector General for Emergency Management (IGEM);
- Life Saving Victoria (LSV);
- Local Government Victoria (LGV);
- Metropolitan Fire Brigade (MFB);
- Municipal Association of Victoria (MAV);
- Victoria Police (VICPOL);
- Victoria State Emergency Service (VICSES); and
- other agencies and departments as required.

EMV Year in Review

While the Emergency Management Operational Review 2015-16 is a summary of sector-wide operational activity across the financial year, this document also complements and links to the EMV Year in Review.

EMV's "Year in Review 2015-16" highlights the challenges, achievements and reform that occurred across Victoria's emergency management sector.

Whilst EMV does not have an obligation to produce an Annual Report, the Year in Review provides reflection on the work achieved to support the sector in creating safer, more resilient communities.

A copy of the Year in Review is available at https://www.emv.vic.gov.au/publications

Process

During the 2015-16 financial year, observations were collected from all tiers of emergency management through individual observation collection and outcomes from monitoring, debriefing and review activities. The SRT supported these activities, collated and analysed the data. This process is established to support the EM-LEARN Framework[1] and shown in Figure 1.

This report provides the narrative of the operational period (Section 1), a selection of case studies (Section 2), and presents the insights from the data analysis (Section 3).

Section 1: 2015-16 Overview

The information included in the overview section is intended to provide a summary of the weather and operational activity across the 2015-16 financial year.

This section describes activity that has been undertaken across the sector before, during and after emergencies to reflect the broader spectrum of emergency management.

Section 2: Case Studies

This section provides a selection of case studies that were developed over the 2015-16 financial year, and demonstrate the variety of incidents managed by Victorian emergency management personnel. Where relevant and possible, case studies were developed as soon as practicable after an incident to capture what went well and to identify and share the identified lessons in what could be improved. Where case studies were originally published elsewhere, the content has been replicated and the source document has been referenced.

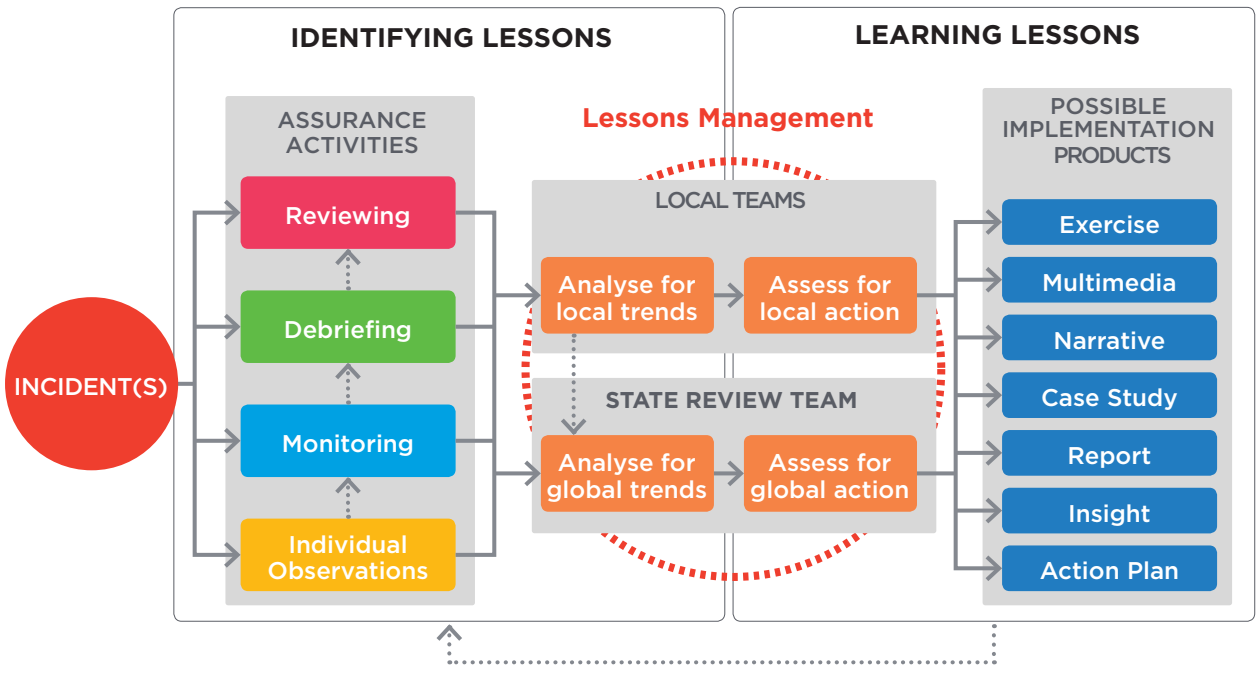

Figure 1: Process for identifying and learning operational lessons

[1] EM-LEARN Framework provides a shared understanding of what lessons management will mean for the Victorian Emergency Management sector, where it will take us and what we intend to do to get there. It is available on https://www.emv.vic.gov.au/how-we-help/reviews-and-lessons-management

Scotsburn - Finns Road Fire, December 2015

> "Local teams and governance groups (e.g. crews, emergency management teams, regional control teams) analysed the data they collected to identify locally relevant insights and actions required to contribute to continuous improvement."

Section 3: Themes and Insights

This section includes insights based on outcomes from assurance activities (individual observations, debriefing, monitoring and reviewing). The section is divided into:

- 2014-15 Theme Update – identified during the first year of the two yearly cycle of learning and improvement. These themes have been updated based on what has occurred during 2015/16, and
- Emerging themes – identified through the data analysis as additional areas that need to be considered during 2016/17.

Capturing Observations

Observations were collected from all tiers of emergency management through the following assurance activities:

- Individual observations – Individuals submitted their observations through the Observation Sharing Centre. (available online through the Emergency Management –Common Operating Picture (EM-COP)[2]).
- Debriefing – Formal debriefs and After Action Reviews (AARs) gathered observations at the end of a shift, tour of duty, incident, campaign or season.
- Monitoring – Deployments of Real Time Performance Monitoring (RTPM – response focus) and Real Time Evaluation (RTE – relief focus) personnel, including a hybrid RTPM/RTE deployment, provided real time feedback to operational personnel and captured observations in the field.

[2] EM-COP is a web based entry point for emergency management personnel to access information and systems using any internet connected device. It provides direct links to current operational information and a range of common applications including the Desktop and Library. EM-COP can be accessed at cop.em.vic.gov.au/.

- Reviews – A number of ad hoc reviews were undertaken during 2015-16, which identified insights from specific incidents that were unique or explored gaps in policy or practice.

Local teams and governance groups (e.g. crews, emergency management teams, regional control teams) analysed the data they collected to identify locally relevant insights and actions required to contribute to continuous improvement. These actions are locally coordinated, implemented, monitored and reported. In some cases, this led to the development of a case study that is included in Section 2.

Analysing for Trends

In addition to local analysis and action, the SRT collated the information from all tiers of emergency management, and analysed this against the insights and trends from 2014-15 to identify good practice, changes and improvements that had been implemented. Insights were generally based on multiple observations relating to a theme, and were usually collected from more than one incident and assurance activity. This analysis provided insights into aspects that went well and areas for improvement across the 11 themes identified during 2014-15, as well as identifying emerging themes for 2015-16.

Assessing for Action

Departments, agencies, teams and committees are expected to utilise the information provided in the Operational Review to inform any continuous improvement activities.

The insights identified in this report form part of a two-year cycle of learning and improvement. This allows continuous assurance activities and improvement processes to occur throughout the year, with insights incorporated into emergency management planning across the sector.

Portland Ship Fire, November 2015

Implementing and Monitoring

The SRT will support the implementation of change and improvement by developing and disseminating supporting materials and implementation products. Some learning materials already produced and disseminated include the case studies included in Section 2.

Information included in this report will also be shared with subject matter experts, through organisational networks, and with various committees.

SECTION 1: 2015-16 Overview

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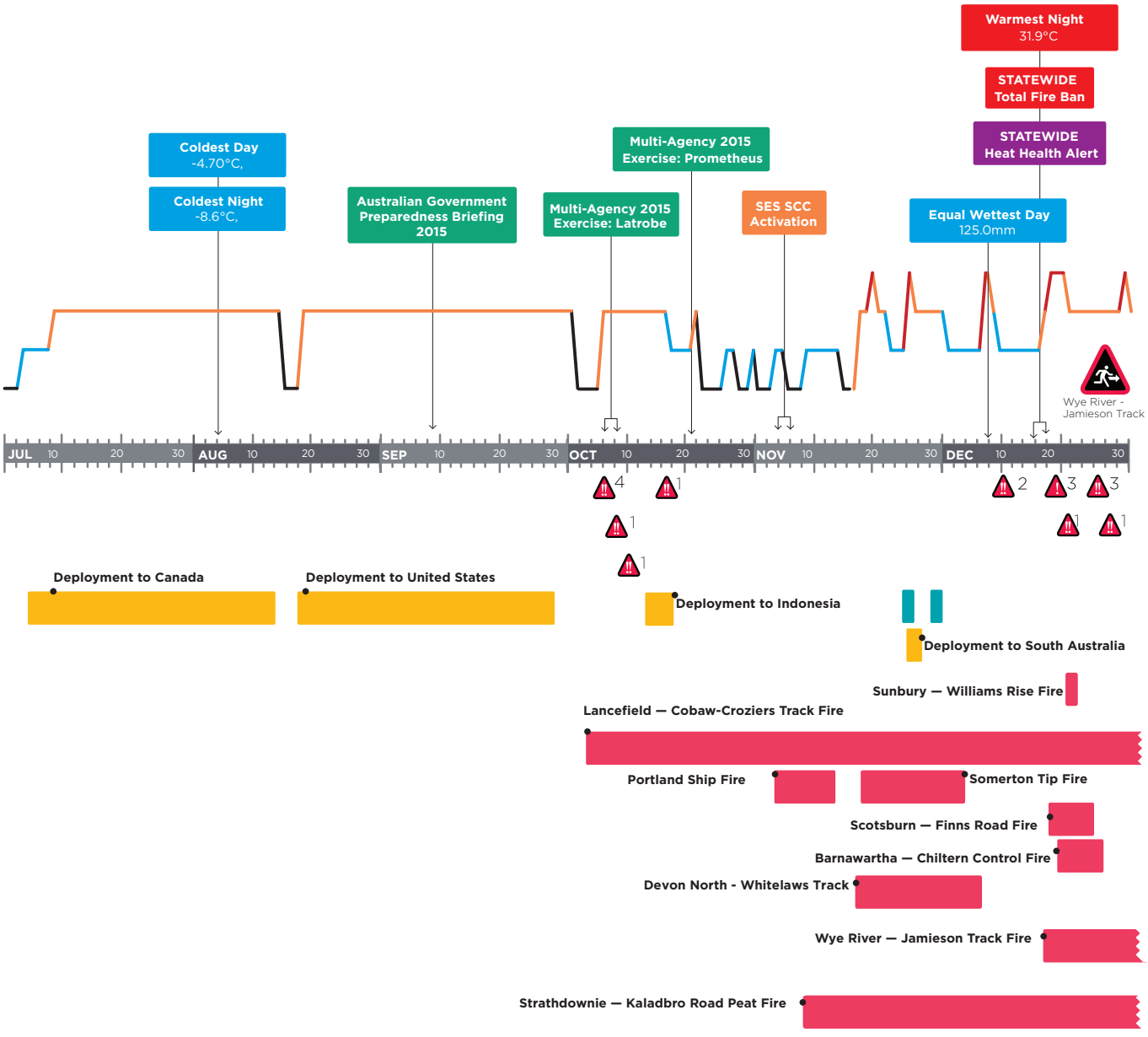
Timeline of Significant Events



State Control Centre Activation Tier

- *Activation Tier 3*
- *Activation Tier 2*
- *Activation Tier 1*

- *Emergency Warning Issued*
- *Recommendation to Evacuate Issued*
- *Multiple Severe Weather/Storm Events*
- *Fires*
- *Other incidents/events*
- *Deployments*

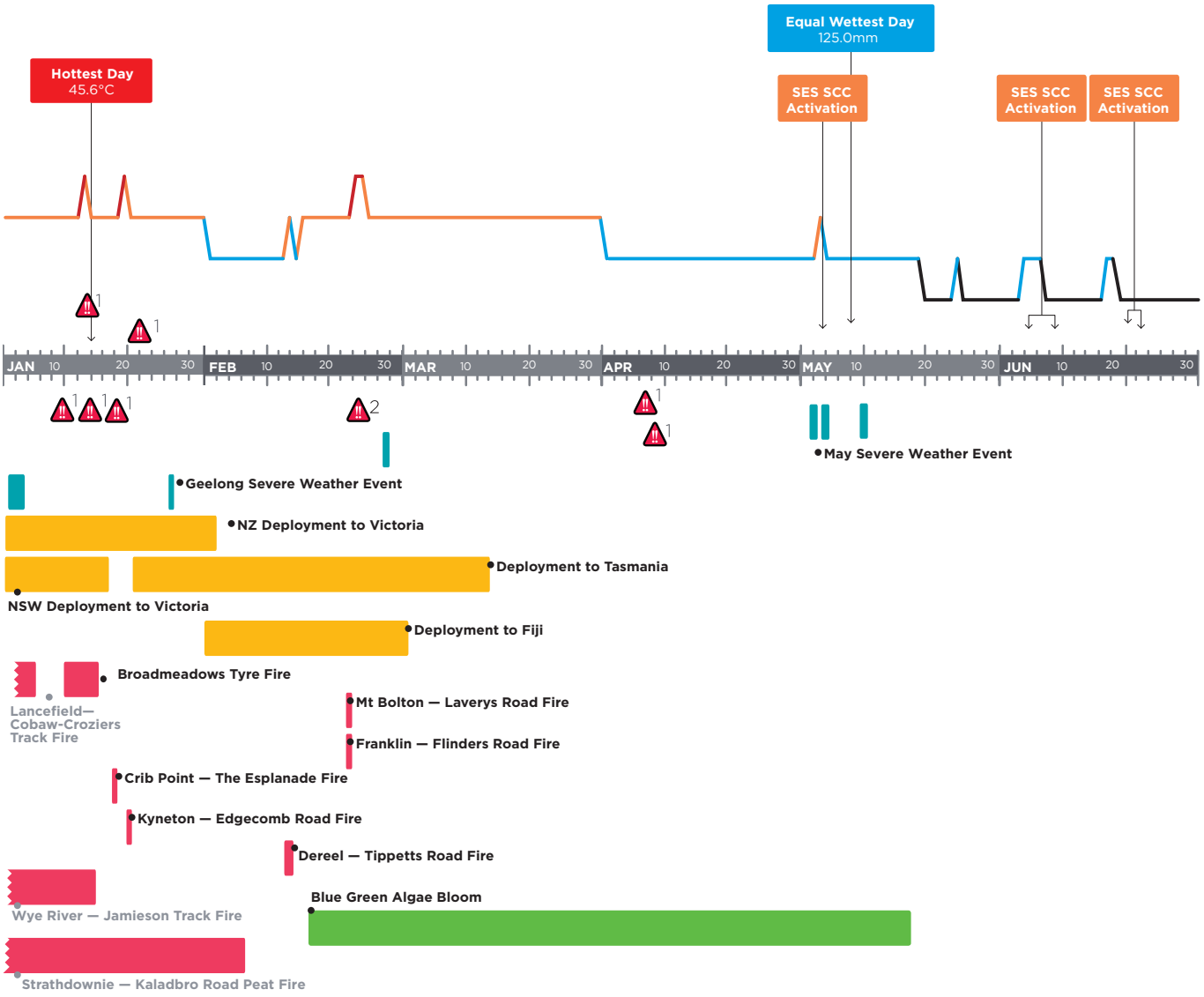


Figure 2: A timeline depicting important/key dates for emergency management over the 2015-16 financial year. This includes significant weather events, significant incidents, operational deployments, SCC activations, multi-agency exercises, significant community warnings and statewide alerts.

Weather and Climate

Strathdownie – Kaladbro Road Peat Fire, November 2015

> "Continuing the trend from last year, the overall mean temperatures for spring 2015 was 2.05 °C above the long-term average, the highest in 106 years of observations."

Seasonal Climate Summary

Winter 2015

This winter saw the coolest winter days recorded since 1989. Daytime temperatures were generally slightly below average. Overnight temperatures ranged from above average along the West Coast to below average through the middle of the State and parts of the Wimmera. The statewide mean maximum temperature was 0.37 °C below the long-term average, the lowest since 1989, and while minimum temperatures were closer to average, they were still 0.16 °C below normal. The overall statewide mean temperature for winter was the lowest since 1997 (0.26 °C below the long-term average).

Victoria experienced below average to very much below average winter rainfall across much of the State, with some areas recording its lowest average winter rainfall since 2006. Above average rainfall in July and a wet finish to August helped Gippsland record average to above-average rainfall for winter. Contrary to this, most of the rest of the State was below average or very much below average. Several sites had their lowest winter rainfall total since 1982.

Significant snowfalls arrived later than usual with a sequence of strong cold fronts starting on 11 July bringing widespread snow across eastern Australia. Subsequent regular snowfalls resulted in moderate snow depths in Alpine areas during the latter part of the season.

Spring 2015

Continuing the trend from last year, the overall mean temperatures for spring 2015 was 2.05 °C above the long-term average, the highest in 106 years of observations. In addition to this, the average maximum temperatures for Victoria were their second highest on record at 2.99 °C above normal. This caused Victorians to experience conditions more typical of summer in the first half of October. With the exception of a particular cold night at the start of spring, average minimum temperatures for Victoria as a whole were 1.11 °C above normal and therefore the 5th warmest on record.

Overall spring rainfall for Victoria was 47% below average, making it the State's 6th driest spring on record. Parts of West Gippsland and around Cape Otway had their driest spring on record. Most of the rest of the State observed

below average to very much below average rainfall during spring, except for patches of average rainfall in East Gippsland, the Mallee and in the north around Shepparton. Murrayville was the only long-term Victorian site that recorded above-average rainfall for spring, recording Victoria's wettest spring day with 82mm on 5 November.

Summer 2015-16

The summer season began with the hottest December on record. Both daytime and night time temperatures were above average across large parts of the State during January and February, resulting in Victoria experiencing its third warmest summer on record with a mean of 1.73 °C above the average. Mildura recorded both the hottest day at 45.6°C and the warmest night of 31.9°C.

Overall rainfall was near average, ranging from below average in coastal and central districts and in the northwest of the State, to above average in isolated patches of the north and east. Patches of above average rainfall were experienced in the north and east, with Wilsons Promontory and Carboor each recording their highest summer daily rainfall in 100 years' worth of rainfall data.

Autumn 2016

Victoria had its warmest autumn on record, with mean temperatures 1.88 °C above average, and all areas recording the highest mean autumn temperatures on record. Highest on record maximum temperatures were observed in the North Mallee, parts of the Wimmera and Central districts, and more of Gippsland. Night time temperatures were no exception, with the State experiencing the second warmest average minimum night temperatures since 1974, at 1.91 °C above average.

Dereel – Tippetts Road Fire, February 2016

This unusual late-season warmth extended well into May. Rainfall totals for autumn were near average across the State after useful rain in May made up for a drier than usual April. In particular, Mount Hotham saw a very wet season, recording both its highest autumn daily rainfall on record and its highest total autumn rainfall on record. This autumn continued a run of five consecutive seasons of drier than average conditions in the State.

Figure 3 provides a visual representation of the seasonal climate summaries of rainfall totals and minimum temperatures.

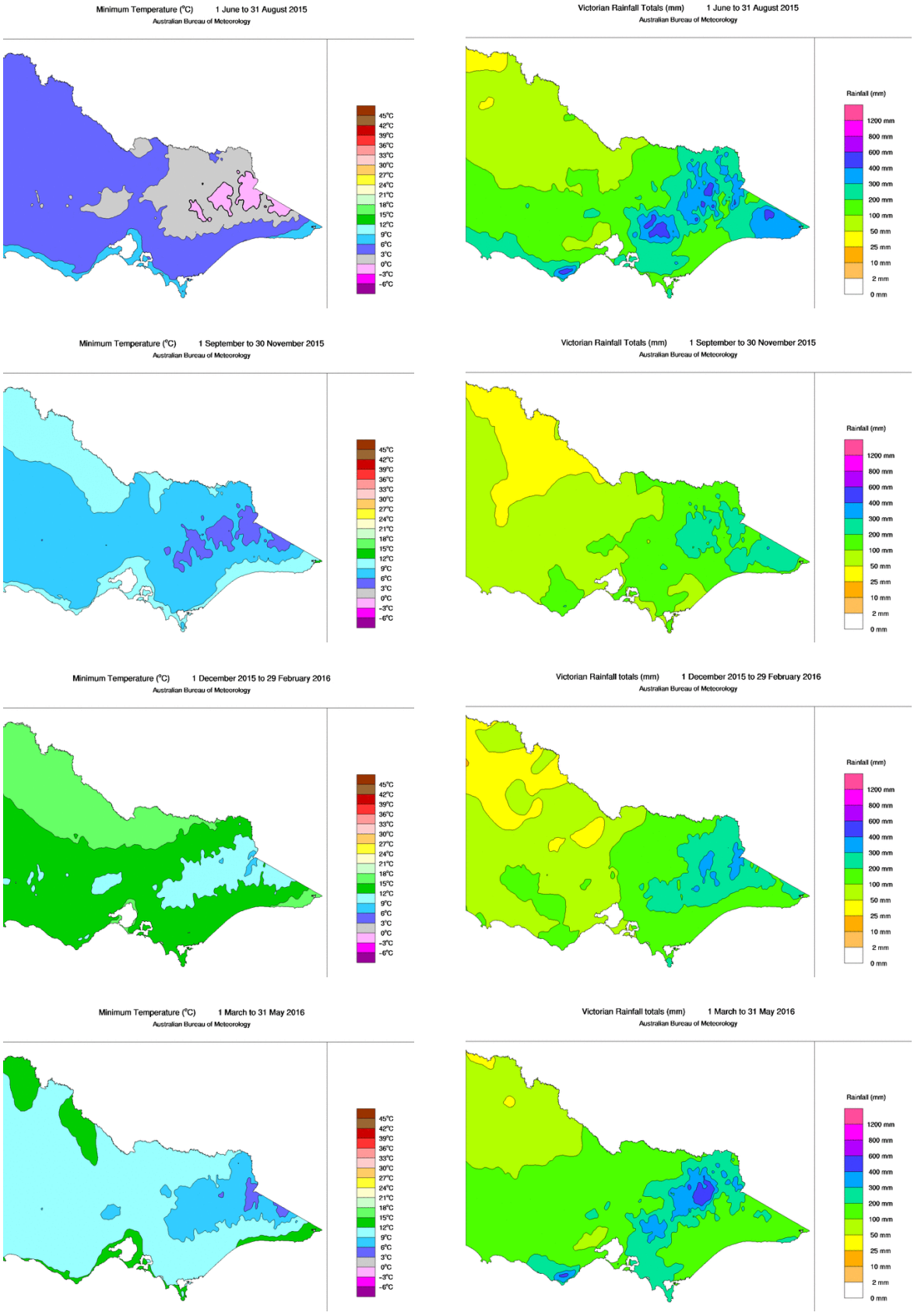


Figure 3: Rainfall Totals and Minimum Temperatures by Season

Summer Season Outlook

The Southern Australia Seasonal Bushfire Outlook 2015-16, originally released in September with an update released in November 2015, indicated the following prognosis for the 2015-16 Fire Danger Period (FDP), see figure 4:

"Large areas of southern Australia, especially along the east and west coasts extending inland, face above normal fire potential for the 2015-2016 fire season, despite many fires in some parts of the country over the last 12 months. The above normal forecast is mostly due to a strengthening El Nino over the Pacific Ocean, currently tracking as one of the strongest on record, but is made more complex this year by the influence of warmer sea temperatures in the Indian Ocean.

There have also been significantly below average rainfalls over the last decade across almost all of eastern Australia, the west coast and Tasmania. Such underlying dry conditions mean that any surface moisture from recent rains will quickly decline once temperatures begin to warm. 2014 was Australia's third warmest year since records began and, when combined with such long term rainfall deficiencies, an early start to the bushfire season is likely in many areas."

The Victorian Regional Summary included a more detailed prediction:

"Key indicators of above normal fire potential are currently in place. They include an extended rainfall deficit, drying conditions in eastern central Australia that affect north westerly air patterns, and rain that dampens but doesn't soak soil profiles. Drier conditions in key areas of the continent that affect Victoria's weather, when combined with the normal course of spring warming and increasing day length, lead to a strong likelihood that the season will begin early"

"Historically, the August to October period is the wettest time of the year in Victoria, and it sets the scene for fuel growth and fuel conditions over the summer. Current climatic signals indicate a slightly better than average chance of above average rainfall and below average daily maximum temperatures across most of the state, leading to an improved outlook for grass growth. However, given the long-term rainfall deficits, significant rain would be required over the spring period to alter the outlook for an above normal fire potential for most of Victoria."

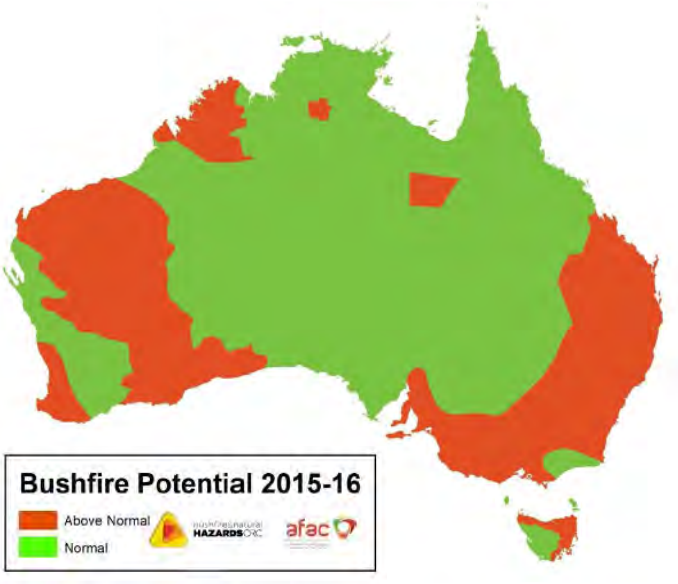


Figure 4: Bushfire outlook for Southern Australia 2015-16

Readiness

Training

A range of training occurred at the local, regional and state level in preparation for the summer emergency season. The SCC conducted a range of training activities to support the management of the SCC over the summer emergency season which saw 298 personnel attend training for SCC functional roles, incident management roles and operational systems, including Emergency Management Common Operating Picture (EM-COP) Training. Additionally, SCC inductions had 140 attendees for the 2015-16 Financial year, including 17 Emergency Management Liaison Officers (EMLOs) from the energy sector.

The Multi-Agency Level 3 (L3) Accreditation Panel recommended 35 individuals for their Level 3 Accreditations (81.4% success rate). These individuals represented a range of emergency services agencies and Incident Management Team (IMT) roles such as Planning, Operations, Public Information, Logistics and Incident Controller. This number of recommendations is significantly higher than the 2014-15 L3 Accreditation recommendations, which saw only 64.4% of individuals successfully recommended for L3 IMT roles.

Briefings and Exercises

A range of briefings were held at different levels across the state in preparation for the summer season, including:

- 2015-16 Australian Government Preparedness Briefing- annual operational pre-season briefing hosted by the Emergency Management Australia division of the Crisis Coordination Centre in Canberra. 97 personnel, representing 43 different functional roles, attended from 29 Victorian agencies and departments.
- SCC Update Briefing – two briefings provided an update on arrangements and procedures of the SCC attended by approximately 100 personnel at each briefing from a multitude of emergency services agencies and departments.
- State Emergency Management Team (SEMT) Awareness Briefings - series of six awareness briefings provided SEMT members (an average of 45 attendees per session) with an update on a variety of topics including:
  - Evacuations and security arrangements
  - Community impact and consequence workshop
  - Impact assessment guidelines
  - Community and Neighbourhood
  - Emergency Management Joint Public Information Committee (EMJPIC) and Media
  - Public Information and Warnings
  - Community Impact and Consequence
  - Governance Arrangements
  - Control and Planning Bills, and
  - An SEMT Recovery Exercise.
- Real Time Evaluation and Monitoring 2015-16 Briefing– the pre-season briefing held on 20 November 2015 provided an opportunity for all monitoring, assurance, evaluation and review personnel to discuss the plan for monitoring and evaluation during the 2015-16 summer emergency season and hear from personnel who had recently been deployed. The briefing was attended by representatives of Strategic Emergency Management Assurance Team (SEMAT), IGEM Field Observations, Real Time Evaluation (RTE) and Real Time Performance Monitoring (RTPM).

Wye River - Jamieson Track Fire, December 2015

"(The Regional leadership Forum) provided an opportunity to reinforce the expectations and message regarding the updated arrangements and engage Regional Leaders to understand their issues, gain feedback and provide an opportunity to share experiences"

- Public Information Briefings – range of briefings for all emergency broadcasters and public information personnel covering updates and developments in operational process, procedure and systems relating to public information. Each region (8) held at least one briefing. Highlights of these briefings included:
  - Variety of speakers, presentation and delivery formats
  - Amount and relevance of topics covered
  - Inclusion of scenario workshop
  - Functional role discussion session
- Regional Preseason Briefings - 17 Regional Briefings were held across the State to provide incident management personnel with updated information on operational arrangements, opportunity to exercise a scenario, and information relevant to their functional role. Over 1,000 personnel from a range of emergency management agencies, departments and organisations participated in the briefings.
- Regional Control Team (RCT) and Regional Emergency Management Team (REMT) Forums – eight forums provided senior EMV staff and each Regional Control Team and Emergency Management Team with the opportunity to discuss mutual expectations, resolve relevant issues and confirm arrangements, and to exercise the planning arrangements.
- Regional Leadership Forum – provided an opportunity to reinforce the expectations and message regarding the updated arrangements and engage Regional Leaders to understand their issues, gain feedback and provide an opportunity to share experiences. It was attended by Regional Controllers, Regional Emergency Response Coordinators, State Control Team, DHHS Regional Recovery Coordinators and State Relief and Recovery Managers.
- State Crisis and Resilience Council (SCRC) Preparedness Exercise – a discussion exercise to explore the whole of government coordination role for SCRC in a time of crisis was held at the State Crisis Centre.

- Exercise Prometheus – A panel based discussion exercise based on the hypothetical scenario of a commercial passenger aircraft crash. 200 attendees representing 40 agencies explored potential response and recovery actions by Victorian emergency management and services to a large scale incident in the metropolitan area.

Aviation

The Victorian Fire and Emergency Aviation Fleet for 2015-16 comprised 47 aircraft (an increase of one from the 2014-15 fleet). As in previous years, more than 100 additional firefighting aircraft were available on a "call when needed" basis. New Type 2 (medium) and Type 3 (light) helicopter contracts were negotiated in readiness for the summer emergency season, which resulted in upgrades of some aircraft from the previous season and additional Type 2 helicopters based at Moorabbin and Mangalore airports.

Large Air Tankers (LATs) continued to be used in the Victorian Fire and Emergency Aviation fleet. These LATS were procured to fill a capability gap identified in relation to the delivery of large volumes (greater than 8,000 litres) of fire suppressant or retardant. The National Aerial Firefighting Centre (NAFC) procured the services of two LATs, and an Air Attack Supervision (AAS) aircraft on behalf of Victoria. A third LAT and a Very Large Air Tanker (VLAT) joined the Victorian fleet in January for a five week period after concluding their contracts in New South Wales. These larger aircraft were used both in Victoria and in support of the Tasmanian fires.

A range of preparedness activities were conducted to support aviation operations, including:

- Aviation Consultation - five multi agency regional workshops to review and revise the Fire and Emergency Aviation Capability Management Framework attended by more than 90 aviation specialists from more than 7 agencies and departments.

Broadmeadows Tyre Fire, January 2016

- Aviation Pre-season Briefings - pre-season aviation briefing reinforcing safety requirements, aviation operations, fleet profile (combination of helicopter and fixed wing aircraft) and the expansion of predetermined dispatch (PDD) attended by approximately 100 responder agency representatives and aviation contractors.

- Seven regional multi agency aviation briefings were also conducted outlining safety, fleet composition, aggregated response, State Airdesk, retardant, airbases, the 2015-16 outlook and a review of 2014-15 operations and occurrences.

- LATs Training – series of familiarisation and training days (in addition to project update circulars) supporting the introduction of LATs into the Victorian Fire and Emergency Aviation fleet attended by aviation specialists from 9 fire agencies from Victoria, Queensland, New South Wales and Australian Capital Territory. Interstate briefings were also delivered to South Australian and New South Wales.

- Pre-Determined Dispatch (PDD) Briefings – more than 20 regional briefings to provide information about PDD to inform pilots, aircraft operators and agencies about changes to operating procedures and expansion from 12 to 16 locations.

- A sector wide Remotely Piloted Aircraft System (RPAS) project commenced considering application and usage of these types of equipment in emergency management. This builds on the work already being undertaken by individual agencies with a more holistic and joined up approach in response to enhancements and progressivedevelopments in this technology.

Doctrine

Victoria's emergency management sector created or updated a wide range of state level doctrine over the 2015-16 financial year, including the:

- State Emergency Response Plan
- State Emergency Relief and Recovery Plan
- State Smoke Framework, and associated documents
- Code Red Determination Processes and Communications Plan
- Victorian Bushfire Handbook – edition 5
- Joint Standard Operating Procedures (JSOPs)
- SCC Procedures and Work Instructions
- Safety Fact Sheets

EMV, in conjunction with the agencies, released a number of learning products to communicate information based on the lessons from the 2014-15 summer emergency season. These included case studies and insights, which were disseminated and published on EM-COP.

Victoria's Deployment to United States, August 2015

Operational Activity

Across the 2015-16 financial year, the operational activity of responder agencies (CFA, DELWP, MFB and VICSES) saw an increase in the number of emergency incidents compared to 2014-15, responding to a total of 125,925 incidents. This was an increase to more than 7,500 emergency incidents every month (including major emergencies). Similarly to the 2014-15 financial year, December 2015 was the busiest month with over 13,000 incidents occurring. While still over 7,500 incidents, August 2016 had the lowest number, as shown in figure 5.

Each agency had reasonably consistent number of incidents each month, with the fire agencies (CFA, MFB and DELWP) experiencing a slight increase in incidents over the summer emergency season. VICSES incidents fluctuated throughout the year, which was mainly driven by the weather observed in the state. Of interest, VICSES experienced almost double the average amount of monthly incidents in May 2016.

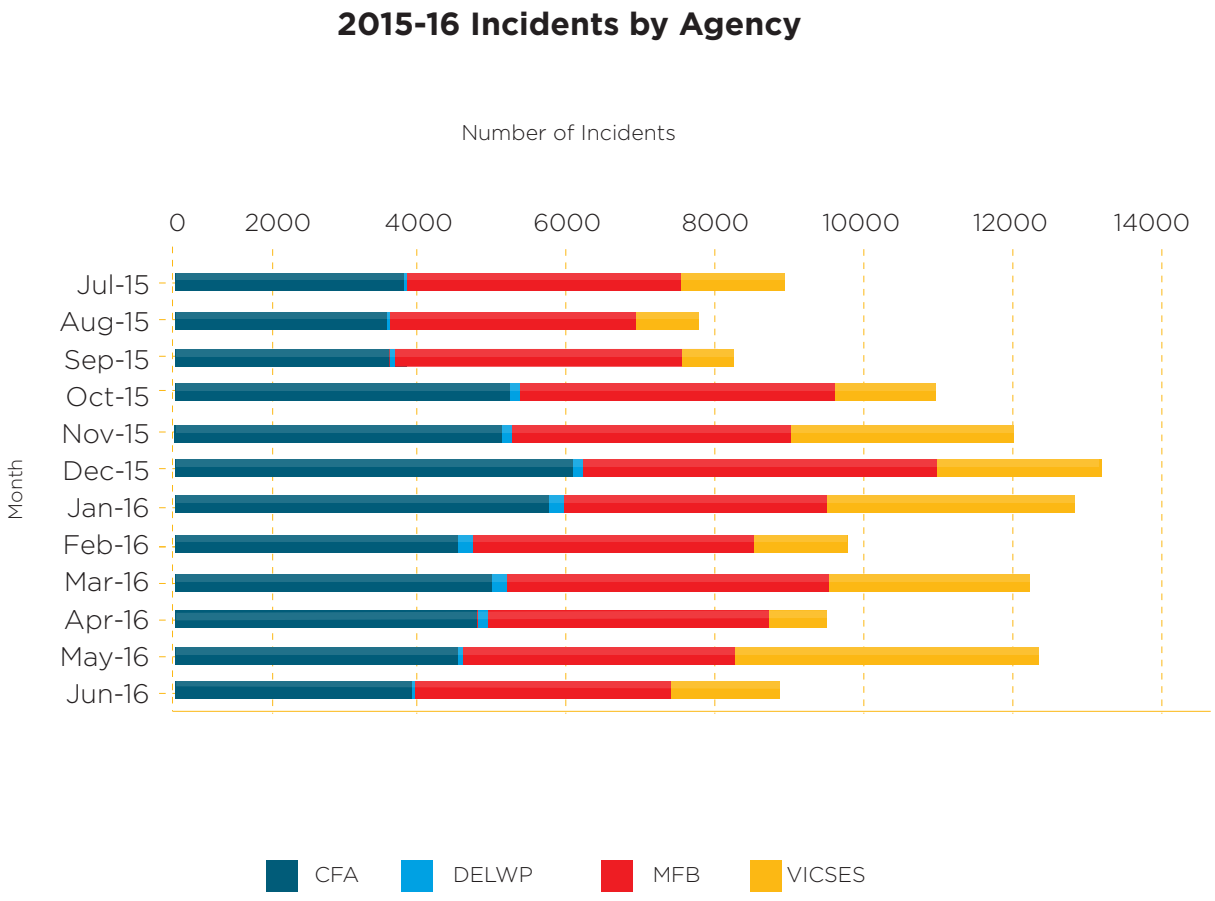


Figure 5: 2015-16 Operational activity by responder agency

Figure 6 displays the total number incidents that occurred over the 2015-16 financial year by type. The most common type of operational activity was false alarms and false calls (including those with good intent) with 32,439 incidents recorded, followed closely by motor vehicle accidents, rescue and emergency medical service calls with over 26,000 incidents. Even though May 2016 was the busiest for VICSES (primary responder to flood events), the highest amount of flood incidents occurred in January 2016.

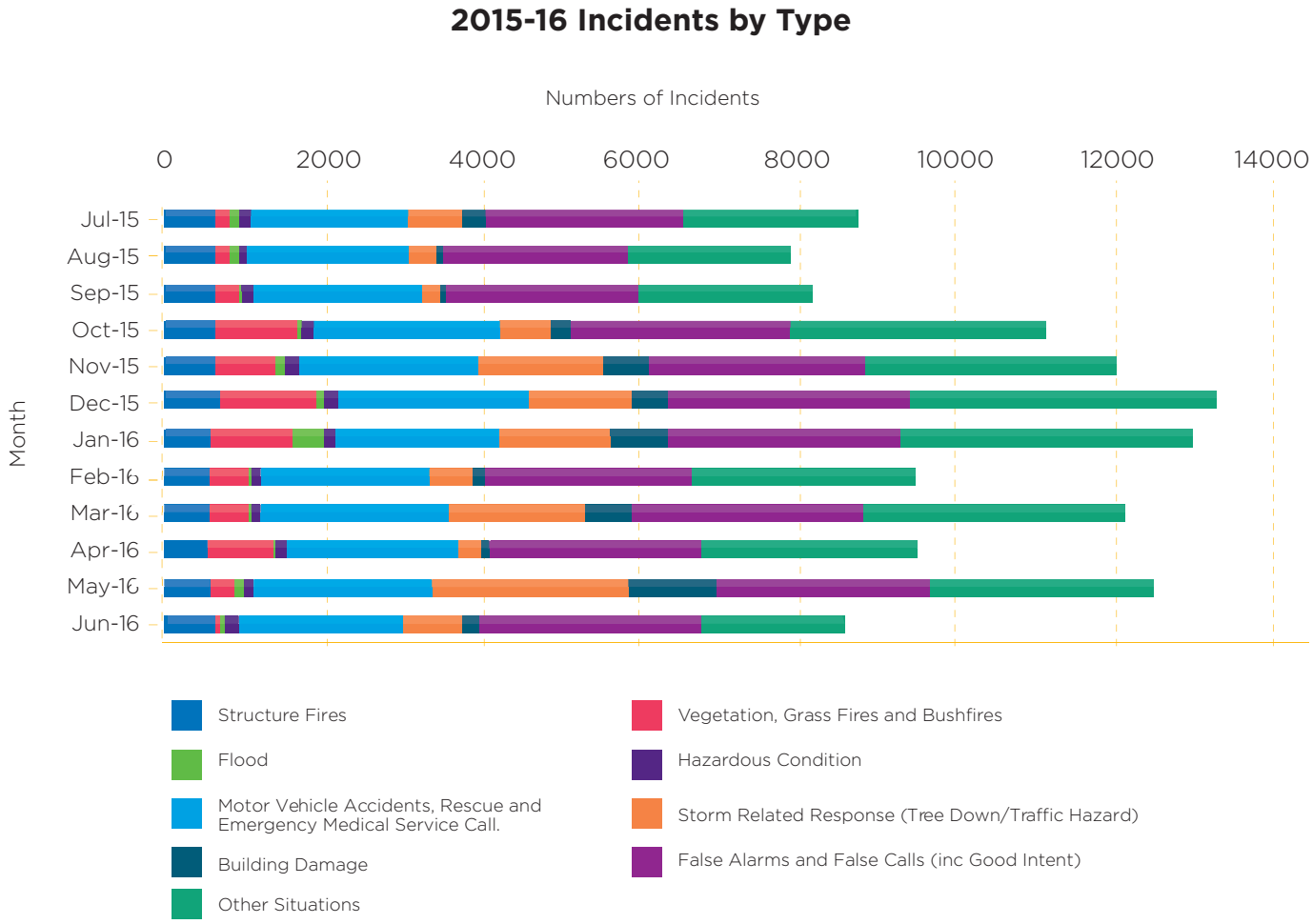


Figure 6: 2015-16 Operational activity by incident type

Fire Danger Ratings

Fire Danger Ratings (FDR) are a prediction of fire behaviour by the Bureau of Meteorology (BoM). Based on environmental and weather conditions, FDR predicts how hard it would be to put out a fire once it starts. The higher the rating the more dangerous the conditions.

During the 2015-16 summer emergency season there were 74 Severe FDRs (recorded over 23 days) and 18 Extreme FDRs (recorded over just seven days) across the nine Weather Districts. Compared to last year, this is a 52.6% increase in the number of Severe FDRs and a 38.4% increase in the number of Extreme FDRs declared, see figure 7.

Some of these recordings were experienced earlier than in previous years, with the first Extreme FDR for the Mallee and North Central occurring on 6 October 2015.

Figure 7 indicates a hotter and longer 2015-16 summer emergency season than what was experienced in 2014-15.

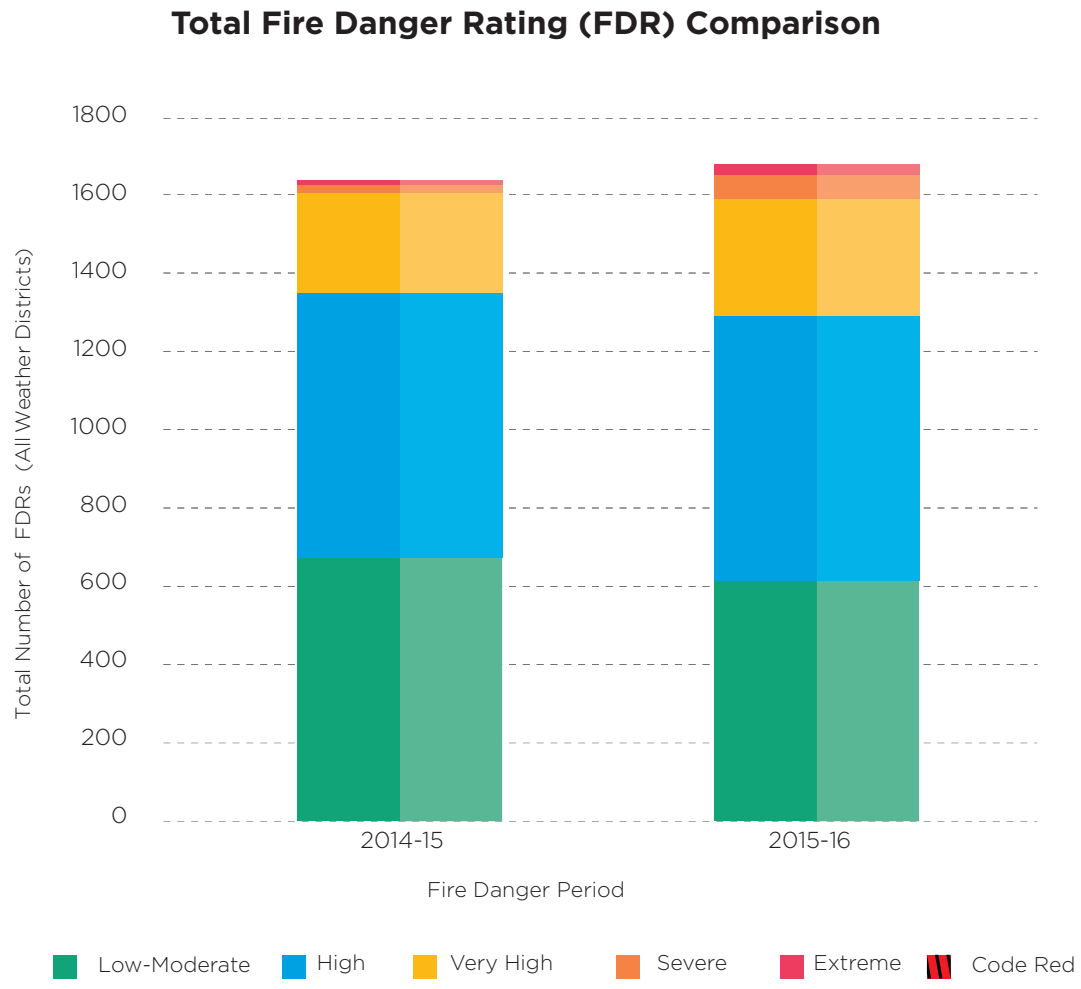


Figure 7: The comparison of 2014-15 and 2015-16 Fire Danger Ratings (FDRs) for all weather districts.

There were no Code Red determinations during this summer emergency season, and even with figures 7 and 8 showing the majority of FDRs as Low - Moderate and High ratings (the same as 2014-15), there's a significant increase in Severe FDRs and Extreme FDRs, which indicates a hotter and longer summer emergency season for 2015-16.

Fire Danger Ratings (FDR)

Period 1 Oct 2015 to 30 April 2016

	Mallee	Wimmera	Northern Country	North Central	North East	South West	Central	West+ South Gippsland	East Gippsland
Code Red	0	0	0	0	0	0	0	0	0
Extreme	5	4	1	4	0	2	2	0	0
Severe	13	9	10	11	6	10	9	5	1
Very High	35	34	31	58	44	41	32	15	11
High	92	84	71	79	96	81	76	57	37
Low-Moderate	42	56	74	35	41	53	68	110	138

Figure 8: Forecast Fire Danger Ratings (FDR) by Weather District for the 2015-2016 summer emergency season

Total Fire Bans

A Total Fire Ban (TFB) is declared by delegation of the CFA Chief Officer on days when fires are likely to spread rapidly and could be difficult to control, under Section 40 of the CFA Act 1958. On days of TFB, no fire can be lit or remain alight in the open air, unless an appropriate permit has been issued.

The 2015-16 summer emergency season, had 22 days declared as TFBs for one or more weather districts (see figure 9), almost double the 2014-15 number of TFBs. A statewide TFB declaration that affected all weather districts only occurred twice in the 2015-16 summer emergency season, on the 19 and 20 December 2015. The Mallee weather district received the most declarations followed by Wimmera and North Central, a similar outcome to the 2014-15 season.

Continuing the comparison to last year, 2015-16 saw a dramatic increase in situations where multiple Weather Districts were declared TFBs on the same day. This occurred 18 times this year, compared with 8 times in 2014-15. This indicates that the State was hotter in more districts and for a longer period compared to the 2014-15 summer emergency season.

Interestingly, of the 19 significant events during the 2015-16 summer emergency season, 13 occurred on a day where one or more weather districts declared a TFB.

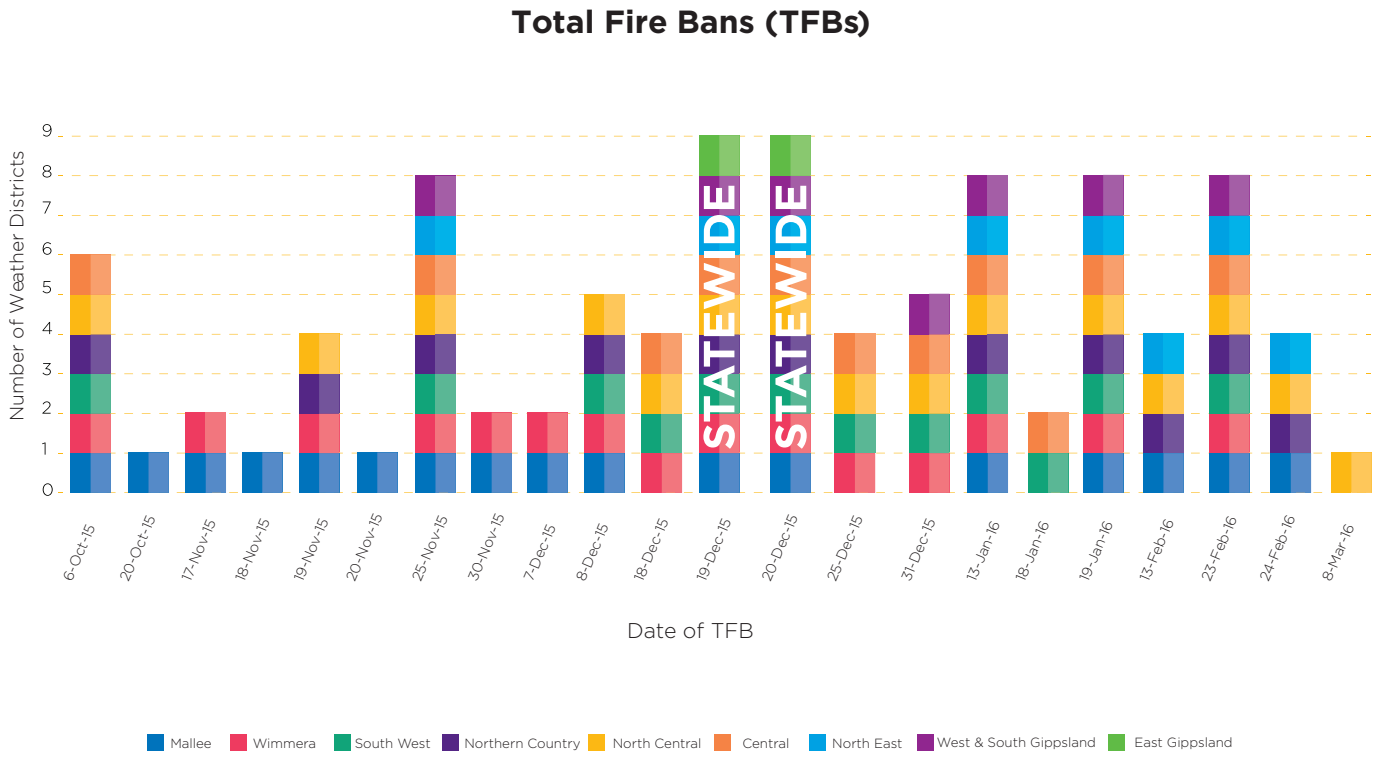


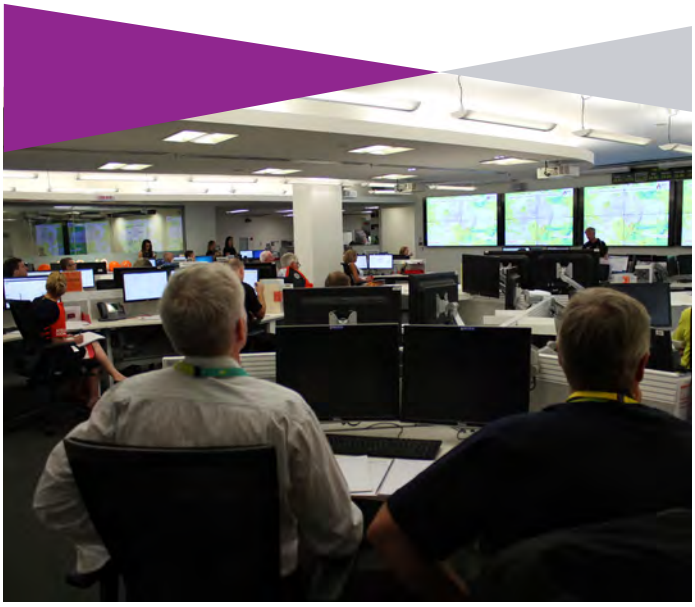
Figure 9: Total Fire Bans (TFBs) for the 2015-16 summer emergency season

FireReady Application and VicEmergency Website

Key statistics:

- There were more than 1.1 million FireReady App registrations.
- More than 2.1 million Victorians used the VicEmergency website.
- The VicEmergency website had more than 18.9 million page views.

The VicEmergency website and the FireReady App evolved during the 2015/16 financial year and will continue to evolve. Improvements made during the 2015/16 financial year included:



State Control Centre

- The map view for the Prepare and Get Ready tab was introduced to allow people to see the history of floods and fires in their area. This tab also displays Fire Danger Ratings.
- The first local view page was created that provided the community with targeted information about the Blue Green Algae Bloom in the Murray River.
- Minor updates to the FireReady App were made. During the 2016/17 financial year the FireReady App will be launched as the VicEmergency App so that warnings for all hazards are published to an app.

Triple Zero (000)

Triple Zero (000) received over 2.5 million calls for assistance this financial year, a slight increase from last year (see figure 10). These calls are then dispatched to the following emergency services:

- Ambulance Emergency (ERTCOMM)
- Ambulance Non-Emergency / Patient Transfer (NETCOMM)
- CFA
- MFB
- VICPOL
- VICSES

ESTA provides the critical link between the Victorian community and the State's emergency services agencies. The integration of emergency services communications within ESTA is unique in Australia and rare worldwide. ESTA supports data transactions on the Mobile Data Network (MDN), provides operational communication support to emergency services via the Metropolitan Mobile Radio Service (MMR) and delivers state wide messages to emergency services via the Emergency Alert System (EAS). However, it is best known to the Australian public as Triple Zero (000).

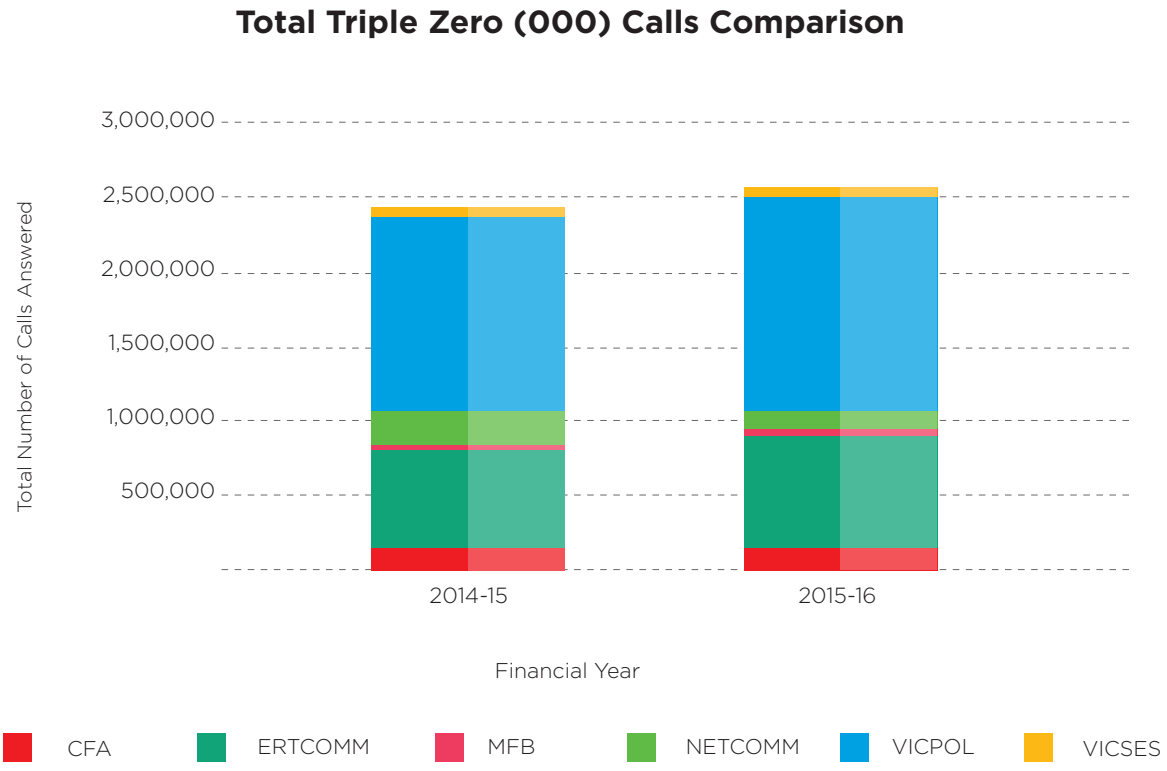


Figure 10: The comparison of 2014-15 and 2015-16 total number of ESTA Triple Zero (000) calls answered for emergency services agencies

CFA, MFB, VICPOL, and VICSES had similar numbers over both years; however VICPOL received approximately 200,000 more calls in 2015-16. Breaking down this figure further into monthly data (see figure 11) shows July 2015 was the quietest month for Triple Zero (000) calls, whilst October 2015 was the busiest month.

CFA data includes calls to the burn-off line, thus the increase in numbers during September to November ahead of the summer emergency season and in April and May once the fire restrictions were lifted. VICSES data includes calls made to 132 500 (the VICSES storm number).

Interestingly, there was a correlation between the seasons and the types of Triple Zero (000) calls received, with both Ambulance services (ERTCOMM and NETCOMM) experiencing the most calls for assistance in winter, CFA and VICSES in Autumn (most likely due to the end of the summer emergency season and therefore an increase in burn offs) and MFB and VICPOL experiencing the most calls in Summer.

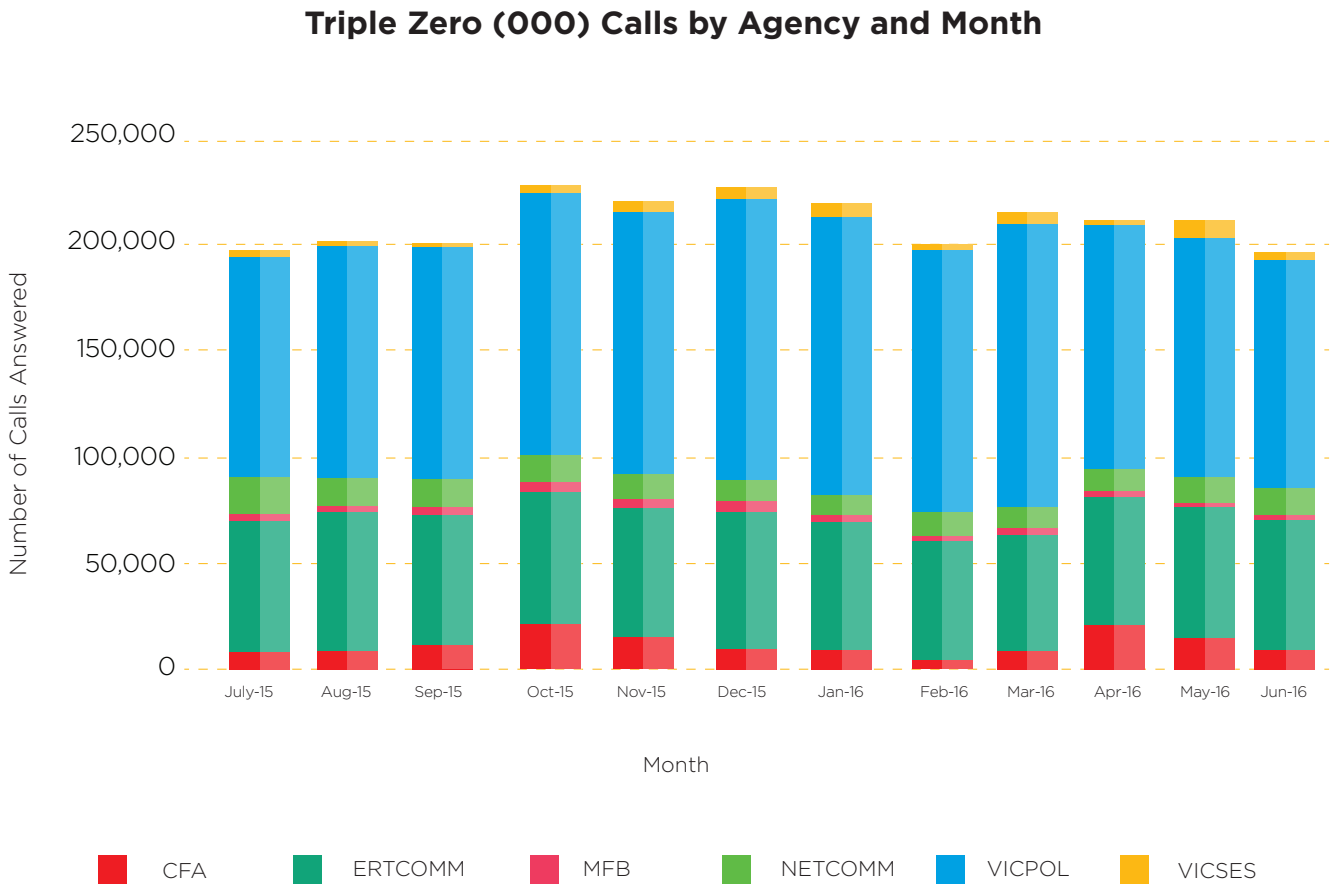


Figure 11: The number of calls to ESTA Triple Zero by agency and per month of the 2015-16 Financial Year

Telstra Outages

During 2015-16 Telstra has experienced five service outages that have directly affected Victorian emergency services and infrastructure:

- 9 February 2016 – Human error caused an outage that lasted for approximately three hours and affected all Telstra customers using the mobile voice and data network (3G and 4G). Congestion on the Telstra Network was caused by an increase in traffic as a result of the outage.
- 17 March 2016 – Mainly 4G voice calls (and intermittently 3G voice calls) were directly affected by this disruption, which lasted for almost two hours. 2G calls and SMS were not affected; however data services were experiencing some level of impact. This outage resulted in significant impact to public transport rail network.
- 22 March 2016 - The disruption affected a random number of services' inbound and outbound calls to fixed and mobile phone networks. The outage lasted for approximately 45 minutes and affected some customers using 2G, 3G and 4G networks.
- 3 May 2016 – This outage affected Triple Zero (000) calls, 132 500 (VICSES storm number) calls, mobile, landline and data signals. This also resulted in VICPOL local stations being directly impacted. Although some of these issues were resolved after approximately an hour, the issues remained intermittent throughout that afternoon.
- 30 June 2016 – Lasting for approximately eight hours, this outage affected all Telstra data services, the Emergency Alert system and DELWP emergency management systems such as FireWeb, eMap and the State Resource Request System.

Heat Health

DHHS reviewed the heat health arrangements for the 2015-16 summer, resulting in the following heat health planning and preparedness activities:

- Reviewing and updating heat plans;
- A multi-agency heat health forum held in September 2015;
- State-wide summer preparedness forums;
- Release of the updated Heat Health Plan for Victoria; and
- Launching the Survive the Heat campaign

These activities were pertinent to the 2015-16 summer period, which saw 10 days where Heat Health Alerts were issued, see figure 12, compared to only four days during 2014-2015. Only one state-wide Heat Health Alert was issued on 19 December 2015, which was also a TFB for the entire State. North Central Weather District was issued with nine Heat Health Alerts over the 2015-16 summer period, and South West Weather District received one. As expected, the SCC was activated at Tier 2 (Orange) or higher every day a Heat Health Alert was released.

DHHS introduced the Heat Health Alert Status system during 2015-16. It has been developed to notify local governments, departmental program areas, hospitals, and statewide or major metropolitan health and community service providers of forecast heatwave conditions which are likely to impact on human health.

On business days throughout summer the department will monitor the Bureau of Meteorology seven-day forecast maximum and minimum temperatures. When the heat health temperature threshold is reached in a specific weather forecast district a heat health alert will be issued.

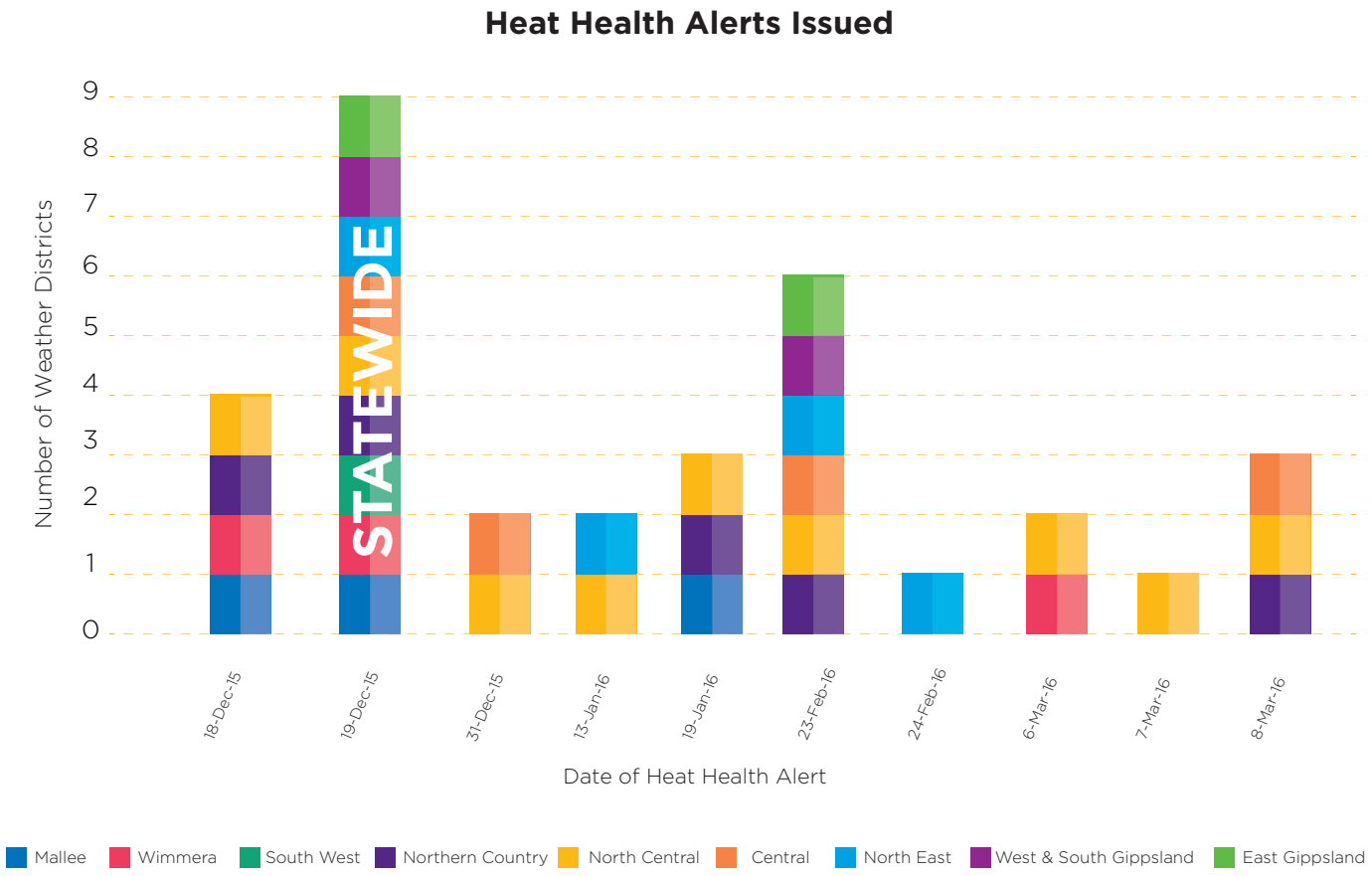


Figure 12: Heat Health Alerts issued by DHHS for the summer emergency season 2015-16

DHHS has identified heat health temperature thresholds for Victoria, above which heat-related illness and mortality increases substantially.

Severe Weather

Of the 309 days that the SCC was activated, eight (8) were VICSES lead agency activations due to severe weather occurring around the State. Of these eight days of SES activations, only one was elevated to Tier 2 (Orange), which coincides with the May weather significant event (see the timeline – figure 2).

Contrary to the running trend of December 2015 being a peak of the year for many alerts, activations and state wide warnings, the majority of SCC severe weather activations occurred at the end of the financial year in June 2016.

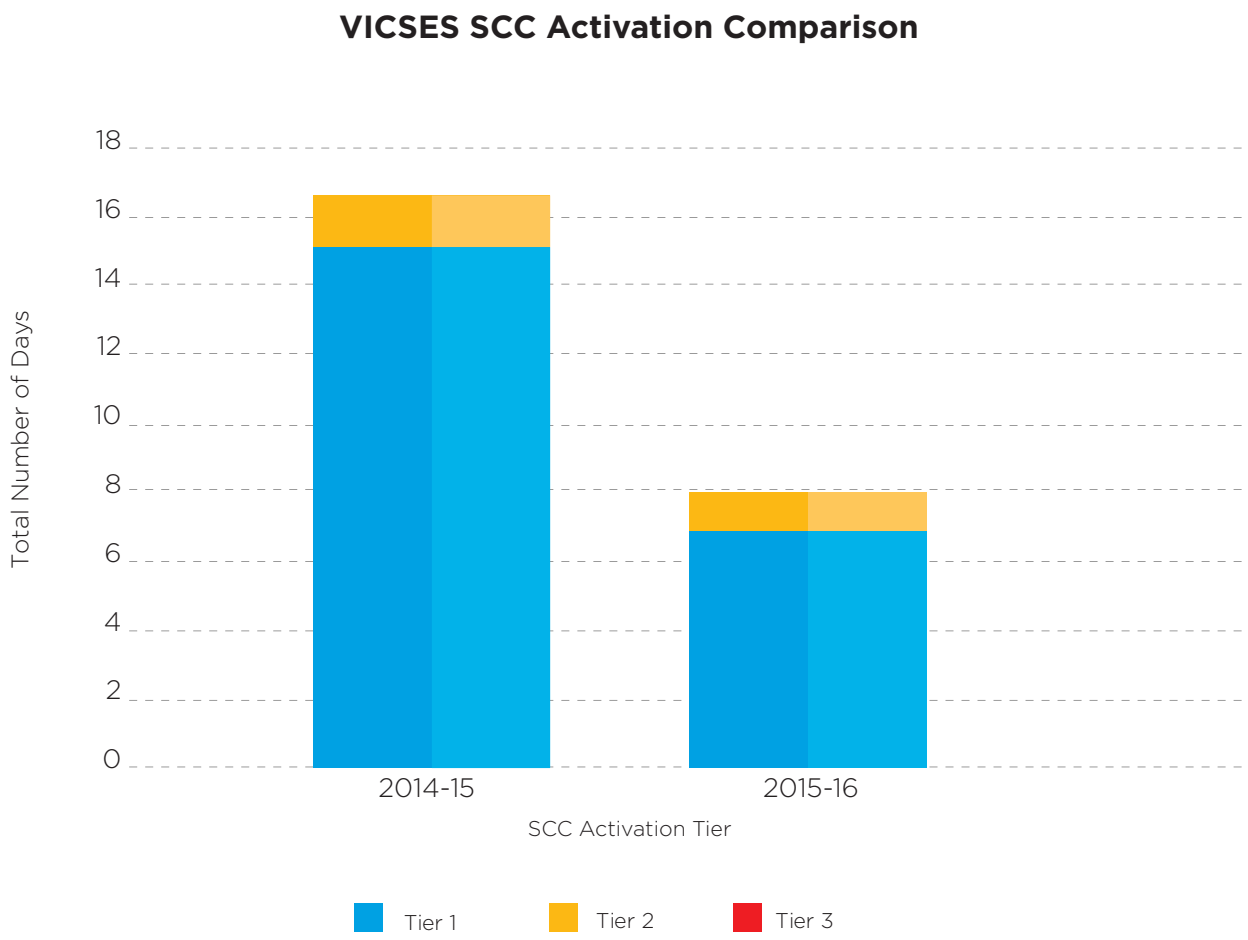


Figure 13: Comparison of the number of days over the last two financial years that the SCC was activated with VICSES as the lead agency

The SCC activations with VICSES as the lead agency over the past two financial years have been very different. 2015-16 saw less than half of the total number of activations compared to 2014-15 (see figure 13). Furthermore, VICSES activated the SCC a total of 22 days as Tier 1 (blue) and three days as Tier 2 (orange).

Warnings and Community Notifications

A range of warnings and community notifications are used to inform the Victorian community during emergencies. The type of community notification issued depends on the urgency, potential impacts of the hazard, and actions that the community need to undertake to protect their lives and property. The warning levels used during 2015-16 were: Advice, Watch and Act/Warning, Emergency Warning, Recommendation to Evacuate and Community Update (see figure 14). Warnings are published to the VicEmergency website and the FireReady App.

Figure 14: 2015-16 Total Warnings and Community Notifications

During the 2015-16 financial year the Victorian community received a total of 2,936 warnings and community notifications, see figure 15.

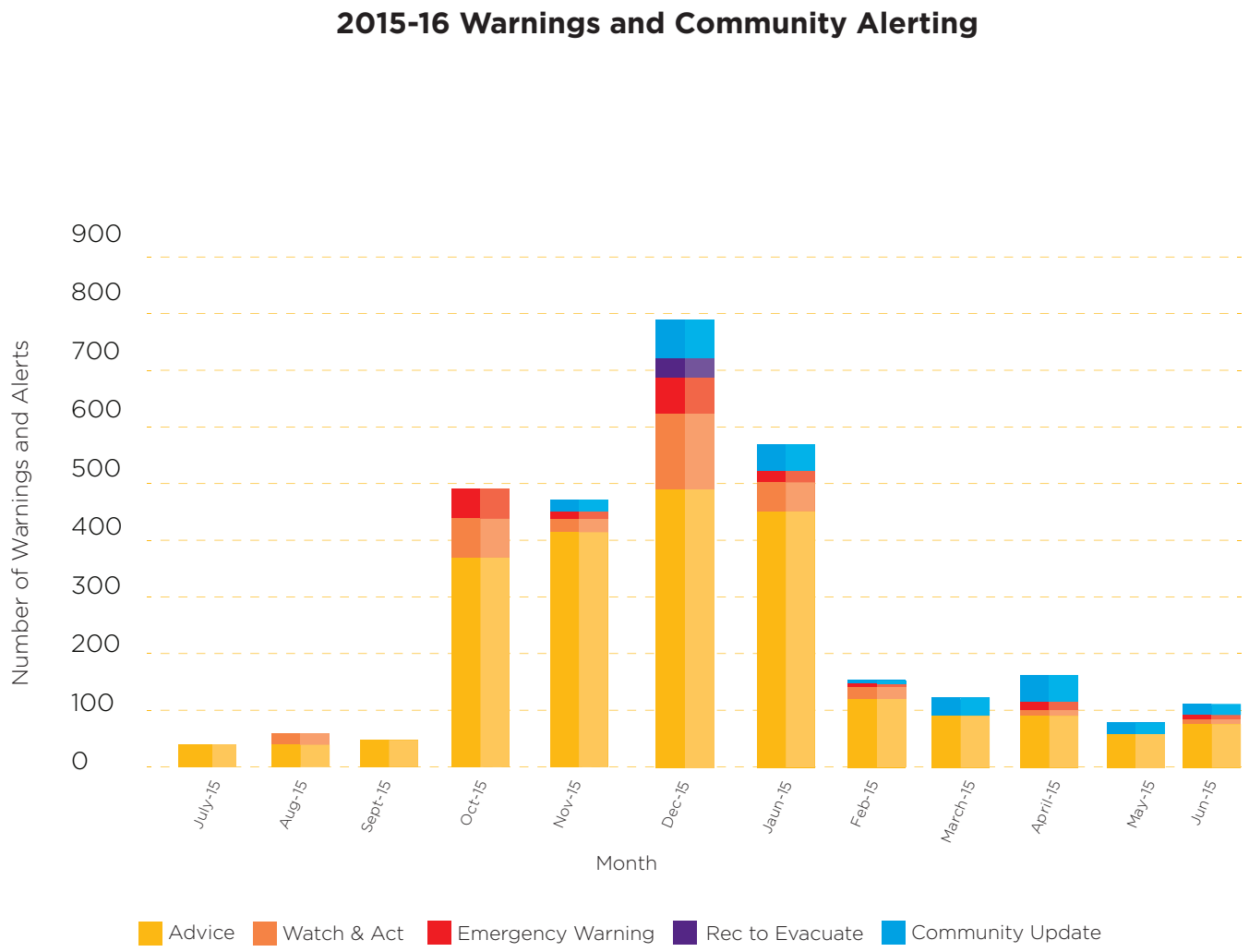


Figure 15: Number of total warnings and community alerts issued over the 2015-16 financial year

There was a 33% increase in the number of warnings and community notifications in 2015-16 when compared to the number of warnings and community notifications issued in 2014-15, see figure 16 and 17.

Figure 16: A comparison of 2014-15 and 2015-16 community warnings and alerts issued

In December 2015 and January 2016 the highest number of warnings issued in a month were published, which is consistent with the trend from last year. An early spike in warm weather was reflected in an increase in the community warnings and notifications issued in October with 394 instances, compared to last October, when only 62 warnings and alerts issued. During the 2015-16 financial year VICSES issued a total of 280 warnings and community notifications, including 223 Advice warnings. There were 479 warnings and community notifications issued for hazardous material and structure fires including 403 Advice warnings.

A range of tools were extensively used to engage with the community:

- Emergency Alert was used to notify the community of an emergency, with more than 94,000 voice and text messages were sent to mobile phones and landlines.
- VicEmergency Twitter account tweeted more than 3,600 tweets and was re-tweeted more than 7,000 times. The VicEmergency Twitter account has 6,400 followers with the majority (62%) being male who are 25-34 years old.
- VicEmergency Facebook page generated more than 119,000 reactions or comments and more than 27,000 shares. The VicEmergency Facebook page has more than 28,000 fans with the majority (64%) being women who are between the ages of 35-44.

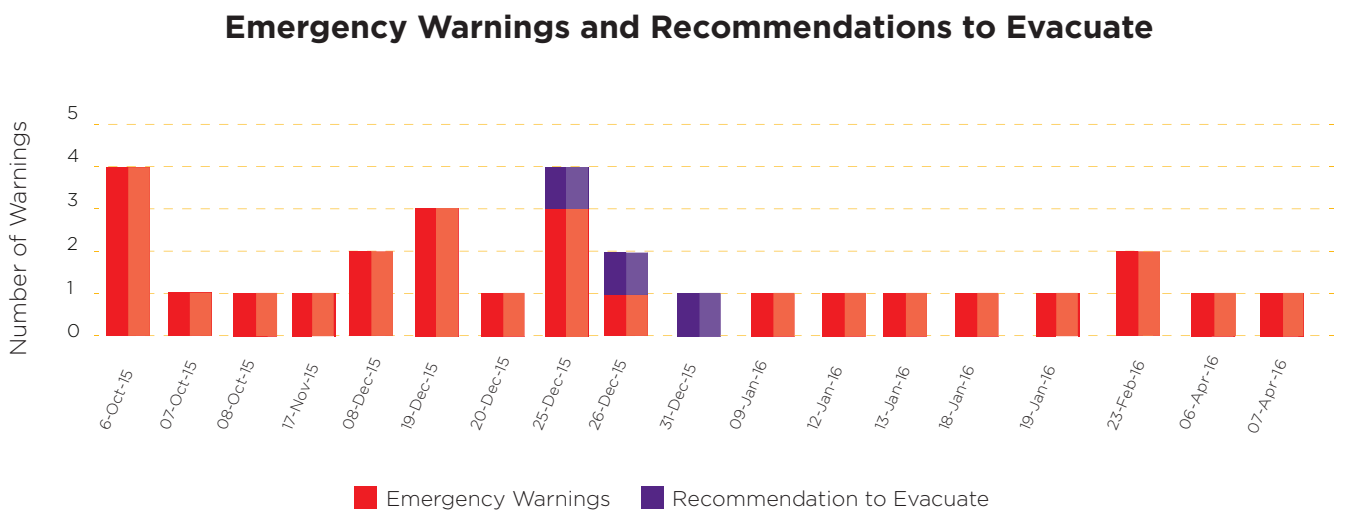


Figure 17: The number of Emergency Warnings and Recommendations to Evacuate released to the public broken down by the day they occurred

State Control Centre

The State Control Centre (SCC) is Victoria's primary control centre for the management of emergencies and the hub of a network of regional control centres (RCC) and incident control centres (ICC) across the state. The Emergency Management Commissioner (EMC) has the legislative responsibility for the management of the SCC.

The 2015-16 summer emergency season saw Victoria experience flooding, storms, fires, heat events and a range of other emergencies that required the activation of the SCC. The SCC was activated a total of 309 days (or 83%) over the 2015-16 financial year (see figures 18 and 19). During this year, the SCC was activated for:

- Interstate / International deployments;
- Planned burning;
- Extreme fire weather or High Fire Danger Ratings (Readiness);
- Ongoing major events such as Blue Green Algal Bloom, Wye River Fire;
- Severe weather events
- Non-emergency events (e.g. White Night in Melbourne); and
- Other significant emergency services events (HAZMAT incidents).

There were 6 months in the 2015-16 financial year where the SCC was activated for the entire month (September and December through to April). This data strongly correlates with the spike weather days in December. Contrary to this, the SCC was activated at Tier 2 every day in September to support international deployments (see the timeline – figure 2).

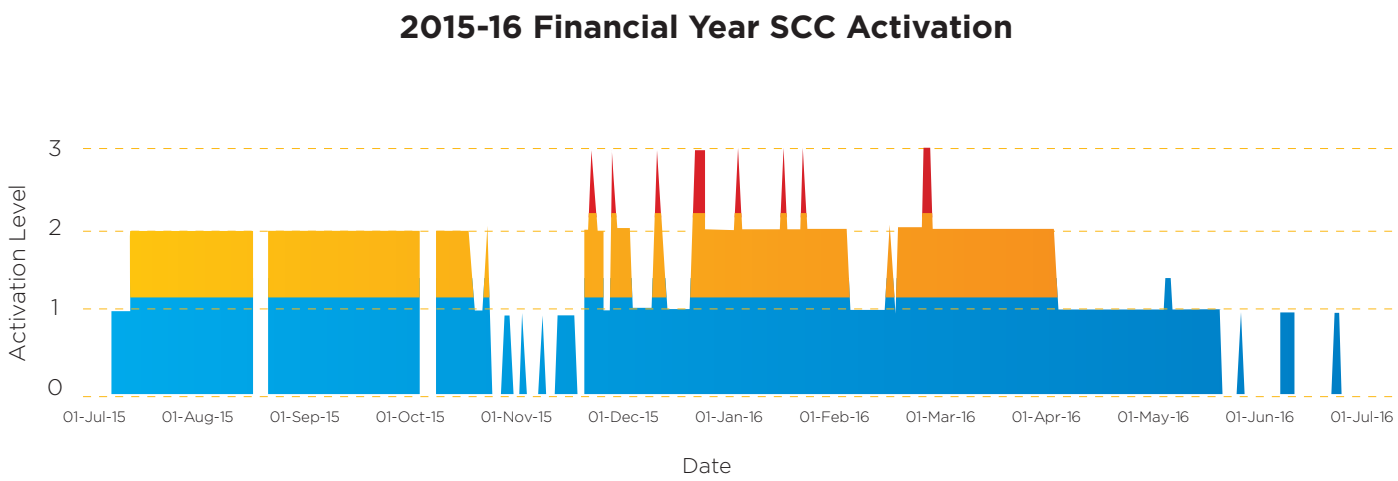


Figure 18: Depiction of the SCC activations over the 2015-16 financial year (where 0 = Not Activated, 1 = Tier 1 activation (blue), 2 = Tier 2 activation (orange) and 3 = Tier 3 activation (red))

All 11 times that the SCC was activated to Tier 3 (Red) related to potential or going fires; either for heightened FDRs, TFB Declarations, Wye River Fire Response or interstate deployments to Tasmania, see figures 18 and 19.

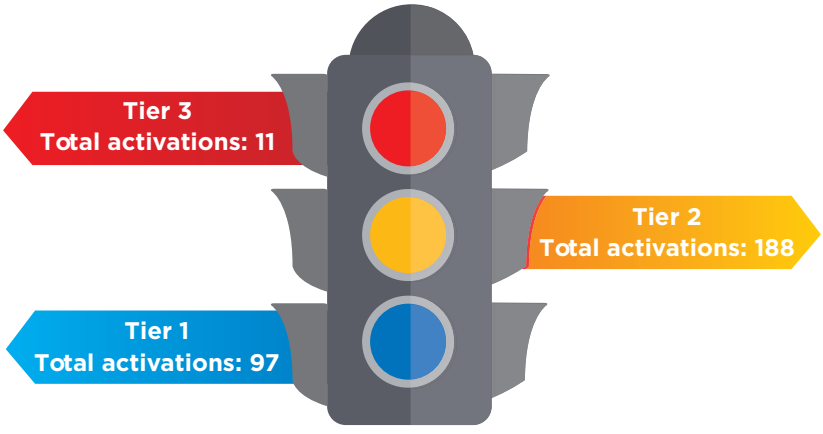


Figure 19: Number of total SCC activations by activation tier

As a result of the activity experienced across the state and the activation levels within the SCC, a high level of support was required to ensure the centre functioned effectively. Figure 20 displays the extent to which support was required within the centre and the amount of activity that occurred.

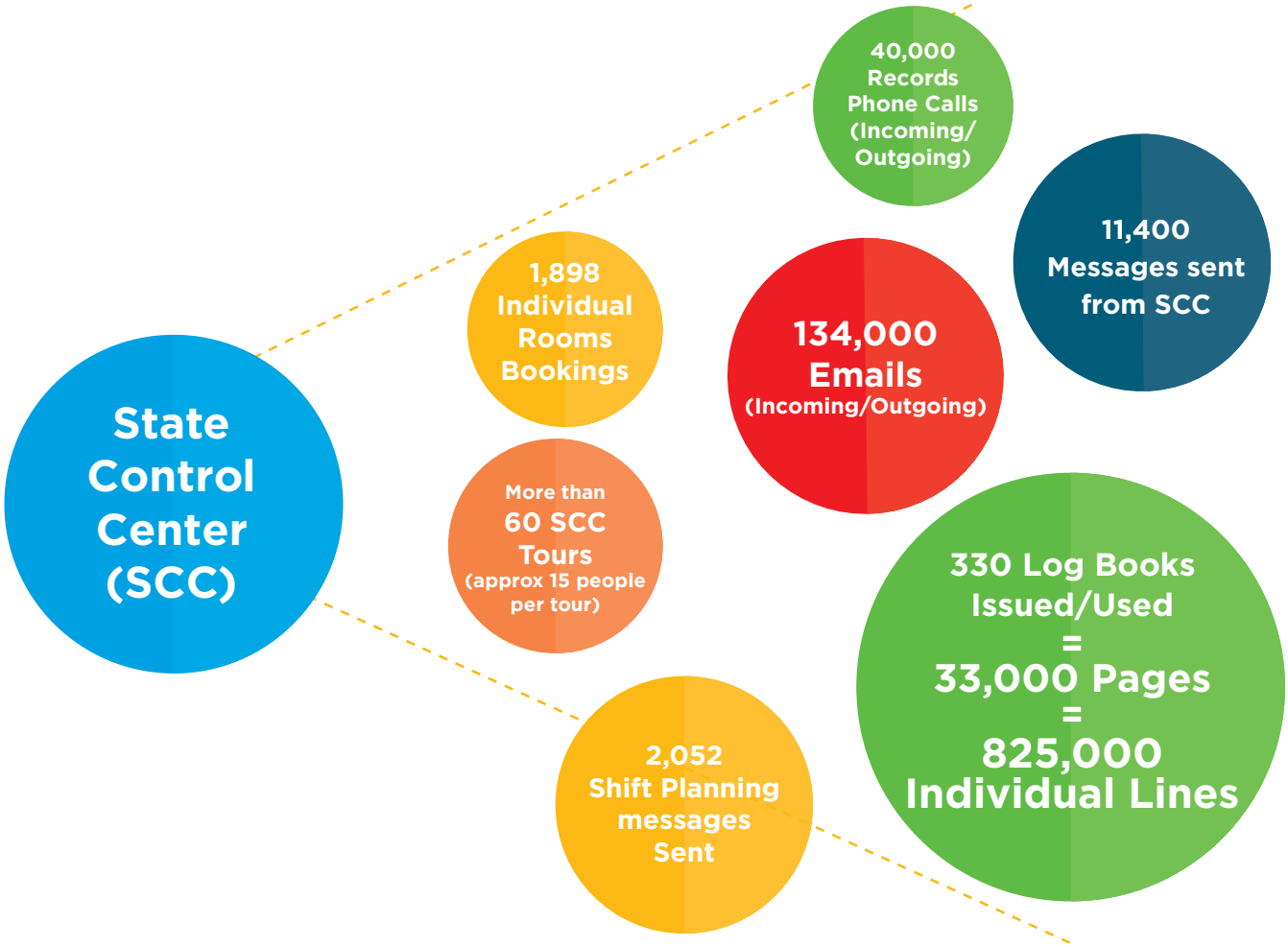


Figure 20: State Control Centre (SCC) statistics from 1 July 2015 to 30 June 2016

Assurance Activity

During the 2015-16 financial year there have been a large number of incidents, including 19 of state significance and 8 interstate/international deployments, resulting in a wide range of assurance activities being undertaken. Operational assurance activities include individual observations, monitoring (real time evaluation and real time performance monitoring), debriefing (after action reviews and formal debriefs) and reviews (targeted and ad hoc reviews).

Monitoring

Real Time Performance Monitoring (RTPM) was deployed three times in the 2015-16 financial year, including during the Portland Ship Fire, Kaladbro Peat Fire and the Somerton Tip Fire.

Real Time Evaluation (RTE) was deployed twice, once in a joint capacity with RTPM to the Scotsburn Fire and once to evaluate recovery coordination for the Wye River Fire.

Portland Ship Fire Real Time Performance Monitoring Team,November 2015

Debriefing

Debriefing for incidents and deployments occurred throughout the year, with assistance provided by EMV and the SRT when requested. Individual observations to support debriefing activities were also collected to support debriefing activities, including 69 observations submitted through the online Observation Sharing Centre.

Face to face after action reviews (AARs) reviewing the functioning of the State Control Centre (SCC) were also conducted by EMV on three occasions.

Reviews

A number of internal and external reviews were also undertaken throughout the 2015-16 financial year including:

- An independent investigation and community report into the Lancefield Fire
- An external review and case study development on the Somerton Tip Fire based on the application of the smoke framework.
- IGEM reviewed the response to the Wye River Fire and a Coronial Investigation is also currently being undertaken.
- Environmental Protection Agency (EPA) produced an air quality monitoring community report for the Broadmeadows Tyre Fire and an independent review is planning to be conducted.
- EMV led a review into the City of Greater Geelong Storm event.

Significant Incidents

Significant Incidents Map During 2015-16 there were 19 incidents identified as of state significance, see figure 21. These incidents consist of a range of hazards including, severe weather, storm events, bushfires, grass fires, peat fire, ship fire, tip fire, tyre fire and blue green algae bloom. For each of these incidents comprehensive response, relief and recovery activities occurred and are provided in detail in the next section.

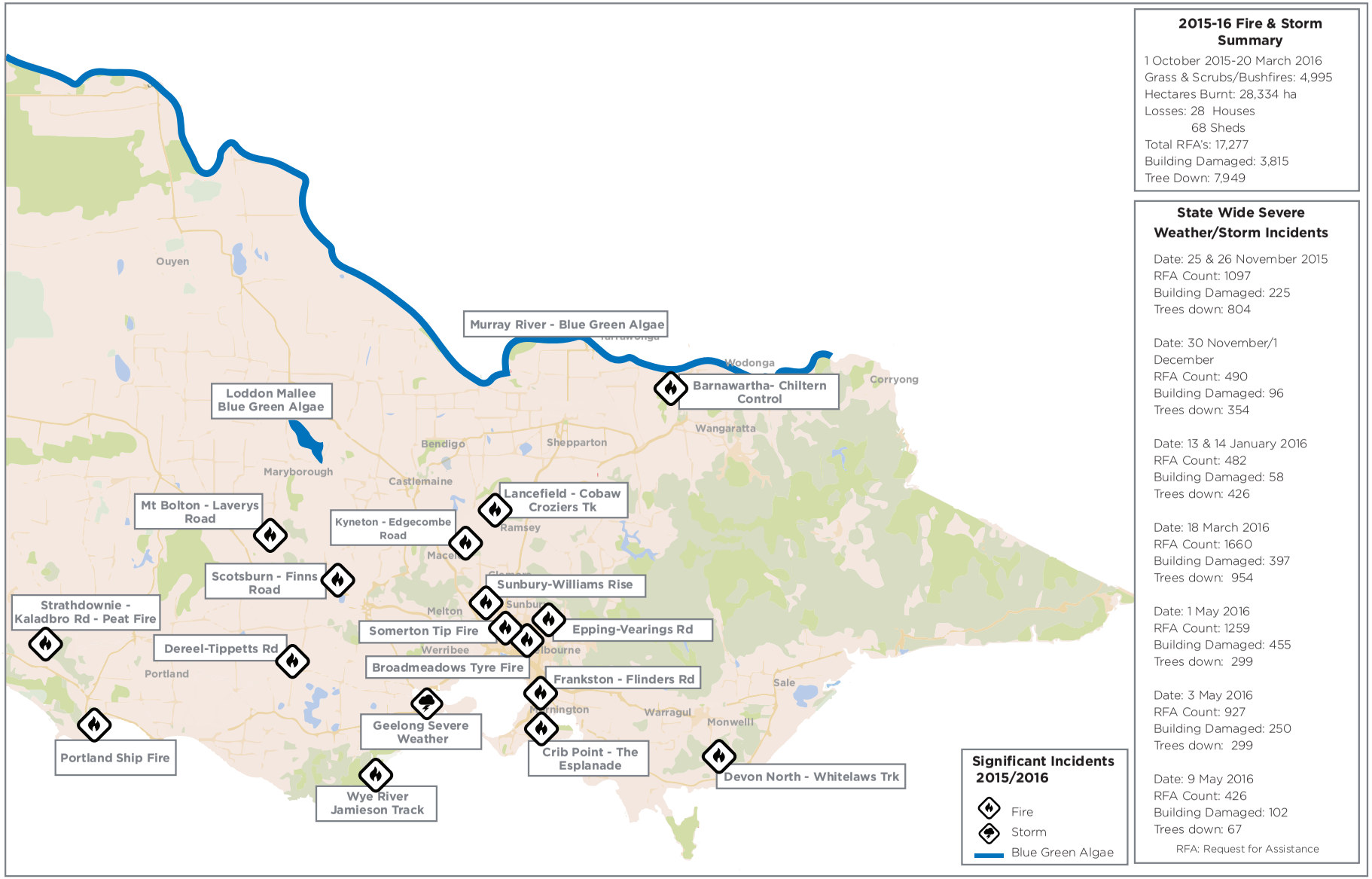


Figure 21: Significant Incidents map for 2015-16 financial year

"The Victorian Government provided extensive support to the local authorities and community. DELWP provided $1.5 million in funding for community infrastructure and capital works"

Lancefield - Cobaw Croziers Track Fire, October 2015

3 October 2015: Lancefield – Cobaw Croziers Track Fire

Start Date: 3/10/2015
Duration: 23 days
Size: 3,055 ha
Losses: 6 Houses, 24 Sheds
Cause: Planned Burn

On Saturday 3 October 2015 (AFL Grand Final Day) at 1456hrs, CFA were called to assist DELWP with a 266 hectare planned burn that had escaped its boundaries and was burning out of control.

This fire took nine days to be contained and a further four days to be brought under control, before finally being declared Safe on Monday 4 January 2016 (13 weeks later). The final fire size was 3,055 hectares.

The burn escaped under extreme weather conditions, becoming an out-of-control bushfire that destroyed four homes, a number of sheds and burnt a large part of the Cobaw State Forest, with devastating affects to local wildlife.

The Victorian Government provided extensive support to the local authorities and community. DELWP provided $1.5 million in funding for community infrastructure and capital works. This promoted strong partnerships with the community to build better relationships and capability.

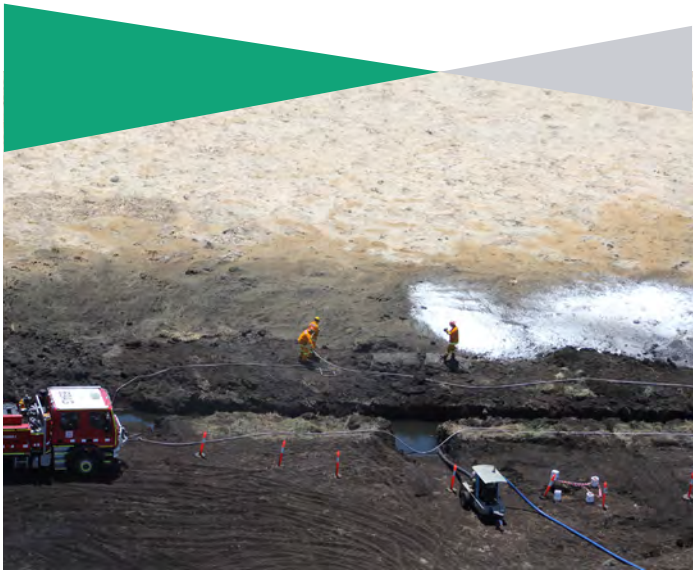
Further recovery support was provided for the community through regular morning teas and workshops to provide advice, updates and to share information.

A coordinated approach to agriculture recovery completed approximately 123 km of fencing across 124 properties, which also included the management of insurance issues for approximately 70 affected property owners. Additionally, DELWP worked closely with Macedon Ranges Shire in the identification and replenishment of essential dam water on properties.

Macedon Ranges Shire was funded to engage a case support worker to provide specialised support to the six families whose homes were destroyed during the fire.

This included support through the re-building process and linkages to other support services such as psychosocial support needs for children. Personal Hardship Assistance Payments (PHAP) were issued to the value of $96,530 to assist in the recovery of the community.

"The fire appeared to be the result of a lightning strike to a fence which ignited the peat in 12 hectares of a 400-hectare peat swamp, to a depth of up to three metres"



Strathdownie - Kaladbro Road Peat Fire, November 2015

A range of investigations, reports and audits were undertaken in response to this incident. An independent report was conducted by West Australian bushfire expert Murray Carter, which resulted in 22 recommendations. These were all accepted by the Victorian Government and are currently being implemented. During the investigation, several areas were identified as 'out of scope' for the planned burn, which were provided to EMV and documented in a Community Report.

3 November 2015: Portland Ship Fire

Start Date: 3/11/2015
Duration: 11 days
Losses: Nil
Cause: Chemical Combustion

On Tuesday 3 November 2015, emergency services attended a fire on a stock transport ship registered in Panama.

The fire, caused by chemical combustion, was confined to a 700 ton grain pellet silo which is used to feed stock being exported. Fortunately, there was not any stock on board at the time of the fire, and there was no risk to the crew, of approximately 50 personnel, who were on board. Firefighting efforts concentrated on isolating the fire and slowly removing the stock feed, while continuing to contain any fire or explosion risk.

The incident response lasted approximately 11 days and involved several agencies. It was a very complex incident and required all agencies involved to work together closely to avoid a catastrophe in the port and significant delays to the vessel's operations.

9 November 2015: Strathdownie – Kaladbro Road Peat Fire

Start Date: 9/11/2015
Duration: 31 Days
Size: 10 ha
Losses: Nil
Cause: Lightning

On 9 November 2015, a peat fire was reported at Kaladbro Swamp around 30 kilometres north-west of Dartmoor in

"The large, complex fire spread quickly and burned for several days. By 22 November 2015, there were approximately 100 personnel and 21 fire fighting vehicles involved in fighting the fire"

Somerton Tip Fire, November 2015

south-west Victoria. The fire appeared to be the result of a lightning strike to a fence which ignited the peat in 12 hectares of a 400-hectare peat swamp, to a depth of up to three metres. The fire was declared Safe on Friday 5 February 2016.

The multi-agency response involved personnel from CFA, the South Australian Country Fire Service, DELWP and Parks Victoria, DHHS, Glenelg Shire, AV, VICPOL, EPA and the property owner.

17 November 2015: Devon North – Whitelaws Track Fire

Start Date: 17/11/2015
Duration: 3 Days
Size: 51 ha
Losses: 1 House
Cause: Private Burn Off Reignition

At 1427hrs on Tuesday 17 November 2015, a 15 hectare bushfire was reported as spreading near Devon North, and with the help of high westerly wind speeds, flame heights during this initial report were recorded up to 10 metres.

The fire was still burning out of control at approximately 2100hrs that night; however cooler weather conditions and lighter winds helped slow its spread. Containment was achieved at 0100hrs the next morning, and the 58 hectare fire was declared Safe at 1328hrs on Monday 7 December 2015. One shed was reportedly damaged as a result of the fire.

20 November 2015: Somerton Tip Fire

Start Date: 20/11/2015
Duration: 13 days
Losses: Nil
Cause: Lightning

A lightning strike ignited a large pile of illegally stored hazardous construction and demolition waste in the early morning of 20 November 2015.

The large, complex fire spread quickly and burned for several days. By 22 November 2015, there were approximately 100 personnel and 21 fire fighting vehicles involved in fighting the fire. A support team from the Australian Capital Territory (ACT) Fire Service also assisted in suppression activities.

EPA set up air monitoring equipment at the site and throughout surrounding communities to monitor the potential health impacts from the smoke on the community. At one stage, a section of Sydney Road (major road) was closed as a result of the smoke.

19 December 2015: Epping – Vearings Road Fire

Start Date:19/12/2015
Size: 163 ha
Losses: Nil
Cause: Suspicious

A grassfire north of Cooper Street in Epping burnt through 160 hectares of grasslands and scattered large red gum on Saturday 19 December 2015. The fire was deemed to be deliberately lit by a cigarette butt.

Farm shedding was destroyed but fire crews successfully defended one home which was under threat from the fire.

19 December 2015: Scotsburn – Finns Road Fire

Start Date: 19/12/2015
Duration: 8 days
Size: 4,570 ha
Losses: 16 Houses, 4,059 Sheep
Cause: Machinery

The Scotsburn – Finns Road fire commenced with fire towers reporting a smoke sighting in the vicinity of Finns Road, Scotsburn on Saturday 19 December 2015 at approximately 1500hrs.

As at 22 December 2015, the Scotsburn – Finns Road fire was approximately 4,600 hectares in size with a 51 kilometre perimeter. The fire was declared All Clear on 1 January 2016. Impacts included 12 houses lost, two houses damaged and uninhabitable, two houses damaged but still habitable and 1,300 sheep destroyed in addition to other stock and property losses.

There were challenges for the social recovery environment due to the large number of children and young people who lost their home days before Christmas.

Psychosocial support was provided at Buninyong Community House recovery centre for three days a week through information sessions for parents and teachers of affected children, as well as for isolated men. DEDJTR coordinated over 64 days of agriculture relief for affected landholders and primary producers. DHHS provided financial assistance through the PHAP to the value of $232,590, which was supplemented by a $100,000 Bushfire Recovery Fund – established by Bendigo Bank – to restore social networks and community well-being.

Assistance was provided for demolition and clean-up of fire affected properties in Scotsburn. Clean up costs for properties and roads is shared between insurers and by the Commonwealth and Victorian Governments under the Natural Disaster Relief and Recovery Arrangements.

19 December 2015: Wye River – Jamieson Track Fire

Start Date: 19/12/2015
Duration: 34 days
Size: 2,515 ha
Losses: 116 Houses
Cause: Lightning

At 1610hrs on Saturday 19 December 2015, a lightning strike started a fire in the Wye River – Jamieson Track area, approximately eight kilometres west of Lorne in the Great Otway National Park.

Wye River - Jamieson Track Fire Community Meeting, December 2015

By 0037hrs on the 20 December 2015, the fire had increased to 28 hectares and remained burning in steep terrain. The location of this fire made direct fire suppression impossible and, with the addition of strong northerly winds, at 1100hrs on Christmas Day the fire broke containment lines, and travelled rapidly towards coastal townships. Wye River and Separation Creek were evacuated and the Great Ocean Road was closed. Aircraft responding to the fire focused on asset protection. By 1617hrs that afternoon, the fire had grown in size from 271 hectares to 1,399 hectares.

The threat from this fire continued, and with a spike in hot weather forecast for 31 December 2015, three more communities – Kennett River, Grey River and Wongarra – were relocated as a fire safety measure. Furthermore, public New Year's celebrations were cancelled or relocated including the sold out Falls Music and Arts Festival.

The fire remained active until 15 January 2016, with a confirmed loss of 2,520 hectares and 116 properties destroyed. During this 34 day campaign, support was requested from New South Wales (NSW) for the provision of Incident Management Team roles and New Zealand for fire-fighting assistance. The fire was declared safe on 8 April 2016.

The fire significantly impacted the tourism industry that reduced the coastal townships' annual income as a result of road closures and subsequent accommodation cancellations.

Due to the complexity and profile of the recovery needs, EMV led the community resettlement and recovery program working closely with Colac Otway Shire Council, departments, agencies, and the Wye River and Separation Creek communities. EMV oversaw the coordinated clean-up of fire affected properties and supported the establishment of a 'one-stop-shop' to provide support and advice on rebuilding. Additionally, DELWP was involved in the assessment and treatment of hazardous trees posing an immediate threat to residents accessing their properties, and to those using roads to access public areas.

DEDJTR coordinated the economic recovery for Wye River and of Separation Creek. The Victorian Government committed $2.75 million assistance program to help Great Ocean Road communities affected by the Christmas Day bushfires, including; a $1 million Economic and Community Recovery Fund; $850,000 for the rebuilding process; $500,000 for infrastructure; and $400,000 for small businesses towards mentoring, advertising and marketing.

DHHS provided case workers to support and maintain regular contact with affected residents. This included meeting short and long term accommodation needs of approximately 20 permanent residents, supporting immediate financial needs, facilitating support for long term financial recovery, and supporting the social recovery of individuals and the community. DHHS provided financial assistance through the PHAP to the value of $284,680.

20 December 2015: Barnawartha – Chiltern Control Fire

Start Date: 20/12/2015
Duration: 7 Days
Size: 6,662 ha
Losses: 4 Houses, 28 Sheds, 620 Sheep
Cause: Tree over Powerlines

At midday on Sunday 20 December 2015, CFA Brigades were paged to a rapidly spreading bush and grass fire at 418 Riley's Road Barnawartha.

The fire spread quickly across the Melbourne-Sydney Railway Line, then the Hume Freeway. The southern head was contained near the intersection of the Indigo Creek Road and the Beechworth-Wodonga Road close to nightfall. However, during the westerly wind change, the fire escaped and crossed the Indigo Creek Road, threatening to spread towards the outskirts of Wodonga. This section of the fire was able to be controlled by very aggressive firefighting and a rain band that swept through the area.

The west flank burnt through the Mount Pilot National Park and was contained at approximately 1500hrs on 24 December 2015 by a back-burning operation, just to the north of the Wodonga-Beechworth Road.

The fire was declared controlled on 28 December 2015, however during its 7 day duration it burnt approximately 6,675 hectares and severely affected the communities along the Indigo Creek Valley into Barnawartha. The cause of the fire was determined by VICPOL and CFA investigators to be the result of tree branches falling on a power line. The fire caused extensive losses, including 3 homes, 29 cars, livestock, stock feed, agriculture and fencing.

During the relief phase, DHHS issued 43 PHAP relief payments to the value of $46,540. Much of the recovery coordination was managed locally. The Indigo Valley

State Control Centre

Community successfully managed their recovery by forming and leading the Recovery Committee that ensured their needs were being met. The community's initiative demonstrated good partnership in practice, in which council and DHHS provided guidance. The Recovery Committee empowered members of the community to EMV provided support by overseeing the coordinated clean-up of residential properties, support for dangerous tree management, financial advocacy and support for a Community Debrief.

25 December 2015: Sunbury – Williams Rise Fire

Start Date: 25/12/2015
Size: 58 ha
Losses: Nil
Cause: Suspicious

On Christmas Day 2015, a column of smoke was spotted coming from near Williams Rise on the northern end of Sunbury around 1220hrs. This column of smoke was found to be a fast-moving grassfire.

The fire, under 55 kilometre per hour winds, quickly burnt through 100 hectares of grassland and into a ravine, towards homes along Settlers Way and Enterprise Drive, Sunbury.

Five firefighting aircraft and 65 CFA vehicles were used to battle the blaze. The fire was deemed contained just before 1700hrs.

11 January 2016: Broadmeadows Tyre Fire

Start Date: 11/01/2016
Duration: 4 days
Losses: 150,000+ tyres
Cause: Electrical Fault (Tractor)

The Broadmeadows tyre fire started at 0857hrs on Monday 11 January 2016 in a large outdoor stockpile of tyres at the Tyre Crumb Australia site in Maygar Boulevard, Broadmeadows. The site stored and recycled used car tyres, with the MFB estimating the stock pile of tyres to be 100 metres long and up to 30 metres high. Sparked by an electrical fault from a nearby tractor, the fire burnt a large pile of tyres at the tyre recycling facility, producing dark black smoke for many hours.

This was a true multi-agency response, with control agency, MFB, supported by AV, Aviation Rescue Fire Fighting, CFA, VICPOL, VICSES, DHHS, Local Council, Melbourne Water, EPA and a range of emergency management partner organisations.

The EPA monitored the impact on air quality and the surrounding environment, while other crews onsite worked to minimise impacts to local waterways and drains.

Located just north of the Western Ring Road, the blaze was in close vicinity to densely populated areas, industry, transport links and infrastructure. Because of this close proximity, the fire had a significant impact on media and social media activity. Public warnings and updates were issued throughout the duration of the fire, and community meetings were also held on Monday 11 and Tuesday 12 January 2016.

18 January 2016: Crib Point – The Esplanade Fire

Start Date: 18/01/2016
Size: 81 ha
Losses: 1 House, 6 Sheds
Cause: Suspicious

The Esplanade fire in Crib Point started at 1338hrs on 18 January 2016. The fire was contained at 1412hrs at 1 hectare; however a secondary fire started at 1606hrs. Emergency services responded to the fire with 20 tankers and five pumpers, primarily focusing on asset protection. Three firefighting aircraft also worked to control the head of the fire. The fire was contained at 2108hrs later that night.

One home was lost, one home was partially impacted and several sheds destroyed in the blaze.

19 January 2016: Kyneton – Edgecombe Road Fire

Start Date: 19/01/2016
Duration: 2 days
Size: 104ha
Losses: 1 House
Cause: Suspicious

> "The storm caused significant damage to over 300 properties, including impact to 213 residences, 18 schools, 5 early learning centres, and 74 council-owned buildings"

Geelong Severe Weather, January 2016

At 1419 hrs on 19 January 2016, 35 firefighting vehicles and six aircraft fought a grassfire that originated near Edgecombe. The fire threatened the town of Kyneton and led to the evacuation of the Kyneton Bushland Resort.

Authorities confirmed one structure near Kyneton was lost in the fire, which burned through 104 hectares of land. The fire was contained by 1800hrs.

27 January 2016: Geelong Severe Weather

Date: 27/01/2016
RFA Count: 520
Building Damaged: 182
Flooding: 205
Trees Down: 57

At 1345hrs on Wednesday 27 January 2016, the Bureau of Meteorology (BOM) issued a Severe Thunderstorm Warning forecasting damaging winds, heavy rainfall and large hailstones over the Geelong and Bellarine Peninsula. Further warnings were issued throughout the day including one at 1609hrs, specifically for Geelong and Bellarine Peninsula.

The severe storm was considered a 1 in a 100 year event with double the January monthly average rainfall total falling in just one hour. The storm caused extensive flooding and saw a total of 365 Requests for Assistance (RFAs) for building damage, flooding, roof damage and trees down. There were also 13 flood rescues due to the storm.

The storm caused significant damage to over 300 properties, including impact to 213 residences, 18 schools, 5 early learning centres, and 74 council-owned buildings. The storm damaged essential assets, including road, drains, and other infrastructure. It also led to outages of the mobile phone and electricity networks. A total of 35 residential properties were designated as uninhabitable due to storm damage.

Clean-up and recovery efforts were managed locally. DHHS provided case management for residents in properties that were deemed inhabitable and alternative accommodation was organised. The Victorian government through DHHS has provided 40 hardship grants (relief and re-establishment) totalling $106,400.

13 February 2016: Dereel – Tippetts Road Fire

Start Date: 13/02/2016
Duration: 2 days
Size: 121 ha
Cause: Machinery

At 1238hrs on Saturday 13 February 2016, fire was reported at Tippetts Road, Dereel. Initial assessment of the fire indicated that it was in dense private bushland and spreading quickly to other bushland and grassland areas. The fire was designated as under control at 1121hrs the following day.

18 February 2016: Blue-Green Algae (BGA) Bloom

Murray River - Blue Green Algae
Start Date: 23/2/2016
Length: 1,450 km
Size: Hume Dam to Lock 9 Weir

Loddon Mallee Blue Green Algae
Start Date: 14/02/2016
Length: 37km

Bacterial organisms are present in almost all aquatic ecosystems including creeks, rivers, lakes and wetlands and can appear singularly or in colonies. Under certain environmental conditions, the number of these bacteria can rapidly increase, creating a bloom (or scum) that causes easily visible changes in bodies of water. Blooms range in colour from dark green to red to yellow-ish brown, and some blooms may not cause any visible changes to the water. Blooms do not have a specific lifespan, merely exist whilst the conditions are right.

In mid-February 2016, the bacterium species, Cyanobacteria (sub-species Chrysosporum Ovalisporum), caused a blue-green algal bloom (BGA) that extensively impacted 1,487 kilometres of the Murray River including Hume Dam to Murrabit, the Loddon River and Lake Boga, as well as the Edward and Wakool river systems. The BGA bloom caused discolouration of the water and posed a potential risk to humans, pets, livestock and wildlife causing skin and eye irritations, and in some cases allergic reactions, when come into contact.

Not only did the BGA bloom have health and aesthetic impacts, but it also had economic impacts on the 41 surrounding townships. With a population base of over 120,000, not including the significant surge in population in popular tourist destinations Echuca, Swan Hill and Mildura, the economic impacts were extensive. The economic boom townships normally felt at this time of the year, were greatly impacted as restrictions for consumption and recreational water activities were put in place due to the BGA bloom.

The impact of the BGA bloom extends further than this, as there are six water authorities that draw water from the Murray River: North East Water, Coliban Water, Goulburn Valley Water, Grampians Wimmera Mallee Water, Lower Murray Water and Goulburn Murray Water. Five supply drinking water, and therefore specialised treatment processes or alternative water sources were considered and implemented.

As the impact of the BGA grew, the DELWP Secretary transferred control of the BGA emergency event to the EMC on Friday 11 March 2016.

The BGA event was declared safe on 18 May 2016, exactly three months after it began. A whole of Victorian Government approach supported the affected communities.

23 February 2016: Frankston – Flinders Road Fire

Start Date: 23/02/2016
Duration: 1 day
Size: 4 ha
Losses: 800m of railway impacted
Cause: Powerlines

A fire started on Frankston–Flinders Road, Somerville at 1423hrs on 23 February 2016. 40 vehicles responded to the incident and a relief centre was opened at the Somerville Recreation Centre.

The fire caused significant impact on commuters with the closure of all Peninsula Link ramps and the suspension of trains between Frankston and Stoney Point stations. The fire also destroyed approximately 800 metres of fencing.

23 February 2016: Mt Bolton – Laverys Road Fire

Start Date: 23/02/2016
Size: 1,222 ha
Losses: 3 Houses, 10 Sheds, 400 poultry
Cause: Unknown

On 23 February 2016 at 1343hrs, a column of smoke was sighted rising from Mt Bolton.

The fire was extinguished on the same day, but not before 1,222 hectares were burnt, three houses and ten sheds were destroyed and 400 poultry were also lost in the blaze.

DEDJTR coordinated agricultural relief and recovery services to rural landholders. DHHS issued assistance payments to the value of $9,100, in addition to other financial support and counselling support services.

3 May 2016: Weather Event

VICSES activated the SCC at Tier 2: Orange from 0600hrs on 3 May 2016 in readiness for potential damaging weather due to cross the State later that day. Many ICCs around the state, including Hamilton, Benalla, Traralgon and Mulgrave, activated in anticipation for the forecasted weather.

The weather front which was expected to impact the Melbourne Metropolitan area around 1000hrs but moved slower than anticipated, finally reaching Melbourne at approximately 1600hrs.

The severe storm was particularly damaging in the south eastern and southern suburbs, including Pakenham, Frankston and Narre Warren. In addition to this, two homes in Melbourne's east sustained significant damage from falling trees resulting in the occupant's relocation and one rescue was performed in Dandenong South to free a man pinned by the arm when a tree fell on a caravan.

By midnight Tuesday, 910 RFAs were received, with over 600 due to fallen trees and blocked roads and 250 for building damage (mostly roof damage). Infrastructure was also affected, with many power outages recorded from the Otways, Geelong, Mornington Peninsula, Ringwood, Eltham, Boronia, Dandenong Ranges, Yarra Valley, Philip Island and throughout Gippsland. Approximately 25,000 homes and businesses experienced power outages, with some extending through the night. Ausnet and internet services were also affected by the storm.

Interstate / International Deployment Summary

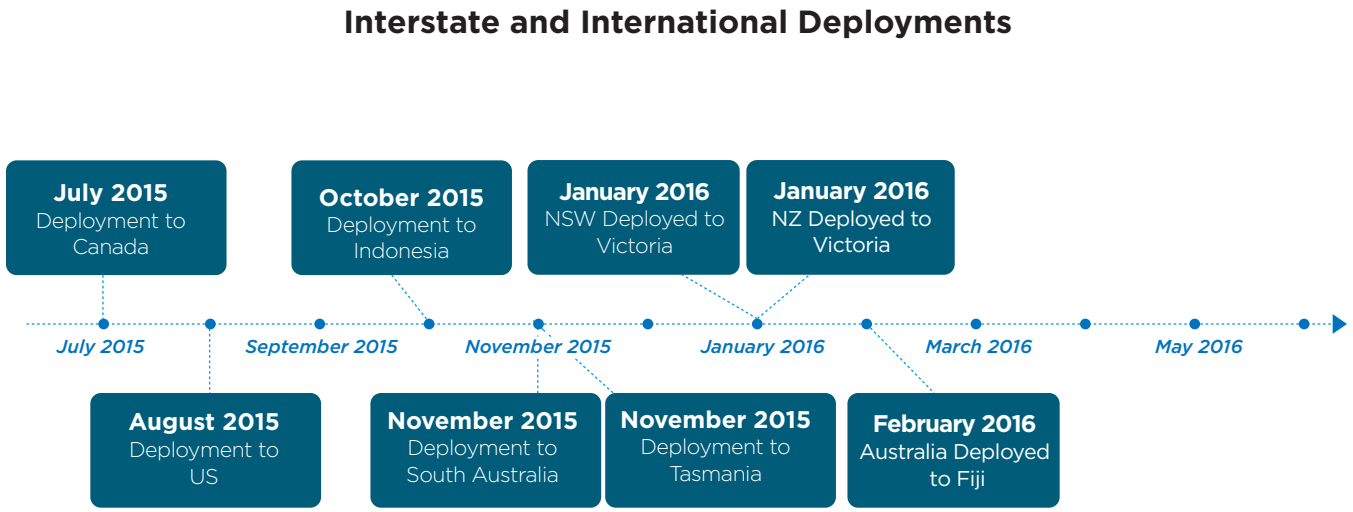


Figure 22: A timeline outlining the interstate and international deployments during 2015-16

During the 2015-16 financial year Victoria was deployed interstate and internationally six times including South Australia, Tasmania, Canada, United States (US), Indonesia and Fiji. Victoria also received support from New South Wales (NSW) and New Zealand (NZ), see figure 22.

July 2015: Victoria Deployment to Canada – Fire

Victoria headed an Australian deployment of 104 personnel to assist with the escalating wildfire situation in Canada in July 2015. Australia was part of the international effort to battle more than 5,000 wildfires. Three million hectares had been burnt at that stage, more than double the land area affected by fire in 2014.

Canada Alberta Fires, July 2015

Victoria's contingent comprised of 21 personnel from DELWP, 12 from Parks Victoria, nine from CFA and single representatives from DEDJTR, MFB and EMV.

The Canadian deployment offered Australian crews the opportunity to learn new skills from their international counterparts. The specialist skills of Australian personnel were welcomed by the Canadian fire agencies, and they carried out specialist leadership roles in incident management and aircraft support.

During their deployment, the Australians enjoyed the camaraderie and experience of working alongside an international contingent that included firefighters from South Africa, NZ, Mexico and the US.

While sharing knowledge and techniques with their Canadian and international counterparts was a highlight, the contingent also reported a few brushes with local wildlife, spotting beaver dams and bears while out in the field.

British Columbia's relationship with Australia in sharing firefighting resources has been in place for over 15 years. This agreement allows for the exchange of personnel, knowledge, skills, equipment, technology and mutual support in the event of an emergency.

"The Canadian deployment offered Australian crews the opportunity to learn new skills from their international counterparts"

August 2015: Victoria Deployment to US – Fire

A contingent of Australian and New Zealand (NZ) emergency personnel flew to the United States in August 2015 to assist with fighting more than 100 wildfires burning in the north west of the country.

It had been an extremely hot, dry, and windy summer in the States, with large fires across 10 states having burnt more than 9 million acres (3.6 million hectares) of land.

The Australian and NZ team joined more than 30,000 firefighters supporting wildfire suppression efforts during one of their worst fire seasons in 20 years.

A contingent of 71 personnel worked around 14 incidents in both Oregon and Washington. They fulfilled specialist field-based and leadership roles as heavy machinery operators, task force leaders, divisional supervisors, airbase managers, safety officers and strike team leaders.

The deployment included personnel from Victoria (20), New South Wales (18), Australian Capital Territory (4), Queensland (2), Western Australia (9) South Australia (3) and New Zealand (15).

Australia has an established relationship with the United States that allows for the exchange of personnel, knowledge, skills, equipment, technology and mutual support in the event of an emergency.

October 2015: Australia Deployment to Indonesia – Fire

An Australian team was deployed to Indonesia for seven days to water bomb forest fires in October 2015.

The Australians were deployed to Sumatra ahead of a Lockheed-100 Hercules aircraft, and a smaller, assistance aircraft. The L-100 Hercules can drop 15,000 litres water within seconds, and is based in NSW over the summer.

Victoria was requested to provide experienced air operations support for the aircraft deployment and two DELWP personnel were included as part of the NSW Rural Fire Service Taskforce.

Of 726 "hot spots" active in Sumatra, 613 were in the south where the crew and plane was deployed.

Indonesia was also coordinating with Japan, Korea, China, Russia, Singapore and Malaysia for further help.

November 2015: Victoria Deployment to South Australia – Fire

The Pinery fire in South Australia was a catastrophic bushfire that burned from 25 November to 2 December 2015, and primarily affected the Lower Mid North and west Barossa Valley regions immediately north of Gawler. At least 86,000 hectares (210,000 acres) of scrub and farmland were burnt.

The Pinery fire destroyed or rendered uninhabitable 91 houses, and completely destroyed 388 non-residential structures, 93 pieces of farm machinery and 98 other vehicles. It also caused significant damage to rural produce, including destruction of 53,000 poultry, 17,500 head of livestock and up to $40 million worth of fodder and unharvested grains.

Victoria assisted by providing a total of 311 personnel and 89 vehicles from Thursday 26 November to Sunday 29 November for incident management teams (IMTs), Strike teams, initial impact assessment crews and liaison teams.

January 2016: NSW Deployment to Victoria – Fire

The Wye River-Jamieson Track fire was caused by lightning strikes on the 19 December and has burnt an area over 2,400 ha. Between 1 and 17 January 2016, 30 NSW personnel were deployed to Victoria to assist with IMT roles.

January 2016: New Zealand Deployment to Victoria – Fire

Between 1 January and 2 February 2016, 45 New Zealand personnel were deployed to Victoria to assist local crews build containment lines around the Wye River-Jamieson Track fire.

The deployment included 'arduous' fire fighters to undertake difficult physical ground work in very remote and steep terrain, such as building containment lines with rakes.

January 2016: Victoria Deployment to Tasmania – Fire

On 13 January 2016, a dry lightning storm passed over North and West Tasmania. Hundreds of lightning strikes ignited multiple fires in exceptionally dry and inaccessible terrain, including within the Tasmanian Wilderness World Heritage Area and threatened significant environmental and cultural assets including stands of unique old growth vegetation.

This marked the start of a firefighting campaign that lasted in excess of two months and involved the use of unprecedented levels of interstate support and aviation resources. Loss of life was avoided and damage to built assets and injury to persons was experienced only at low levels.

A total of 229 vegetation fires were recorded from 13 January to 15 March burning a total area of 124,742ha with a combined perimeter of 1,260kms in largely remote, rugged and inaccessible areas. About 20,125 ha or 1.27% of the Tasmanian Wilderness World Heritage Area was affected by these fires, including about 1466ha or 1.8% of threatened and sensitive vegetation communities, some of which may not recover. Other sensitive areas, including Aboriginal and historic heritage areas were also affected by the fires.

Victoria assisted by providing a total of 621 personnel and 64 vehicles from 20 January 2016 to 12 March 2016 to support personnel providing assistance to locals.

Victoria's Deployment to Tasmania, January 2016

February 2016: AUSMAT Deployment to Fiji – Cyclone Winston

During February 2016, DHHS coordinated the selection and provision of an Australian Medical Assistance Team (AUSMAT) as part of a package of Australian Government assistance following Severe Tropical Cyclone Winston which impacted Fiji. The AUSMAT comprised of six Victorian health professionals including doctors, nurses and paramedics who provided mobile medical support and expert advice within emergency operations centres in Fiji.

Severe Tropical Cyclone Winston (Category 5) impacted Fiji and Tonga from Friday 19 February 2016. It is the strongest tropical cyclone ever recorded to make landfall in Fiji, causing 44 deaths and affecting up to 350,000 people. In anticipation of a request for assistance, Director General Emergency Management Australia (EMA) activated AUSASSISTPLAN to ALERT on Saturday 20 February 2016.

An official request was received by the Australian Government from the Fijian Government on Monday 22 February for the provision of a six (6) person Aeromedical Evacuation (AME) Team. Following discussions with jurisdictional agencies in Australia, tasking requests were approved and a six-person AME team deployed to Suva, Fiji on Tuesday 23 February as AUSMAT Alpha. This included 1 Victorian paramedic.

On Saturday 27 February, the Fijian Government made a second request of the Australian Government for additional medical assistance. This assistance was provided in the form of a Mobile Type 1 Emergency Medical Team (EMT) made up of small mobile medical teams providing primary care and public health which could embed within local Ministry of Health teams. Tasking requests were approved and 15 personnel were deployed to Suva, Fiji on Sunday 28 February and Monday 29 February as AUSMAT Bravo. This included 5 Victorians (2 Registered Nurses, 2 Medical Officers and 1 Emergency Operations Centre Officer). AUSMAT Alpha departed Fiji on Friday 4 March and AUSMAT Bravo departed in a staged process. The majority of AUSMAT Bravo departed Fiji on Saturday 12 March. AUSASSISTPLAN was reverted to standby on Thursday 31 March following 41 days of activation.

Source Information

Figure 2
See data provided in this section for source of data.

Figure 3

Sourced from Bureau of Meteorology: Climate Summaries http://www.bom.gov.au/climate/current/season/vic/summary.shtml

Figure 4

Sourced at Southern Australia Seasonal Bushfire Outlook 2015-16, Bushfire & Natural Hazards CRC Hazard Note, Issue 010 September 2015 http://www.bnhcrc.com.au/hazardnotes/010

Figures 5 and 6

Data included in the graph has been provided by the EMV SCC. The data has been collected through SCC reporting of forecasted Fire Danger Ratings (FDRs) by weather district during the financial year.

Figure 7

Data included on the graph has been utilised from "History of TFBs, Country Fire Authority", http://www.cfa.vic.gov.au/warnings-restrictions/history-of-tfbs/

Figures 8 and 9

Data included on the graphs has been provided by the EMV SCC and may not match agency government reporting for

the 2015-16 financial year due to the specific need of this report. The data is current as at the time extraction only (5/08/2016). Figures may alter if further reports for incidents related to the period are completed.

CFA data is from Incident Management System (IMS), MFB data is from Firecom, DELWP data is from Fireweb and SES data is from Operational Incident Management System (OIMS).

Similar incidents with different agency descriptions have been combined to create one group of similar incidents. Those groups are specified below:

- *Flood* – Combination of MFB Flood data and SES Flood data
- *Hazardous Condition* – Combination of CFA Hazmat data and MFB Hazmat data
- *False Alarms and False Calls (inc Good Intent)* – Combination of CFA False Alarm data and MFB False Alarm data
- *Motor Vehicle Accidents, Rescue and Emergency Medical Service Call* – Combination of CFA Rescue / MVA / EMR data, MFB MR (Medical Response) and Rescue / Incident data, and SES Rescue data
- *Storm Related Response (Tree Down / Traffic Hazard)* – Combination of MFB Storms / Tree Down data and SES Tree Down and Tree Down / Traffic Hazard data
- *Building Damage* – Represented only by Building Damage data from SES
- *Other Situations* – Combination of CFA Other data, MFB Alarm Activations and Non-Structure data, and SES Assist Agency, IMT and Other data
- *Structure Fires* – Combination of CFA Structure data and MFB Structure data

- *Vegetation and Grass Fires and Bushfires* – Combination of DELWP Vegetation / Grass / Bushfire data and CFA Vegetation / Grass / Bushfire data

Figures 10 and 11

Data included in this figures were provided by ESTA on 5/8/16.

Figure 12

Data included in the figure was utilised from Survive the Heat Newsletter, April 2016, Department of Health and Human Services DHHS.

Figure 13

Data included in the graph has been provided by the EMV SCC.

Figures 14, 15, 16 and 17

Data included in the graphs has been provided by the EMV Communities and Communication team. The data is pulled from the One Source One Message (OSOM) system and the Yearly Community Warnings Report for the period of 1 July 2015 – 30 June 2016.

Figures 18, 19 and 20

Data included in the graph has been provided by the EMV SCC. This map is a snapshot generated from Victorian Government data. The State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons accessing this information should make appropriate enquiries to assess the currency of the data.

Figure 21

This map was sourced from EM-COP

Section 2: Case Studies

This is a sample of the case studies developed about incidents and events that occurred during the 2015-16 financial year. A comprehensive set of case studies is available on the Emergency Management – Common Operating Picture (EM-COP) Library > Reviews-Lessons > Learning Products > Case Studies and Insights

*There may be discrepancies between previously reported incident data and the data within the case studies due to when the case studies were developed and the sources of information used.

Case Study:

Testing the new tree hazard procedure at an alpine forest fire

The Coronial Inquest into the tragic deaths of two Department of Environment, Land, Water, and Planning (DELWP) firefighters during the Harrietville Alpine North fire in February 2013 identified a number of improvements that could be made to enhance the safety of firefighters, including aspects related to tree hazard. The Coroner recommended that 'DELWP liaise with other any other relevant agency to develop a protocol which best ensures that fire crews are not exposed to fire effected alpine ash forests unless absolutely necessary and only if all safety precautions, in particular removal of hazardous trees and regular monitoring of weather conditions are undertaken.'

In response to the Coroner's recommendation, Joint Standard Operating Procedure (JSOP) 8.03 Tree Hazard Bushfire Response was developed 'to mitigate the risk to emergency service personnel of injury or death from falling trees and branches during bushfire response', the latest version of which came into effect on 1 October 2015. DELWP has also since developed Work Instruction (WI) 4.4.1.3 Initial Response in Very High Tree Hazard (effective 11 January 2016) to outline how initial incident response will be carried out in areas of very high tree hazard.

The DELWP response to the inquest has highlighted how firefighter safety remains the number one priority in forest fire management, and this case study from the Upper Murray Fire District has been prepared to highlight some of the progress and learnings made in response to this tragedy.

Fire-killed ash forest stands have been specifically identified as being highly hazardous as trees will often fall soon after a fire or during a strong wind event. The rate of fire-killed alpine ash tree fall is exacerbated by the species intolerance to fire and the rapid decline in root structure once killed. On steep slopes the dead alpine ash trees may also spear downhill after falling, with limited warning.

Fire affected mixed species eucalypt trees also pose a safety risk to firefighters as limb and tree fall may occur under similar circumstances. The risk of this is especially high when trees are impacted by machinery.

Incident Overview – Mt Tempest Fire

JSOP 8.03 and WI-4.4.1.3 were tested by DELWP firefighters in February 2016, when a lightning strike started a fire in remote forest near Mt Tempest in north-east Victoria.

Local knowledge within the Incident Management Team (IMT) recognised that the area was known to have areas of alpine ash forest that was burnt during the 2003 Alpine Fire and had the potential to carry significant tree hazard risk. This prompted an initial interrogation of the Tree Hazard Risk layer in eMap by the IMT which confirmed that the area impacted by the fire had a 'very high' risk rating.

With this initial information, the IMT dispatched heavy machinery (D7 bulldozer and excavator) and requested firebombing aircraft to undertake direct attack operations on the fire. DELWP ground crews were also dispatched and approached the fire location from the south along a track close to the fire edge.

"A useful method for detecting tree hazard using colour infrared aerial photographs was demonstrated during this fire"

The ground crews determined that the fire was burning on both sides of a prominent ridge line, however, the northern section of the fire could not be observed at this time. The airborne Air Attack Supervisor (in place to direct the firebombing aircraft) had a clear view of the northern section of the fire and observed a 'very high' density of fire-killed ash trees. Following a dynamic risk assessment, the IMT determined that direct attack by ground crews would not be safe and that aerial suppression operations would continue whilst the heavy machinery was used to mitigate the tree hazard risk.

Ground crews were advised to remain clear of this section of the fire until all hazardous trees were identified and treated by heavy machinery.

The resulting seven (7) hectare fire was contained within 24 hours and the safety risks posed by the fire-killed ash trees were successfully managed.

What worked well?

The review of this response identified a number of key learnings.

Knowledge of JSOP 8.03 informed decision making within the IMT and ensured the safety of ground crews.

Effective communication between the IMT and ground crews was critical. Both worked effectively to identify and mitigate the risk of tree hazards on firefighter safety before ground crews commenced operations. IMT information was then validated and refined according to field observations through the appropriate and safe use of dynamic risk assessment and decision making.

Effective readiness planning by DELWP staff provided for the rapid dispatch of resources, including heavy machinery and aircraft. Aircraft were used to good effect to drop fire retardant which effectively boxed in the fire whilst heavy machinery constructed control lines and mitigated the tree hazard risk.

A useful method for detecting tree hazard using colour infrared aerial photographs was demonstrated during this fire (the images were sourced from the DELWP Image Web Server). This technique uses image colour to help to differentiate live vegetation from dead trees.

What could we improve on?

The Tree Hazard Risk layer on eMap was established by DELWP using modelled data, and is known to have some accuracy limitations. Investigation of the layer following this bushfire incident has identified opportunities to improve the layer which will be followed up by DELWP at the next review opportunity.

Colour infrared aerial imagery may not be available for all fires, but where available, promises significant potential for providing additional knowledge on the level of tree hazard risk which can be used to support a safe response. The use of this imagery will be further explored by DELWP for inclusion in future fire mapping and to guide the strategies and tactics employed in incident action plans.

What would you do next time?

The IMT and ground crews must maintain open communication lines to ensure that identified risks and mitigation strategies are developed and adapted to ensure firefighter safety. Ground crews must maintain situational awareness and constantly assess changes to their own safety using dynamic risk assessment. Significant changes in the tree hazard risk profile should continue to be reported through the chain of command. This awareness is especially important when ground crews observe changes in terrain and vegetation types. The ground crews involved in this situation thought carefully about what they did, and balanced the need for swift first attack whilst managing tree hazard risk.

It is essential that Operations Officers reiterate the importance of firefighter safety at daily briefings. Firefighter safety from hazardous trees during fire emergencies takes priority over all other considerations.

Conclusion

This case study has sought to highlight one of the key risks to forest firefighters in Victoria and provides a 'best practice' example from IMT and ground crews responding to the Mt Tempest fire.

JSOP 8.03 has been tested at a fire with a 'very high' tree hazard risk and has proven that its use will assist operational personnel in managing this significant risk.

The case study demonstrates the importance of ground crews maintaining situational awareness and using a dynamic risk assessment to inform decision making. In this instance, the crews adapted their operational plans to ensure their own safety to achieve a good outcome.

The use of the Tree Hazard Risk layer in eMap has proved valuable, with some opportunities identified for DELWP to improve the accuracy of current data.

Source

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

Further Information

J08.03 – Tree Hazard - Bushfire Response (EM-COP Library > Doctrine > JSOPs)

DELWP Work Instruction 4.4.3.1 Initial Response in Very High Tree Hazard (FireWeb I Information > Instructions, Manuals and Guidelines > Bushfire Management Manual 4 Response > 4.4 - Initial Incident Response Chapter)

Case Study:

Exercise Prometheus

Overview

Exercise Prometheus, a multi-agency discussion type exercise attended by approximately 200 people in October 2015, was one of the first major exercises for some time where the Metropolitan Fire Brigade (MFB) initiated and led all aspects of exercise management.

Recognised internally and within the Victorian emergency management sector as an extremely successful and beneficial initiative, this case study provides an overview of the exercise management and the key learnings from this project.

Initial planning for Exercise Prometheus was undertaken by MFB personnel, with the input of several external subject matter experts, and focused on the development of a discussion based exercise using the scenario of a large commercial passenger aircraft (Airbus A380) crashing in Melbourne's northern suburbs.

The emergency would result in the deaths of all passengers and crew, significant loss of life, injury to the suburb's residents and extensive, widespread damage to infrastructure, necessitating a significant response from the MFB and other emergency management agencies and organisations.

Following attendance by two MFB personnel at an exercise management course, it was recognised the scope, magnitude and experience required to develop and deliver an exercise of the scale planned would benefit from additional expertise and accordingly, a consultant was engaged.

To achieve the exercise aim and objectives in the most beneficial manner for the wide range of organisations, the style of exercise was changed to a hypothetical discussion exercise, with questions posed by a facilitator and considered by a panel/s of individuals whilst working through a scenario.

The exercise was presented in three phases of response, relief/recovery and preparedness.

Over three and a half hours, the panels responded to a range of questions relating to the scenario and some questions from the audience.

The exercise achieved a number of "spin off" outcomes including the involvement of several agencies, organisations and non-government agencies, particularly airline operators, who are not normally involved in emergency management sector exercises and activities, who had an opportunity to see how arrangements in Victoria are applied.

Lessons Identified

Evaluation – All exercises should be evaluated as part of a comprehensive exercise management approach and Prometheus was no different.

Evaluation was considered but somewhat overlooked in the early stages of planning Exercise Prometheus. As a consequence, instead of assisting with the development of the exercise aim and objectives, late incorporation of evaluation forced a review and adjustment to the exercise aim, objectives and scope.

> "determining the need and commencing planning for an exercise of this scale several months before its planned conduct was a key factor in managing the exercise effectively"

A multi-agency exercise evaluation team was established, and whilst all evaluation team members were experienced evaluators, some had limited exposure to exercise evaluation. It is important to be particular about the experience and knowledge of exercise evaluators and get commitment to being available for all pre and post exercise activities (briefings, debriefings, analysis workshop) to ensure the best possible evaluation outcome.

An evaluation plan was developed as part of the suite of exercise documents and the evaluation team briefed well ahead of the exercise on key aspects of the proposed exercise conduct and expectations. A further briefing was conducted immediately prior to the exercise conduct, and relevant materials were provided for prior review. This approach contributed to the overall success of the exercise evaluation.

Planning – determining the need and commencing planning for an exercise of this scale several months before its planned conduct was a key factor in managing the exercise effectively. The planning reference group provided beneficial support to the planning team however several agencies and organisations were represented by different people throughout the planning period. This change of personnel meant a loss of continuity which resulted in important time during meetings being spent on getting different representatives briefed on the progress to date. It is important to get a solid commitment for consistent stakeholder representation to ensure planning remains focused.

Effective and supporting exercise governance structure – the early appointment of the Exercise Director, Coordinator, Planning Team Leader and other key exercise roles meant there was a strong and supportive governance structure in place, allowing quick, effective decision making, and key planning and conduct activities remaining on track.

Stakeholder and subject matter expertise engagement – early and continued engagement with MFB, external stakeholders and subject matter experts enabled the planning team to have access to a wide range of experienced emergency and exercise management personnel. This presented opportunity for independent input regarding the exercise aim, objectives, scope and scenario in addition to the logistics required to conduct an exercise of this size and complexity.

Be prepared to think big and take the lead – Exercise Prometheus was a considerable undertaking and thrust the MFB into a key leadership role in emergency management exercising. Partnerships with EMV and the Hume City Council were invaluable.

Being prepared to adopt new initiatives – there were several initiatives introduced during this exercise which were new to exercising in the Victorian emergency management sector. The first was to film the exercise, providing an opportunity for learning benefits to continue in the future. The second was providing opportunity for audience participants to pose questions during the hypothetical discussions (where normally there would be no opportunity) via SMS which were reviewed and incorporated into the panel discussion if appropriate. The third was the use of an online invitation and booking system for exercise attendees. While there were some minor problems with the functionality of the system, it simplified some aspects of tracking attendees.

Be prepared to defer to and use exercise management experience – the Victorian emergency management sector has people who have extensive knowledge and experience in managing exercises and in general are willing to share this knowledge if approached. Using external consultants can assist significantly with guidance and in some cases, completion of key exercise management activities.

Follow documented guidance material – the Australian Emergency Management Institute Handbook 3 – Managing Exercises is widely accepted and endorsed as the primary guidance material for exercise management within Victoria. As the planning phase progressed this became the key reference for the development of all aspects of the exercise including documentation, and proved to be an invaluable tool which should be utilised for all exercises.

Don't underestimate how much time and effort it takes – exercises on the scale of Prometheus present enormous challenges in relation to people's time, effort and logistical support - they can't be just "whipped up", so consider how you will achieve all of the requirements and form a strong and resilient planning team to coordinate the exercise.

Don't become scenario focused – experienced exercise managers will identify "scenario development before the aim and objectives" as the most common issue they experience with exercise planning. The scenario for Prometheus was well developed prior to the consolidation of the aim and objectives – a common approach which can adversely influence the exercise development.

Be realistic about what the exercise will achieve – it was eventually acknowledged, during the final stages of planning there were too many exercise objectives to be achieved in the available time, necessitating the removal of one. Be realistic and not too optimistic about what may be achieved in the available time.

Conclusion

By incorporating, amongst other things, a clear exercise need, consistent planning team members, the early inclusion of evaluation, realistic aim and objectives, suitable subject matter expertise, and not being corralled by the scenario, exercises will provide opportunity to identify lessons, sustainable actions and opportunities for improvement.

The consistent use of the primary guidance material for exercise development and conduct in Victoria, the Australian Emergency Management Institute Handbook 3 - Managing Exercises, in the development and conduct of any exercise will always provide the greatest opportunity for success.

Source

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

Further Information

Australian Emergency Management Institute Handbook 3 – Managing Exercises (https://www.aidr.org.au/media/1418/handbook-3-managing-exercises.pdf)

EMV Exercising Portal which includes a calendar, library and resources (EM-COP Library > Training-Exercising > Exercising Portal)

Case Study:

Portland Stock Ship Fire

Summary

Port of Portland is a deep-water bulk port between the ports of Melbourne and Adelaide. The port specialises in bulk commodities, particularly forestry, agricultural and mining products as well as aluminium and fertiliser. It delivers $2.5 billion into the region and the nation each year and it's Victoria's largest value export port.

On 3 November 2015, a fire was reported on a stock transport ship in the port. The fire was in a 700-tonne grain silo within the ship. The grain was to be used to feed the stock for export to Russia. The vessel has a 17,000 cattle transport capacity and, fortunately, there was no stock on board at the time of the fire. There was no risk to the crew of around 50 on board.

Incident Overview

At 8.01pm, Country Fire Authority (CFA) was advised of a potential fire in a stock transport vessel. The call came during a Portland Fire Brigade meeting and the crew responded and was on scene at 8.10pm with full brigade response including two pumpers, two tankers and a multi-purpose vehicle (MPV). They received support from Heywood and Warrnambool brigades.

On board the ship, CFA crews discovered that the front starboard side of the fodder storage was on fire and was it spreading to the rest of the storage area. The colour of the smoke was a greyish-yellow and being discharged from the vent holes of the vessel, indicating the fire was burning well.

An operations point was established wharf side, and the fire was sectorised into a silo sector and breathing apparatus control. There was a direct attack on the fire and an indirect attack cooling the steel in the deck to prevent spread of the fire through conduction.

The operations point was then moved to the bridge of the vessel so an emergency management team could be formed. This included the ship's captain and master, Port of Portland duty officer and CFA Incident Controller Operations Officer. This allowed communication to the ship's crew and firefighting crews and seamless operation.

Firefighting activities included the use of carbon dioxide gas (CO^2) and injection of A Class Foam and water used for area cooling. At 9am the following morning the fire was still going and temperature probes were used to identify hot spots.

As the fire intensified, it was decided to use medium expansion foam on the surface fire and then fill the silo's void with high expansion foam to reduce the chances of a dust explosion.

"Firefighting efforts concentrated on isolating the fire and then slowly removing the stock feed while continuing to contain any fire or explosion risk"

Firefighting efforts concentrated on isolating the fire and then slowly removing the stock feed while continuing to contain any fire or explosion risk. By 12pm, a base level Level 3 incident management team (IMT) was established at the Portland local command facility.

The incident response lasted 13* days and nights and involved several agencies. It was a very complex incident and CFA ensured every step of the process was ticked off and that all agencies involved worked closely to avoid a catastrophe in the port and significant delays to the vessel's operations.

A real time performance monitoring (RTPM) team was deployed during the fire, and after-action reviews were carried out to learn from this incident and continue to build strong relationships across the agencies involved.

Lessons Identified

Training and exercises - In early 2015, Glenelg Municipal Emergency Management Committee conducted a Level 3 exercise which focused on a ship fire. This allowed engagement and relationship building within the sector and all port-related industries. In addition, pre-incident exercises were conducted by Portland Fire Brigade and these benefited the crews dealing with the incident. Previous experience and discussions also helped the emergency management team make high-level decisions early on.

Pre-incident opportunities to do training, exercises and collaboration in a marine environment should continue and be expanded, including practical training on ships.

Pre-incident relationships preparation - At a local level the relationship between CFA and the port and the relationships within the Glenelg Municipal Emergency Management Committee are solid. However, it was identified that connections with personnel at national and international levels could be enhanced through exercising at a significant incident level.

Local knowledge - The initial responding personnel had solid knowledge and the skill sets to combat such an incident at the port. However, it was identified there could be benefits in continuing to develop and enhance response to incidents and ensure specialist skill sets can be used appropriately.

Safety - The safety of personnel is always paramount and it was in the forefront of everyone's mind from the beginning of the incident. It was identified there was duplicated effort

of health monitoring, though this was an opportunity to fine tune the system and processes to ensure two agencies didn't undertake the same role. This also presents an opportunity for future exercising.

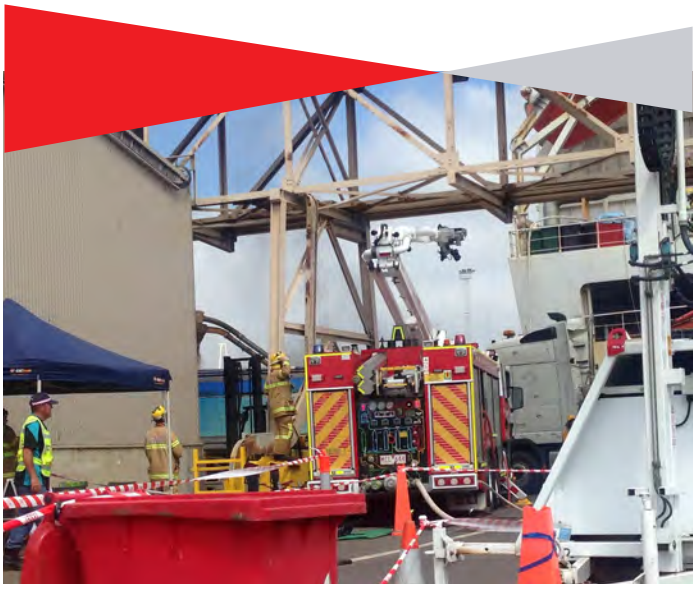
Importance of research - Extensive research was undertaken by the IMT to increase the team's knowledge about similar incidents, particularly with regards to creating an inert environment within the silo. For example, using nitrogen rather than carbon dioxide reduced the risk of static electricity production in a flammable atmosphere and gases that would asphyxiate people working around it.

Although these dangerous activities required long, tedious and methodical processes, and it was a very slow operation mainly because of the safety systems put in place, the research paid off.

Understanding the risks - Agencies and individuals involved had an awareness of the dangers of fire on ships and exposure to extreme temperatures in confined spaces. Specialist skills operators were called in, including confined space operators, breathing apparatus operators and personnel used to working with heights and ladder platforms.

Understanding the risks - Agencies and individuals involved had an awareness of the dangers of fire on ships and exposure to extreme temperatures in confined spaces. Specialist skills operators were called in, including confined space operators, breathing apparatus operators and personnel used to working with heights and ladder platforms. In addition to these operators, any firefighters who worked within three metres of the wharf edge wore a personal flotation device to enhance fireground safety. A CFA marine capability is currently under review and this review will also help develop appropriate resources and training for the risk.

Multi-agency response - It was clear from the level of shared responsibility and willingness to be involved, that there were strong relationships between Port of Portland, insurers, the



ship owners, ship masters, shipping company, Landmark, Victoria Police, Glenelg Shire Council, Australian Border Force, shipping agency Monson, Australian Quarantine and Inspection Service, Australian Maritime Safety Authority and CFA/ Metropolitan Fire Brigade scientific officers. Although CFA led the incident, the support agencies were excellent.

Conclusion

This fire was a complex, unfamiliar and unique circumstance for several reasons: the marine environment, access and operating on a vessel, feed pellet characteristics, unique equipment, confined space operations, use of inert gases to limit combustion/explosion risk, and engaging with multiple agencies and stakeholders. Yet despite this, those involved did an exceptional job managing this incident. As a result, the overall Port of Portland operations were not affected by the fire. Business continued as normal with negligible impact to the port and community.

Source

Adapted from CFA Brigade Magazine Learning from Incidents Winter 2016 (EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights)

Case Study:

Strathdownie Kaladbro Swamp Peat Fire

Summary

On 7 November 2015, a peat fire was reported at Kaladbro Swamp around 30 kilometres north-west of Dartmoor in south-west Victoria. The fire appeared to be the result of a lightning strike to a fence which ignited the peat in 12 hectares of a 400-hectare peat swamp, to a depth of up to three metres. Firefighters from Country Fire Authority (CFA), the South Australian Country Fire Service, Department of Environment, Land, Water, and Planning (DELWP) and Parks Victoria went to extraordinary lengths to contain the peat fire, with support from other agencies including Department of Health and Human Services, Glenelg Shire, Ambulance Victoria, Victoria Police, the Environment Protection Authority and the property owner.

What is a Peat Fire?

Peat is partially decomposed plant matter formed in wetlands and harvested as fuel. Unlike regular fires, the problem with peat fires is they can burn for long periods of time – months, years and even centuries. Also, it can take up to seven or more litres of water to wet a portion of peat the size of a one-litre milk carton. These fires can go into the soil and travel underground, which makes the firefighters' task much more difficult because they can spread very slowly and surface anywhere.

Incident Overview

During early morning on 31 October 2015, there was significant lightning across Glenelg Shire, and CFA and DELWP responded to many fires caused by lightning. These were all brought under control by 2 November. Aerial detection flights were used to detect any further fires which hadn't been reported.

On 7 November, a fire was reported at Kaladbro Swamp. A lightning strike on a fence ignited the peat in a 400-hectare drained peat swamp. Containment works immediately began including the construction of a containment trench around the perimeter of the fire to restrict further spread.

The initial response to this fire was within normal CFA response arrangements: a Level 1 incident reporting to the district rostered duty officer in District 4. The fire was managed for the first 10 days within the group structure, with control strategies developed to initially contain the fire.

Crews responded using tankers to contain the fire edge and to construct a channel using excavators to provide a physical barrier. This was to prevent the fire spreading into large areas of forest plantations (including both pines and blue gums) within 500 metres, and rural agricultural areas with scattered buildings. The relatively low depth of peat meant this was successful, because there was a good clay base just below the peat. Later in the firefight, these excavators were used effectively to dig out the peat, turn

and break it up so water and foams were more effective. This work significantly reduced the suppression time.

Lessons Identified

The use of a foam class in a lower concentrate - Foams with the lowest proportioning rates between 0.1 and 0.5 per cent generally have relatively fast drain times, which release solution for rapid wetting. The lower concentrate was used on this fire, which penetrated the peat at a faster rate.

Straight tips provided better penetration than fog branches -

Using the straight tips:

- gave a long reach to penetrate flames
- was least affected by wind
- was less affected by radiant heat
- attacked the seat of a fire.

In comparison, fog branches (not used on this peat fire):

- produce extremely fine particles of water that form a mist or fog stream but has the shortest reach
- are affected by wind
- can impede visibility
- use more water than the jet/straight tip.

The use of thermal imaging cameras - Thermal imaging cameras were used at the peat fire. They allowed the crew to see through smoke to assess the extent of the fire, improved safety and, most importantly, they identified hot spots burning underground which could surface anywhere.

Compressed air foam system (CAFS) equipment - CAFS was used to help crews apply firefighting foam to the fire. It worked well by penetrating the ash layer, preventing oxygen from combining with fuel and disrupting the chemical reaction required for the fire to continue. The sustained blanket of foam allowed steam underneath to remove heat from the peat.

Strategy to construct a trench/moat - The trench was constructed to form a physical barrier to contain the peat fire. Firefighters excavated to the depth of clay so that the fire couldn't burn and spread underneath the trench. They then flooded the area with water and this strategy was a huge success.

The use of P2 particulate filter masks - P2 filter masks were necessary for all crew members because of the huge amount of dust and ash around the peat. Unfortunately, as their breathing became restricted, the crew needed to change masks frequently because the disposable masks have a short life span.

The use of Bollé goggles - With dust and ash surrounding the peat, Bollé Nitro goggles protected the crews' eyes well. They provided better protection than the standard goggles because they didn't allow the fine dust particles to enter the goggles via the vents.

> "As there was no surface water available at the site, two large irrigation bores were constructed next to the fire and fitted with high capacity submersible pumps and delivery pipes by the property owner shortly after suppression commenced."

Water supplies - Containment and control of the fire needed huge and reliable quantities of water over an extended period of time. As there was no surface water available at the site, two large irrigation bores were constructed next to the fire and fitted with high capacity submersible pumps and delivery pipes by the property owner shortly after suppression commenced.

Carbon monoxide - These fires can release significant quantities of carbon monoxide gas (measured at up to 300 parts per million). Appropriate measures should be implemented early to monitor gas exposure for crews, contractors and nearby communities, and to introduce appropriate work practices and equipment to ensure their safety.

Conclusion

Peat fires are not common in Victoria so CFA members have little experience dealing with them. However, the first crews on scene implemented direct attack on the entire perimeter to contain it. The fire was brought under control in 10* days thanks to the great efforts of the crews coupled with the cooperation of the property owner.

Source

Adapted from CFA Brigade Magazine Learning from Incidents Autumn 2016 (EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights)

Case Study:

Application of the State Smoke Framework – Somerton Tip Fire

The State Smoke Framework (the framework) provides guidance in the management of significant smoke events that impact air quality and the health of communities. The application of the framework during the first three days of the Somerton Tip Fire was reviewed through analysis of incident documentation and interviews with key incident and emergency management personnel.

Incident Overview

At 02:36 on 20th November 2015, Country Fire Authority (CFA) and Metropolitan Fire Brigade (MFB) responded to a fire in a private refuse facility in Patullos Lane Somerton. The fire, reportedly started by lightning, spread through 8,000-10,000 cubic metres of compacted building waste, burning both on the surface and within the heap. The fire burnt for six* days.

The potential of the fire to produce smoke and other emissions that could compromise responder safety and impact on the community was recognised early. Smoke management and carbon monoxide (CO) protocols were activated, with a management and monitoring plan established for the fire ground, identified exposures and areas of the surrounding community.

Weather conditions were largely favourable for smoke dispersal, and for much of the fire the wind blew smoke to the north-east across open grassland rather than residential areas. This limited impact on the community and there were no significantly elevated CO or particulate matter (PM2.5) readings beyond the immediate fire area. Overnight inversion layers caused some smoke pooling, but at times when most people were asleep indoors.

What Worked Well?

The framework contains 112 detailed requirements relating to incident management, responder safety, monitoring and prediction, and public health advice and warnings. The vast majority of these were implemented at the Somerton Tip Fire. Of the 112 requirements for full implementation of the framework, 88 were met in full and seven partially, whilst 13 were not applicable to Somerton. Only two requirements were not met; the fire was not declared a 'non-smoking' incident, and the operators of the refuse facility did not provide support to the incident management team (IMT) or incident emergency management team (IEMT).

CFA and Environment Protection Authority (EPA) were familiar with the refuse facility due to ongoing regulatory issues, and a pre-plan had been prepared for the site. Thus the potential size, duration and complexity of the fire was recognised early. This resulted in progressive implementation of the framework, including work practices and health monitoring to ensure the safety of responders; and monitoring and prediction of smoke impact on the surrounding community to underpin a proactive public information program.

Application of the framework at Somerton was aided by the experience many personnel had gained from their involvement at the Hazelwood Mine Fire or as subject matter experts in the development of the framework.

> "There was a close and effective relationship between the IMT, IEMT and the Regional Emergency Management Team, with the Regional tier were able to take a wider view of potential community consequences and utilise existing networks to coordinate the multiagency response"

There was a strong focus in the IMT and IEMT on potential smoke impacts, with the appointment of a Deputy Incident Controller – Smoke who managed the atmospheric monitoring, prediction and community information unctions. The IMT and IEMT regularly accessed spot weather forecasts from the Bureau of Meteorology and smoke plume modelling by CFA, to help understand the likely direction and pooling of the smoke plume, and hence the time and location of potential impact on the community.

Arrangements were put in place to minimise impact on responders, through CO monitoring, and work practices that limited exposure through use of appropriate personal protective equipment and shift rotations.

EPA and the fire services conducted atmospheric monitoring at the fire and in the broader community and collaborated in analysing data and providing information to the Department of Health and Human Services (DHHS). Atmospheric monitors were located close to the fire, in appliances working in the smoke, in adjacent factories and nearby residential areas with potential to be impacted.

Community engagement was proactive and regular, using a wide variety of media and face-to-face contacts. Community advice messages about the smoke were agreed with DHHS early in the fire and used extensively in Watch and Act and Advice messages, 17 of which were issued during the first three days. Industry adjacent to the fire was identified as being most affected and were engaged directly by the IMT and IEMT through two industry meetings and a newsletter, and a community information point was also established, and this resulted in minimised disruption to the community.

There was a close and effective relationship between the IMT, IEMT and the Regional Emergency Management Team, with the Regional tier were able to take a wider view of potential community consequences and utilise existing networks to coordinate the multiagency response.

What Could We Improve On?

Although firefighter rehabilitation services were organised promptly, there was a delay in the provision of effective health monitoring with many fire ground personnel electing not to participate in what was seen as an optional service during the first two days of the fire. Health monitoring was made compulsory during the evening of day two and a number of firefighters and operators of private plant working in the smoke were found to have elevated levels of CO in their blood.

It was reported that a small number of contractors deliberately compromised the monitoring of CO in the cabs of their machines in order to avoid the possibility of elevated readings preventing them from completing the contract. Three contractors returned elevated CO readings and one was excluded from the job.

There was also a delay in establishing continuous monitoring of atmospheric CO. Whilst spot measurements were taken from early in the fire, the portable multi-gas detectors required for continuous monitoring were not responded until mid-morning of day one.

Smoke plume modelling is an emerging technology, and the Incident Controllers felt the modelling did not provide them with the information they wanted about the height of the plume, the concentration of gases or at what distance particulate matter would begin to fall out.

What Would We Do Next Time?

The role of a Smoke Technical Unit should be formalised within the incident control structure. On scene it could comprise a suitably senior and experienced fire service leader, fire service and EPA scientific officers and the Hazmat crew leader; whilst the Bureau of Meteorology forecaster, EPA air quality forecaster and fire service plume modeller work remotely.

Plume modelling will continue to be refined. The smoke technical experts need to work with IMT personnel to determine what predictive information is required and how it can be best presented to assist incident planning.

It is likely that continuous monitoring of atmospheric CO will be required at any fire where the framework is applicable. Consideration should be given to responding Hazardous Material technicians plus a fire service scientific officer as soon as it has been determined that the framework applies.

CO monitoring was conducted using a variety of equipment at different times. It did not appear, however, that data was able to be compiled into a single authoritative repository. There is potential to support the atmospheric and personal CO monitoring by collating all data in a single repository that allows basic analysis to be conducted automatically (e.g. rolling multi-hour averages, peak readings, exceedances of pre-defined thresholds etc.) and that is accessible on demand to authorised personnel at incident, regional and state levels.

Mandatory health monitoring for responders should also be implemented at any fire at which the framework has been applied. Clear direction is needed from the Incident Controller, as the Ambulance Victoria Health Commander does not have the authority to require personnel to undergo health monitoring. Health monitoring should include any contractors working at the scene as well as emergency service personnel.

Consideration needs to be given to the actions that will be required from Incident Controllers during the 24-hours before authoritative health advice is available from the DHHS. The Incident Controller needs to provide advice to impacted communities, but under some circumstances generic messages may be inadequate to community need. The Incident Controller will be required to make the best decision possible with the limited information available, and EPA and DHHS need to be an a position to provide the best advice they can, acknowledging that they might not have the data required for definitive statements. Of particular concern is what happens in a 'shelter indoors' scenario after 8 hours, when smoke levels inside the building have reached equilibrium with the external atmosphere, and there is no definitive advice available on the potential health impacts of exposure to that particular smoke.

Smoke messaging needs to be available in languages other than English, and having smoke fact sheets available on fire service, EPA and DHHS web sites for use by the Public Information Unit would support timely communication with the affected community.

It is important to recognise that the Smoke Framework and supporting procedures were relatively new at the time of the fire and most personnel had received extremely limited training in their application. It was also apparent that most agencies were still developing supporting procedures to operationalise the framework. Future application will be assisted by finalisation of agency procedures and provision of training to emergency management personnel in their application.

Most people interviewed advocated multi-agency exercises focused on implementation of the framework, which would involve key personnel at incident, regional and state levels.

Conclusion

Smoke can significantly impact the safety of firefighters and the health of the exposed community.

Monitoring and analysis of atmospheric CO and particulate matter is critical to understanding current and potential future impacts, and to providing a safe work environment for responders and informing the community of appropriate protective actions.

Work practices, including shift rotations and appropriate personal protective equipment, can limit the exposure of responders. Mandatory health monitoring provides assurance that responders are not experiencing unhealthy amounts of CO or other hazardous emissions.

Proactive and regular communication tailored to the needs of the affected community is crucial to managing public impact and concern.

All personnel interviewed as part of the review credited the framework for greatly increased cooperation and common understanding compared to the Hazelwood Mine Fire, with the work of EPA being particularly acknowledged by the fire services. Whilst most respondents suggested improvements to the framework and its application, they recognised it defined clear roles for each agency and guided interactions between them.

Application of the framework provided an effective focus on smoke management and ensured that the potential for harm to responders and community was actively managed throughout the Somerton Tip Fire. Since this incident, a lot of work has been completed within agencies and the sector to improve the framework and support implementation.

Source

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

Further Reading

Somerton Tip Fire Review (https://www.emv.vic.gov.au/how-we-help/reviews-and-lessons-management/operational-reviews/somerton-tip-fire)

CFA Brigade Magazine Learning from Incidents Autumn 2016 - Somerton Tip Fire Case Study (EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights)

Community Smoke Air Quality and Health Standard, Rapid Deployment of Air Monitoring for Community Health, Standard for Managing Significant Carbon Monoxide Emissions, State Smoke Framework, Smoke Management - Aide-Memoire (EM-COP Library > EM Arrangements > Emergency Plans)

Case Study:

Managing very high tree hazard risk during initial bushfire response

Since 2003, Victoria has experienced significant landscape scale fires which have resulted in vast tracts of fire-killed ash forest stands. These fire-killed ash trees now present a significant risk to firefighter safety during bushfire response as they readily burn and fall when reignited or impacted by strong winds.

This risk was highlighted with the tragic deaths of two of Department of Environment, Land, Water, and Planning's (DELWPs) firefighters during the Harrietville bushfire in February 2013. Since this time, DELWP staff have been working to implement a number of important operational improvements around tree hazard management, including those identified during the Harrietville Coronial Inquest.

Traditional first attack tactics for forest fires in mountainous terrain generally involves the dispatch of a small bulldozer to construct a mineral earth fire break to contain the fire, supported by ground crews in ultralight tankers. Ground crews then undertake blacking out operations with hand tools and water (if available). For remote fires, specialist fire crews may rappel out of helicopters to access the fire and will receive firebombing support from the helicopter. Managing firefighter safety in areas of very high tree hazard requires a modified operational response to these traditional tactics.

DELWP is committed to ensuring that firefighter safety remains the number one priority during any bushfire response. This case study from the Murrindindi Fire District outlines how operational tactics have changed when responding to fire in high tree hazard areas.

Incident Overview

Widespread lightning crossed the Murrindindi Fire District on 19 and 20 December 2015 igniting seven fires around Buxton, Narbethong and Marysville, across the Black Range, Toolangi and Marysville State Forests. This occurred during a period of extreme fire danger that triggered the highest level of bushfire readiness under regional readiness arrangements.

The fires were burning within areas previously impacted by the 2009 Black Saturday fires and contained high densities of fire-killed mountain ash trees and dense regenerating vegetation.

The development of DELWP's new Work Instruction 4.4.1.3 Initial Response in Very High Tree Hazard, guided decision making processes for staff. This instruction establishes safe operating practices to be applied in areas with very high tree hazard and directs the immediate request of aircraft to slow or retard the spread of fire and the immediate deployment of approved heavy bulldozers and excavators equipped with Falling Object Protection Systems (FOPS) to establish control lines and remove hazard trees. Ground crews are deployed to the fire, but remain at the nearest safe anchor point until hazard trees have been treated and a dynamic risk assessment is completed.

What worked well?

Effective bushfire control relies upon rapid detection of fires, and timely decision making on the deployment of appropriate personnel, equipment and resources. The fire district established a high level of readiness during this extreme fire danger period, with available machinery placed on standby (on floats) in pre-determined locations to enable

rapid response to reported fires. Contract machinery was also included in these arrangements, including excavators which are considered superior in the rapid treatment of dead trees.

The District Duty Officer and Incident Management Team (IMT) used local knowledge and tree hazard maps to quickly determine that several fires started by the lightning were in areas of very high tree hazard. This risk was communicated to responding ground crews to advise of a change in typical tactics, and to remain clear of these areas until appropriate resources arrived. Access roads into the fires had been maintained by heavy machinery as part of seasonal preparedness which assisted the ground response.

Pre-planning undertaken by fire district staff allowed rapid deployment of key resources, including firebombing aircraft as required by the new Work Instruction. All seven fires were contained with limited spread (ranging in areas of 0.1ha to 3.8ha). This was an excellent outcome considering the extreme fire danger, geographic location and number of fires.

Aerial firebombing was assessed to be pivotal in controlling the spread of these fires. Large Air Tankers were used to good effect to drop fire retardant which effectively boxed in the fires allowing heavy machinery more time to construct control lines.

What could we improve on?

A number of issues were identified in review of this response strategy. A safety issue raised after the fire event related to the need to ensure that machinery operators could be safely extracted back to the anchor point following a machine breakdown.

Availability of heavy machinery and trained operators was problematic due to the number of fires that had ignited in the area. Timely provision of these resources is a vital component of the new modified response in areas of high tree hazard.

Fire district staff engaged additional contractors (using an established panel of providers) to increase the number of available machines and were assisted by a VicForests harvesting contractor undertaking timber harvesting operations nearby. The harvesting contractor was assessed to be highly skilled in performing the required work, with tree harvesting equipment fitted to the machine providing greater capacity to fall trees in desired directions and mechanically cut off burning tree ends. Ready access to heavy machinery with the capability to efficiently fall large numbers of hazard trees will enhance future response in these areas.

The time taken to resource and dispatch appropriately trained and skilled machinery operators to each fire was assessed to be variable. Less experienced operators were observed creating large windrows during control line construction, which generated more work for ground crews to mop up and patrol the fires in the following days. Experienced DELWP and contract machine operators ensure safe and proficient operations and enhance the safety and efficiency of subsequent ground crew operations.

As the community wants to see a visible response to fires as quickly as possible, there is potential for misunderstanding around any decisions to hold back ground crews for safety reasons. DELWP will investigate opportunities to

better inform the community about modified firefighting tactics in areas of high tree hazard. Delivering an efficient operational response with appropriate machinery capability to manage tree hazard whilst keeping fire sizes small will be critical to managing community perceptions, especially if these situations become more frequent.

Local Country Fire Authority (CFA) brigades have been informed about the changes to firefighting tactics in very high tree hazard areas by fire district staff. Additional awareness activities will need to occur more widely to ensure all CFA firefighters develop an understanding of the tree hazard risk and the modified tactics being used in these areas to support future multi-agency response.

What would you do next time?

Using appropriately trained and experienced staff to operate heavy machinery in steep and difficult terrain on the fire ground was assessed to be highly beneficial as they were able to provide accurate fire behaviour observations and situation reports back to the Incident Management Team (in the absence of ground crews). DELWP bulldozer operators are trained and experienced in fire behavior assessment, but panel contractors may not have the same skills. DELWP will work to maximize the number of fire trained operators available for heavy machinery.

Given the usefulness of specialised timber harvesting machinery with directional tree falling capability, DELWP will also investigate opportunities to increase the availability of such machinery during peak fire danger periods.

Conclusion

The fires burning in very high tree hazard areas could not be approached using traditional first attack tactics due to concerns for firefighter safety. Judicious planning and readiness arrangements made it possible to successfully suppress these fires with concerted aerial firebombing accompanied by ground attack with heavy machinery, including forest harvesters and excavators.

This case study highlights the value of pre-determined response strategies in areas of very high tree hazard and the effective engagement and deployment of appropriate heavy machinery from DELWP and nearby forest industry operations.

The successful outcome of this operation reinforces the importance for land management and fire response agencies to pre-plan for safe operations. This includes creating cleared safe areas, selecting roads to maintain or close for fire management and public access and the engagement of heavy machinery with suitably skilled operators in the right locations, for rapid response in areas of very high tree hazard.

Source

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

Further Reading

DELWP Work Instruction 4.4.1.3 Initial Response in Very High Tree Hazard (FireWeb | Information > Instructions, Manuals and Guidelines > Bushfire Management Manual 4 Response > 4.4 - Initial Incident Response Chapter)

Case Study:

Major Highway Closure: Barnawartha – Indigo Creek Road Fire

Incident Overview

On Sunday 20 December 2015 at approximately midday, a tree fell on a power line in strong winds and sparked the 6,674ha* grass and scrub fire at Barnawartha in North East Victoria. Named the "Barnawartha-Indigo Creek Road Fire", it ran quickly and very hard under the influence of a strong Northerly wind, burning approximately 4,000ha in the first two hours. It caused significant losses including four houses destroyed, another house damaged but habitable, damage to three outbuildings, 28 sheds destroyed and a further five damaged, with further loss and damage to cars, equipment, infrastructure, stock, and water supplies. A large contingent of firefighting and incident management personnel were required to manage this fire.

In addition to the abovementioned losses and damage, an approximate 50km stretch of the Hume Highway was closed between Springhurst and the Hume-Murray Valley Highway Intersection. All traffic was diverted along the Rutherglen-Springhurst Road and the Murray Valley Highway.

Lessons Identified

Whilst there were a number of key learnings identified from this incident, the focus of this case study is to create awareness of the active management in both closing and re-opening the Hume Highway, and the associated consequence management requirements.

The Guidelines for the Operation of Traffic Management Points during Class 1 Emergencies (v1.1) dated 5 November 2014, which recognise circumstances may exist that require Traffic Management Point staff to make decisions outside of the procedures detailed in the guideline, proved effective and useful in this instance.

Some interesting and compelling data provided by VicRoads regarding the number of cars and trucks that travel along key thoroughfares across the state on an hourly basis, shows that if a decision is made to close a major highway, the consequence of such an action can result in a traffic jam growing by around 2.5 kilometres every hour. It also has the potential for the equivalent number of people to a small country community, being stranded in possibly unsafe and uncomfortable conditions.

When we consider the Hume Highway is a major arterial link connecting numerous communities throughout Victoria and New South Wales, the closure of this vital lifeline can have a very detrimental effect on these communities and Victoria's economic prosperity.

Wire rope barriers prohibited road users from turning around, and equally prevented emergency service personnel from responding safely to any additional emergency - be that further fire, or a heat or medical related emergency to any person caught in the traffic congestion. With several hundred vehicles, significant numbers of vulnerable people on scene, displaced animals, searing temperatures, smoky conditions, flying embers, and dehydration all combined with a lack of situational awareness about the fire and whether those at the road closure may be impacted, a real recipe for disaster exists if the situation is not proactively managed.

> "the process of recognising the consequences of the road closure, and planning for reopening at the same time as the closure occurred allowed for effective management and consequence limitation."

The successful strategy that was implemented as part of the overall Traffic Management Plan for this fire was the early recognition the fire front had passed. In fact, the process of recognising the consequences of the road closure, and planning for reopening at the same time as the closure occurred allowed for effective management and consequence limitation.

Following a basic safety assessment of the highway, which considered further fire impact, potential tree danger and obvious surface damage, a decision was taken to allow motorists through the roadblock at a reduced speed limit, therefore continuing their journey.

This strategy development required close liaison between members of the Incident Management Team and officers at the Traffic Management Point. The closure was on the Emergency Management Team's agenda and a combined effort resulted in a successful outcome of this facet of the Traffic Management Plan

The Hume Regional Controller and Incident Management Team, supported by their respective Emergency Management Teams (both Regional and Incident), recognised the consequences of this highway closure, and turned their minds to actively managing this complex element of the incident.

There have been a number of recent instances where the need for major thoroughfares to be closed has existed; it is vital when these well considered decisions are made, a plan is developed to manage the people and animals caught up in the closure.

This could include what occurred at Barnawartha, or be a combination of rerouting and/or diverting traffic, or even staying put at the point of closure, providing appropriate relief requirements such as water, nourishment and health support where necessary, while sheltering until traffic can move again.

Continual communication between officers at the closure point and the Incident Control Centre, particularly the Incident Controller, Traffic Management Manager, local government and Department of Land, Water, Environment and Planning - Agriculture, is fundamental when managing these aspects of an emergency.

Updating information on the status of closures on VicEmergency and VicRoads websites, along with accessing Emergency Broadcasters, Victorian Bushfire Information Line and the use of social media will assist in keeping the community informed.

Conclusion

The proactive approach of the management personnel involved formed the basis of the positive outcome to this key aspect of the incident. Despite putting road detours in place, the potential consequences of not allowing existing traffic at the traffic management point (located on the Hume) through the area, and equally not re-opening the Hume Highway at such an early stage, could have caused far-reaching implications to emergency service personnel and broader community members alike.

The connectedness across teams, early recognition of existing issues and potential dangers, and consideration of the broader consequences, are key aspects of best practice decision making, which could be used to inform the management of any similar event in the future.

Source

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

Further Reading

Guidelines for the Operation of Traffic Management Points during Class 1 Emergencies (v1.1) dated 5 November 2014 (EM-COP Library > Doctrine > Technical)

Case Study:

Use of a 'Wilderness Response Paramedic' to support firefighters at Wye River

Background

The response and containment of the Wye River – Jamieson Track fire in December 2015 and January 2016 required the deployment of a significant number of firefighters. Many of these firefighters worked in challenging and steep terrain for a number of days to construct more than 12km of mineral earth control lines using hand tools. At some places the terrain was estimated to have slopes greater than 40 degrees (very steep). It is not feasible to use heavy machinery to construct control lines in such areas due to stability and safety limitations.

Hand line construction is performed away from vehicles and comes with significant risks to the ground crews involved. Risks include exposure to hazardous trees (including those affected by fire), being struck by vegetation, insect and snake bites and increased potential injury through slips, trips and falls. Occupational Health and Safety (OHS) statistics collected within Department of Environment, Land, Water and Planning (DELWP) have shown that the number of annual muscular stress related incidents reported in 2015-16 increased by more than 23% from previous years. The arduous work conducted at the Wye River fire was a significant factor in this increase.

A large number of DELWP firefighters receive level two first aid training under existing training arrangements, and can render a moderate level of first aid assistance to colleagues when required. However, this level of training does not currently extend to extraction of wounded personnel or the application of drugs or other medicines that may be required in critical medical emergencies. These can only be provided by doctors or paramedics.

Incident Overview

Ground crews working on the Wye River fire were constructing hand lines in remote areas that were only accessible by 4WD vehicle.

Incident action plans for fires will sometimes reference 'evacuation by helicopter' in cases of medical emergency. Helicopters are often used to provide operational assistance to ground crews (e.g. fire behavior information, crew transport) and would have potentially been available to ferry an injured firefighter if required. Ground crews at the fire tried to establish a helipad near the area of operation but were initially unsuccessful due to the challenging terrain.

Two 4WD ambulance vehicles had also been noted by fire crews at one of the base camps set up for the fire, although these were over one hour's drive away from the fireground.

One of DELWP's experienced Divisional Commanders had extensive local knowledge of the area and was concerned about the remoteness of the operation and the elevated risk of medical emergency. These concerns were raised with the Incident Controller. Both the Divisional Commander and the Incident Controller had undertaken overseas deployments

> "After consultation between the Incident Controller and Ambulance Victoria, it was determined that a 'Wilderness Response Paramedic' would be stationed in a safe location near the high risk operational area"

within the United States and Canada, and taken note of the use of outposted paramedics and specialist medical teams in those countries to respond to medical emergencies during bushfires.

Given the difficult nature of the work being undertaken, the nature of the terrain and the initial difficulty in establishing a helipad, the Incident Controller began investigating opportunities for the deployment of an outposted paramedic to help manage the higher level of risk associated with this fire. The aim of this was to increase the level of medical assistance available, and to reduce response times for delivery of critical care (if required).

What worked well?

The request was discussed between agencies and was widely supported. It posed procedural and policy challenges for the Incident Management Team (IMT) on a number of levels, as access to the fireground is strictly limited under safety and risk management procedures.

Accommodating non-fire accredited personnel on the fireground posed a challenge as procedures require that all personnel accessing the fireground must have completed basic wildfire awareness (BWA) training (not currently a training requirement for Victorian paramedics). There were also concerns raised by Ambulance Victoria management who were required to ensure health and safety requirements for their staff. However, the procedure does allow for non-fire accredited personnel to access the fireground when escorted by a person who holds a BWA or equivalent accreditation. This procedure was also used to meet community needs by using firefighters to accompany members of the community into township areas to inspect damaged properties and collect personnel belongings from unaffected homes.

After consultation between the Incident Controller and Ambulance Victoria, it was determined that a 'Wilderness Response Paramedic' would be stationed in a safe location near the high risk operational area. The paramedic had access to fireground communications and could be contacted if necessary. The Divisional Commander oversaw transport responsibilities for the paramedic whilst on the fireground. Once deployed, the paramedic also liaised with ground crews regarding a potential location of a helipad for medivac purposes. A helipad was subsequently constructed a short distance away from the main operation area.

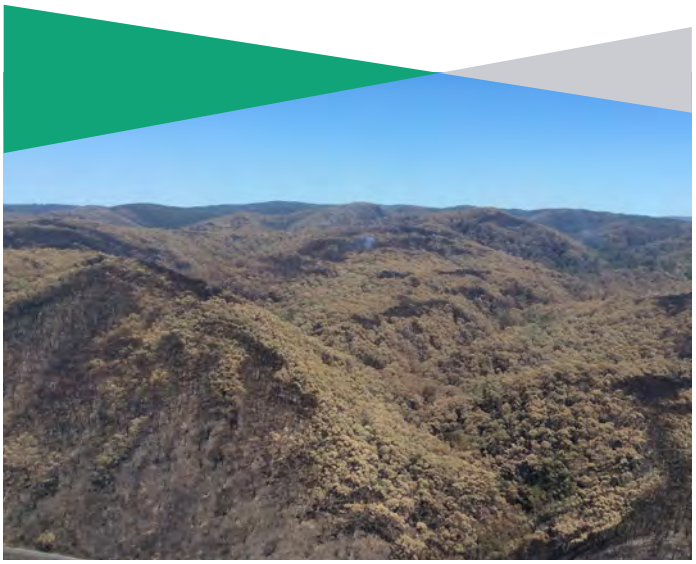
What could we improve on?

Whilst existing fireground access policy is vital for managing safety issues associated with non-accredited personnel, this case has highlighted the need for IMTs to adopt flexible and risk-based arrangements when required to meet the needs of ground crews. Arrangements are already established through procedures and protocols so that IMTs can establish individual reporting arrangements that accommodate other groups of personnel (i.e. wildlife rescue volunteers, risk assessment teams and media).

The ongoing requirements and determinants for arranging outposted paramedics at fires has not yet been fully researched by DELWP, but will be given further consideration. This work will include close liaison with Ambulance Victoria to ensure that any potential OHS issues can be addressed.

It is recognised that specialist medivac helicopters are a shared resource in the community, and may not always be available for medical emergencies on the fireground. The potential for this unavailability is increased where the fireground is remote, or affected by weather or smoke. The use of medivac helicopters in emergency response planning to provide critical care to firefighters in the event of a medical emergency will be looked at as part of the current review.

Clarification on the level of fireground training and accreditation requirements for paramedics to attend a fireground was also raised as an issue at the Wye River fire debrief. This has been registered by the DELWP Office of the Chief Fire Officer for further review in 2016-17. DELWP has also reviewed the level of first aid training provided to firefighters and is considering recommendations from the review.



Conclusion

The decision to position an outposted Ambulance Victoria 'Wilderness Response Paramedic' close to the fireground at the Wye River fire ultimately meant that the availability of high level first aid was enhanced, and that the time taken to administer medical assistance to ground crews (if required) was greatly reduced.

This decision provided a good level of reassurance for ground crews in the area, knowing that help would be more readily available if required. Fortunately there were no serious medical incidents requiring response by the paramedic.

Source

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

Case Study:

Broadmeadows Tyre Fire

Incident Overview

At 8.57am on Monday, 11 January 2016, the Metropolitan Fire Brigade (MFB) received a call for a fire in a tyre pile at 175 Maygar Boulevard, Broadmeadows. The fire was reported to have started in machinery at the site, however by the time the first crews arrived, the fire had spread to a small section of a pile of tyres, approximately 100m x 60m in size.

Rubber tyres are made from combustible compounds, including carbon, oil, benzene, toluene, rubber and sulphur, and are not easy to ignite, as they are designed to absorb the heat generated by the friction of road contact. However, once ignited, this same ability of tyres to absorb heat makes extinguishment difficult. The high carbon content and the steel cords within tyres act as a heat sink, absorbing and storing heat within the tyre. Although extinguishment cools the tyre from open flaming to a smouldering stage, the stored heat can cause the tyres to reignite.

At the height of the fire, around 50% of the tyre pile was alight and initial estimates reported the fire would burn for four to five days. Over the course of the fire, over 100 firefighters, 22 fire trucks and specialist units battled the blaze, as well as two airport tenders and two helitac aircraft (Elsie and Gypsy Lady). The rapid and aggressive attack by all crews, however, saw the fire being extinguished in just over 24 hours from ignition.

The forecast 38 degree temperature for the day meant the Regional Control Centre (RCC) at Melton and the State Control Centre (SCC) had been activated and were able to assist the Incident Management Team (IMT) at the fire from early in the event. Fortunately, the wind conditions on the day of the fire were such that the smoke rose almost directly upwards before being dispersed. Other wind conditions could have led to much greater smoke dispersion at ground level and more significant health impacts on the community.

What worked well?

A large tip fire in Somerton in November 2015, provided recent experience for agencies working together to manage a large, long duration fire with significant off site impacts, as had the Hazelwood mine fire of 2014. The learnings from these fires ensured that the consequences of toxic smoke ensured that the consequences of toxic smoke release, the impact on community and the importance of public information were identified early and managed throughout the incident. The significant impact on the community was identified and measures put in place to release important public information on the fire and the smoke being generated. This in turn led to the creation of two Deputy

Incident Controller roles within the Incident Management Team (IMT) structure – Operations and Community Consequence. Community meetings were facilitated by the Deputy Incident Controller and allowed for timely information to be disseminated directly to the affected parts of the community.

The scale and location of this incident meant that Country Fire Authority (CFA) and Aircraft Rescue and Firefighting (ARFF) played a significant role in assisting firefighting operations. The utilisation of a second command vehicle provided an additional onsite meeting and resource centre. This command vehicle provided room to conduct Emergency Management Team (EMT) meetings and develop community information whilst the other command vehicle focused on operational activities.

Co-operation and collaboration between response and support agencies, including local government, contributed to mitigating the emergency in a timely manner. Relationship building, such as multi agency exercise management activities, joint agency and emergency management planning meetings, station and site familiarisation drills have provided a platform for key personnel across agencies to better understand dependencies and inter dependencies in the planning, preparation, response and recovery processes.

What could we improve on?

The debrief for this incident included a range of key stakeholders sharing their experience and opportunities for improvement. The length of time that this fire was burning and the amount of smoke generated caused significant community interest and concern. A number of community warnings were issued throughout the incident and media officers were established at both the incident site and at the Burnley District Command Centre (DCC). Community meetings were held and at these meetings, a Department of Health and Human Services (DHHS) prepared fact sheet regarding the health consequences of the smoke was disseminated.

All the public information roles under Australasian Inter-Service Incident Management System (AIIMS) were filled – information and warnings, media, and community liaison – however there was a disconnect in the overarching media strategy. The appointment in the afternoon of two experienced CFA Public Information Officers and their location at the IMT on site dramatically increased the frequency of community warnings and brought a more coordinated approach to the public information strategy. Though social media was monitored throughout the incident, a need to further develop this capability with a feedback loop to the community was identified as key. The importance of establishing the role of Public Information Officer early within the IMT at an incident of high community consequence is crucial to ensure timely, relevant and high quality information is disseminated to the community.

On the fireground, firefighter safety was identified as a priority. A firefighter rehabilitation area was established early in the incident and consisted of a hydration area, ambulance medical monitoring and the brigade medical officer present to ensure firefighter welfare. The implementation of this process and the cycling of crews through this this area was not managed as well as it could have been. It has been identified through the debrief process that some crews worked for longer periods than they should have and there was a level of disorganisation around where and when decontamination and rehabilitation were to take place.

The opportunities for improvement identified through this debrief have led to the development of a more structured approach to firefighter welfare. This new model channels firefighters from the fireground through decontamination, medical monitoring and rehabilitation areas, before being sent back to the staging area for redeployment to the incident. This new process increases accountability on the fireground and ensures that the health and safety of firefighters is maintained.

Source

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

Case Study:

Rapid onset storm events - Geelong Thunderstorm

Incident Overview

On Tuesday 26 January 2016 at 2.05pm, the Bureau of Meteorology (BoM) provided advice to Victoria State Emergency Service (VICSES) that there was a potential for slow-moving thunderstorms across the South West Region the following day. At around 2.30pm on 27 January, a severe thunderstorm impacted the heavily-populated residential suburbs of the City of Greater Geelong, in particular the residential areas bounded by Corio Bay, the Geelong Ring Road, and the Princes Hwy, Waurn Ponds.

The thunderstorm was relatively slow moving. The BoM advised that this thunderstorm was considered to be a supercell, which resulted in very heavy rainfall leading to flash flooding across parts of Geelong from around 3.30pm. More than 70mm of rain fell over parts of Geelong in the space of a few hours, causing extensive damage to homes, businesses, schools, public facilities, council properties and essential assets such as roads and drains across the city.

The heaviest falls recorded were at Hamlyn Heights (74.68mm from 9:00am Jan 27 to 9:00am Jan 28) and at Avalon Airport (72mm from 9:00am Jan 27 to 9:00am Jan 28). The worst hit areas included Geelong West, Hamlyn Heights, Highton and Newtown. The monthly average for January at Avalon Airport is 33mm. This event has been determined a one in 50 year event, with the significant rainfalls at Avalon determined to be a one in more than 100 year event.

Flash flooding required significant multi-agency response at incident, region and state levels. VICSES and Country Fire Authority (CFA) responded to more than 350 requests for assistance (RFA) during the afternoon of Wednesday 27 January and morning of Thursday 28 January. Eighteen people were rescued from their cars, while a man was struck by lightning in Highton. Significantly, no lives were lost.

The storm caused significant damage to over 300 properties, including impact to 213 residences, 18 schools, 5 early learning centres, and 74 council-owned buildings. The storm damaged essential assets, including road, drains, and other infrastructure. It also led to outages of the mobile phone and electricity networks. A total of 35 residential properties were designated as uninhabitable due to storm damage.

Transition to recovery occurred on Monday 1 February 2016. Geelong City Council took more than 900 calls during the nine days following the storm regarding problems associated with flooding, drain or pit cleaning, dislodged pit lids, and fallen trees. Geelong City Council worked with over 200 residents on a range of issues since the downpour, including uninhabitable homes, mould, rubbish collection and access to grants.

Geelong City Council was supported by Department of Justice and Regulation (DJR) to organise rubbish removal from 160 properties. Department of Health and Human Services (DHHS) distributed up 31 emergency Relief Grants, 6 Re-establishment Grants (Part A) and 3 Re-establishment Grants (Part B) (as at 1/8/16). Many more properties were also impacted but didn't need to make contact with Council or DHHS for assistance.

> "the characteristics of these types of events are challenging for the emergency management sector to manage. These events are difficult to predict and, once they occur, it can take substantial time to fully understand the impacts."

A facilitated community meeting was held on the evening of 22 March 2016 at the Geelong West Town Hall with approximately 60 residents attending. Organisations present included: the Geelong City Council, DHHS, Council of Churches – Emergency Ministries and the Barwon Community Legal Centre. Information was provided regarding drainage, debris removal services, dealing with m ould, reestablishment grants, insurance, personal support and disaster legal aid.

Lessons Identified

Initial Response - the Incident Controller (IC) quickly recognised the scale of the incident, assumed control and rapidly established control structures at the ICC and on the incident ground. These early incident management structures supported a rapid and effective multi-agency response to a significant number of requests for assistance.

Implications of rapid onset storm events – the characteristics of these types of events are challenging for the emergency management sector to manage. These events are difficult to predict and, once they occur, it can take substantial time to fully understand the impacts. Although rapid storm events of this scale are rare, they significantly challenge the sector's arrangements, procedures, capability, structures and processes.

It is important that response and recovery organisations understand the particular characteristics and complexities of rapid impact storm events and undertake more comprehensive preparedness planning. Arrangements and procedures must be flexible, adaptable and should be exercised to ensure they appropriately support a range of hazards. Underpinning work is required to model potential storm events and identify the intelligence sources that provide triggers for incident escalation.

Determination of major emergency – the lack of clarity around whether this incident was a major emergency or not influenced a range of aspects of the response and recovery of this incident, including resourcing levels, multi-agency support, reporting expectations and regional oversight. Clear determination of an incident as a major emergency is critical for establishing expectations, minimising confusion, and supporting effective information flow.

Managing multiple emergencies – within the Barwon South West Region, there were a number of emergencies occurring at the same time as this storm. In addition, this event occurred after a series of large, complex and unusual emergencies over a number of months. The competing priorities at regional level may have influenced a range of aspects of this incident. Managing multiple emergencies challenges the capacity of the emergency management sector and adds a layer of complexity, particularly at the regional level.

Underestimation of incident scale – the underestimation of the scale of the incident and the extent of impacts to the community appeared to have considerable influence on the evolution of this incident. This underestimation may have been partially due to limited experience in such events of this scale and the challenges to obtaining a comprehensive understanding of the location and scale of impact. Stronger preparedness planning may assist in recognising the signals of a potential major emergency and minimising the underestimation of such incidents. In the initial stages of an incident, a robust estimation of the potential of the impacts is crucial for establishing appropriate structures, anticipating challenges and enabling rapid decision making. First responders can provide critical intelligence about the scale and nature of community impacts that can be used to inform impact assessment and recovery planning. However, data often varies in quality and is captured using inflexible single-agency systems that do not support information collation and sharing.

Interface between response and recovery – there appeared to be a lack of shared understanding about the triggers for transition between response and recovery, as well as inconsistent understanding in relation to what implications the transition has for control, support and recovery agencies. The need for a smooth transition between response and recovery was acknowledged as important and personnel made considerable efforts to integrate these aspects of emergency management. However, the sector lacks the systems, processes and training to ensure the transition is managed effectively, limiting the maturity of the sector to truly integrate response and recovery.

Conclusion

This incident was an important opportunity to identify lessons about the management of rapid onset severe weather events impacting on large urban communities. Consistent with all emergencies, this incident was characterised by complexity, uncertainty, competing goals and dynamic conditions.

Based on the lessons from the Geelong thunderstorm, personnel should keep the following in mind:

- Ensure readiness arrangements are flexible and agile because the location and severity of rapid onset storm events are difficult to predict.
- Forward plan resourcing and proactively escalate arrangements based on potential community impact where possible, rather than waiting for the impact to occur.
- When rapid onset events do occur, quickly notify other agencies and escalate the incident level early to ensure adequate support and resources are available.
- Continually reassess the situation and reconsider competing priorities based on the potential consequences to communities, particular when managing multiple emergencies.
- Recognise the potential to underestimate the scale of storm and flood impact because it can be difficult to see damage from the street.
- Share information about community impact across agencies and organisations – everyone must contribute to build the overall picture, don't assume others know what you know!
- Continue to strive for smooth integration of response and recovery through frequent communication and genuine collaboration.

Source

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

Further Information

Greater Geelong Thunderstorm Review (EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights)

Case Study:

Marina Boat Fire

Summary

On a windy Saturday afternoon on 20 February 2016, multiple calls were received about a number of boats in a blaze at Blairgowrie Marina on the southern Mornington Peninsula. The newly-reopened marina has berths for about 330 boats, and three boats were seriously damaged by the fire. The area was still in the middle of peak tourist season and was flooded with visitors. The fire became a major spectacle for the day for both those on the land and at sea, with the marina packed with boat owners. Swift action by the responding Country Fire Authority (CFA) and marina operations crews kept damage to a minimum and prevented a major catastrophe.

Incident Overview

At 2.36pm, a call was put through that a boat was on fire in row A at Blairgowrie Marina and there were a lot of flames and black smoke. Rosebud Fire Brigade pumper turned out first followed by Rye and Sorrento brigades. Safety Beach Coast Guard brigade was requested, though they had already responded after they saw the smoke while patrolling the waters adjacent to the Peninsula.

Police and Ambulance Victoria were also requested within minutes of the brigade arriving on scene. A man who suffered burns during the fire was stabilised by ambulance crews on scene and then taken to Frankston Hospital in a serious but stable condition.

When the brigades arrived at the marina, three boats were well alight. Due to a swift and aggressive firefight following the principles of rescue, exposure, containment, extinguishment and overhaul (RECEO) only a small number of boats sustained damage. However, there was significant damage to the marina infrastructure.

Sorrento brigade Captain Darren Croad was incident controller with Station Officer Mark Flower from Rosebud brigade taking the operations officer role and Operations Officer John Francis was District 8 rostered duty officer providing emergency management team (EMT) support.

The incident area was immediately sectorised into beach sector, marina sector and on-water sector.

The beach sector was run by Fourth Lieutenant Paul Baiguerra from Rye Fire Brigade. The marina operations team followed the procedures in the Blairgowrie Yacht Squadron Emergency Management Plan and two vessels on fire were towed towards the shore and extinguished with a hand line from the beach by a CFA crew.

The marina sector was run by Station Officer Flower. The crew concentrated on providing exposure protection and extinguishing the vessels still at berth using 38mm hand lines.

The on-water sector was run by Mark Woollard from Rye brigade and was placed on the coast guard vessel to help the coast guard brigade extinguish the vessels that were freed from the berth.

Overall, this sectorisation assisted in managing and controlling the incident.

"Within minutes of turning out, the crew leader requested the response of Victoria Police, Ambulance Victoria and, importantly, Safety Beach Coast Guard brigade. This early activation of the coast guard was identified as important because of travel time and distance involved"

To combat the fires, the positioning of the crews was important because fires were burning in three distinct areas. The Sorrento pumper was allocated close to the marina via the main connecting ramp and was connected to the marina's 64mm fire service with hand lines supplied direct from Sorrento pumper to the marina pontoons. Rosebud pumper helped by boosting the main 64mm hydrants via the boost point that extended on to the marina and the supply of hand lines to the beach.

Lessons Identified

Early activation - Within minutes of turning out, the crew leader requested the response of Victoria Police, Ambulance Victoria and, importantly, Safety Beach Coast Guard brigade. This early activation of the coast guard was identified as important because of travel time and distance involved, and to ensure we continue to develop our partnership with coast guard.

Initial actions - The yacht club's personnel and management gave important assistance to the brigades by clearing the traffic so that brigade trucks had access to the main and boom gates. These actions contributed positively to the incident outcome.

Appropriate vehicle responded - Each brigade that responded to the fire made the decision to take their pumper. This was appropriate for the type of risk which required breathing apparatus crews and the ability to perform boost point activities.

Strategies and tactics - The decision to relocate burning vessels to the shore definitely reduced the spread of fire and subsequent damage to other surrounding vessels.

Incident management team structure - It was recognised that the incident management team (IMT) developed was appropriate and suitable for the event. The sectorisation of the area helped to control the incident.

Pre-planning and local knowledge - Although the pre-plan had not been updated since the marina's renovations, it was still very useful under the extreme circumstances. Understanding of the facilities helped to formulate the strategies and tactics, in particular the location and use of the hydrant boost point. The use and success of the boost point at this location should be noted and referenced.

Safety concerns - It was identified that the hazard of operating in a marine environment meant there was a real risk of emergency service personnel falling into the water and possibly drowning. Safety measures need to be addressed by crews when working in a marina and, in particular, a deep water marina.

Emergency partner response - It was identified that local CFA crews had limited knowledge of the coast guard's and Metropolitan Fire Brigade's (MFBs) capabilities and capacity. There are opportunities to further integrate training within brigades where a marine risk is present.

Fireground communication - Fireground communications posed some difficulties during the fire. Establishing fireground channels was of some help, but further work is needed to fully understand the causes of the problems.

Identified roles - Although the EMT structure was developed immediately at the incident, it was identified that the use of tabards would have helped agencies' members to talk to the appropriate people.

Conclusion

CFA crews were faced with a difficult firefight because of the thick black smoke and strong winds, together with the complexities of a marina, the additional safety considerations and the significant potential for spread to other boats. The actions of the crews limited the spread of the fire and ensured there were no serious injuries to the community or to responding crews.

Lessons identified from this incident will help brigades and the yacht club's management refine the Emergency Response Plan to reduce the impact of fires in the marine environment.

Source

Adapted from CFA Brigade Magazine Learning from Incidents Winter 2016 (EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights)

Case Study:

Tanker Rollover at Inglewood

Summary

In Inglewood located in the Shire of Loddon, an unplanned power outage was affecting the town when a B-double petrol tanker crashed and dislodged two power lines. It then rolled on to its side and stopped in the front yard of a property, partially blocking the Calder Highway.

Brick pillars from the fence of the property tore open the fuel tank and more than 40,000 litres of petrol and diesel spilled on to the Calder Highway and into the surrounding drains.

Emergency services were called and responded immediately to the incident. Twenty eight people were evacuated from their homes. Around 600 households in the area were left without electricity for 24 hours. Although there wasn't a fire, the potential for ignition was significant during the emergency.

Incident Overview

On 6 April 2016 at 7.45pm, emergency services were responded to a reported motor vehicle accident, with possible people trapped. The first crews on scene reported that the incident was actually a fuel tanker which had rolled and ruptured, leaving significant amounts of fuel on the highway and spilling into the surrounding drainage system. Police, Ambulance Victoria and Inglewood and Bridgewater brigade crews were on scene within minutes. By 7.50pm, the driver was seen to out of the truck and needing medical attention.

Environment Protection Authority, Powercor and Victoria State Emergency Service (VICSES) were also requested, because if the power was came back as scheduled at 8.30pm the result would have been catastrophic. At 7.55pm, Powercor confirmed power would remain off until the area was safe.

The rostered duty officer was quickly notified by the incident controller and as a result an operations officer was sent to provide support to the incident controller. Specialist resources were requested throughout the night and into the next day. They included: Metropolitan Fire Brigade's (MFBs) bulk B-class foam POD and ultra-heavy pumper, Scoresby brigade's hose layer, Corio brigade's heavy hazmat with Area RAE monitor, Shepparton brigade's heavy hazmat, Ballarat brigade's hazmat, Golden Square brigade's field operations vehicle, Country Fire Authority (CFA) District 2's B-class foam trailer and private recovery operators.

A total of 11 brigades attended the incident which lasted throughout the night. CFA operations concluded at 7pm the next day.

Lessons Identified

Pre-planning - The brigades' planning, ongoing training and experience from past events all helped at this incident. The brigade had previously participated in exercises to consider the consequences of such an incident. The power outage in Inglewood resulted in a number of complications, such as the station door needing to be opened manually so that the trucks could be dispatched without delay. The pre-planning in this situation was invaluable.

First attack - The crew was tasked to contain the spill with B-class foam to reduce the risk of ignition. It was identified that further training and familiarisation in the use of B-class foam in response to large fuel spills, including method of containment, would give crews a greater understanding in the use of foam equipment in similar situations. Training would have helped those first on scene to apply the foam faster to the affected areas. As practical training in B-class foam is currently unavailable in CFA because of the environmental impact, brigades will need to rely on theoretical training. A practical training program is currently under development and will be available soon.

Hazmat template warning - The use and requirements of the hazmat warning template was essential in this incident in order to alert the community. Given the limited number of hazmat calls, it's vital that warnings and advice officers are familiar with the specialist templates.

Speciality equipment - Area RAEs were used to remotely measure explosive mixtures in the atmosphere. These took some time to be established because the equipment is limited to major cities. In remote areas, it's vital to make an early request for specialist equipment.

Establishing a staging area - The staging area was established early. However, there was also a need for a staging location for the responding vehicles in the immediate area. Due to the size of the incident, numerous vehicles responded and there were many roadblocks in place. This caused difficulty in diverting large vehicles. The potential for mass convergence is often overlooked in planning for major events and should be carefully considered.

Catering - Food services were set up early and close to the staging area for both the crews on scene and for the evacuated residents. Many people from Inglewood Lions Club and the local community cooked and served food. The Loddon South Group's pre-plan for catering is a perfect example that pre-planning and coordination works well.

Effects of power outage on warnings - With the extended power outage, the residents were not prepared for an emergency and warnings were ineffective at times as the residents' mobile phone batteries became flat during the incident.

Communication - There were a number of issues regarding communication, which are often experienced in multi-agency events. MFB couldn't talk to VicFire because their own frequencies were out of range and they were not fitted with CFA radios. Local command facility radios failed because the backup po wer system eventually drained because of the length of the power outage.

Community - The community expected that all properties would be door knocked during the incident to inform them face-to-face about what was happening. However, this wasn't possible because there weren't enough emergency services personnel. The decision was made to keep residents who were not in danger in place, based on the assumption they were receiving community messaging via various media.

Community members in immediate danger were evacuated to a safe location. These people were very thankful.

Inglewood has a Victorian Fire Risk Register rating of extreme, so there have been many community education sessions held in Inglewood over the past five years focusing on bushfires. Also, a Community Information Guide (CIG) has been produced which includes information specific to bushfires. However, the affected community didn't make the connection between the CIG emergency for bushfire and the tanker rollover incident. It was also clear during the public meeting that the most residents weren't aware of the CIG.

This is a concern and a new approach needs to be developed to get communities involved in local emergency planning before incidents occur. This approach needs to be driven by the community for the community, with support from agencies.

An Inglewood community engagement day was held on 16 April 2016. Both CFA volunteers and staff attended every household in Inglewood, talking to residents and handing out emergency information from Red Cross, CFA and other agencies. CFA also set up an issues register so residents could pass on their comments post incident to the agencies involved. This was well received by the community.

The Environment Protection Authority ran a project at the local primary schools about their actions and the impact of the incident on the environment. The community appreciated this project.

There was a series of community meetings on the days following the incident, to update people on the progress and steps towards recovery. The initial meeting, on the day after the accident, was attended by all agencies involved and 125 residents. It was clear there was a lack of community understanding of what to do during the incident. There was little understanding about how they could get information while the power was off and many residents' mobile phones were flat. It was clear during the public meetings that the majority of residents weren't aware of the community information guide even though there had been many community education sessions in Inglewood over the past five years.

Communities rarely understand how potentially dangerous these types of incident are and they would benefit from participating in a broader range of exercises.

Community Lessons

- Incident leaders shouldn't assume that community warnings will reach the affected community or that residents will know what to do.

- The incident controller must consider using community meetings, particularly when the incident is complex, long in duration and the outcomes will have an ongoing effect on the community.

- Catering, such as tea, coffee and light meals, needs to be considered for the community when residents haven't had power for a long time.

- People will engage strongly in emergency management planning and information, when they are directly affected. This presents a huge opportunity to get key information to affected communities immediately after the incident, and engage them on a personal and emotional level to build knowledge in their community.

Conclusion

This incident could have been much worse for the community if the power had been on when the truck crashed. The brigades' and district's pre-planning, along with effective initial response, early size up and timely request for specialist support, ensured early containment of the incident, leading to the safety of the community.

Source

Adapted from CFA Brigade Magazine Learning from Incidents Spring 2016 (EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights)

Case Study:

Exercise Red Alert

Background

The Barwon South West (BSW) Region regularly conduct exercises and most recently developed and delivered Exercise Red Alert. Conceived and managed by the BSW Regional Emergency Management Training and Exercise Committee (REMTEC), a subcommittee of the Regional Emergency Management Planning Committee (REMPC), the exercise was developed to explore the existing arrangements within agency/organisation plans at municipal and regional levels for periods of extreme heat/heatwave.

The need for this exercise was established following a review of the Community Emergency Risk Assessments (CERAs) completed for the region's nine Local Government Areas (LGAs) which identified extreme heat/heatwave as a significant, common risk across the region.

Exercise Red Alert was intended to provide an opportunity for the key municipal and regional emergency management stakeholders to discuss current arrangements, identify key areas to sustain or continuously improve, and any existing gaps relating to this hazard so a continuous improvement action plan could be implemented by the REMPC prior to the 2016/17 summer season.

Conducted at Camperdown in June 2016, Exercise Red Alert brought together almost 60 exercise participants from 26 BSW emergency management sector stakeholder groups for a syndicate progressive discussion style exercise (DISCEX).

Feedback from participants indicated a high level of satisfaction with the exercise and the opportunity for each of them to identify individual learnings, actions they would implement immediately, and specific areas they would like to see improved.

Scenario Outline

The scenario involved a period of extreme heat which coincided with a Code Red Fire Danger determination.

The general exercise idea initially involved municipal and regional emergency planning committees reviewing preparedness arrangements prior to the summer period. The scenario then moved to late February when a protracted period of high temperatures were forecast. Initially the forecast did not reach the heatwave threshold and did not reach the required Fire Danger Indices which would prompt an escalation of readiness by fire agencies. As the scenario developed the threshold for heatwave was reached, and in addition one day was determined to be a day of Code Red Fire Danger Rating. Syndicates discussed readiness, response and to a lesser degree recovery over a period of several days.

"The overall rationale was to determine to what extent the exercise was managed, including planning, conduct and evaluation, in accordance with nationally recognised and applied doctrine."

Exercise Management

The exercise was conducted as a two part DISCEX with each part including several phases.

Part A was a Syndicate Progression DISCEX where participants were formed into syndicates representing municipal and regional levels of emergency management. They progressed through a number of phases based on a scenario relating to heatwave and discussed the situation, providing responses to questions posed throughout each phase.

Part B was a Workshop DISCEX where participants again worked in syndicates and reviewed the outcomes and activities of the Part A DISCEX. This provided the means to determine the activities and actions related to heatwave preparedness (before summer), readiness (immediately before forecast extreme heat), response (during extreme heat) and relief/recovery (during and immediately after extreme heat) which should be sustained, improved or developed to address identified gaps.

A regional continuous improvement action plan has now been developed by the BSW REMTEC.

Exercise Aim

To explore existing regional, municipal, emergency management and other agencies/organisations plans during a protracted, consecutive period of extreme temperatures/ heatwave and where other simultaneous hazards, such as bushfire, could present additional management challenges in accordance with Victorian emergency management arrangements.

Evaluation of Exercise Management

The overall rationale was to determine to what extent the exercise was managed, including planning, conduct and evaluation, in accordance with nationally recognised and applied doctrine.

From the observations during the exercise, review of all exercise documentation, feedback from the evaluation team members and those involved in the planning team, the following was identified:

- Current doctrine was applied and the exercise management conducted in accordance with established standards and guidelines (concept to operational documentation, evaluation and reporting);

- The inclusion of an exercise subject matter expert who worked closely with the planning team assisted the REMTEC deliver the desired exercise;
- The exercise was successfully planned and conducted in a relatively short timeframe (40 days) and whilst this was not ideal, it was a success due to the commitment of the planning team. Although some initial planning had been conducted in the months prior to this period, the commitment of the planning team to a schedule of meetings and other milestones during the planning phase meant the exercise was developed within a compressed period and delivered at the predetermined time;
- Evaluators would have preferred greater guidance and structured evaluation reporting templates;
- The capacity to remain adaptive to the needs of the syndicates and the master schedule of events during the conduct phase was seen as a positive;
- Debriefing during and immediately after the exercise was also seen as a positive by the evaluation team;
- Scheduling the evaluation analysis workshop sooner after the exercise would have been an improvement;
- There was a lot of exercise documentation for evaluators to review and limited time to achieve this prior to the exercise; and
- The topic of extreme heat/heatwave had not had a platform like this exercise previously in the region. The great discussion held within the syndicates throughout the day resulted in significant experience sharing and the identification of issues which were seen as key learnings.

General Observations

Exercise participants engaged well throughout the exercise and held meaningful and valuable discussions. They clearly anticipated the progression of the exercise and at times moved beyond the point at which the scenario had developed - a common issue where a syndicate progressive exercise style is used.

Most importantly, it was demonstrated the participants have a solid understanding of the potential of emergency events and are constantly considering the potential risks and consequences, either formally or informally.

Conclusion

Aimed at exploring the hazard of extreme heat/heatwave in a manner not previously undertaken in this region, the exercise either achieved or partially achieved all exercise objectives. It has provided the REMPC with valuable information from which to develop an achievable continuous improvement action plan for the BSW Region, ensuring a heightened level of mitigation, response and recovery to extreme heat/heatwave events in the future.

The overall success of this exercise was as result of two key factors; a committed group of exercise planners who set and achieved milestones in a compressed planning period, and the interest and involvement of almost 60 exercise participants from a variety of agencies and organisations who were willing to commit to, and participate in the exercise.

Source

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

Further Information

Australian Emergency Management Institute Handbook 3 – Managing Exercises (https://www.aidr.org.au/media/1418/handbook-3-managing-exercises.pdf)

EMV Exercising Portal which includes a calendar, library and resources (EM-COP Library > Training- Exercising > Exercising Portal)

Case Study:

State Control Centre
Learning and Improvement

Background

During 2015/16, a series of After Action Reviews (AARs) were conducted within the State Control Centre (SCC) to capture learnings relating to the functionality of the centre; systems and processes – particularly information technology and doctrine; and, communication and information flow. This was particularly important, as a lot of change and improvement has been completed within the centre and it was an opportunity to capture this change, what was working well and areas for improvement.

The SCC was activated a total of 309 days (or 83%) over the 2015-16 financial year. During this year, the SCC was activated for:

- Interstate / International deployments;
- Planned burning;
- Extreme fire weather or high Fire Danger Ratings (Readiness);
- Ongoing major events such as Blue Green Algal Bloom, Wye River Fire;
- Severe weather events; and
- Other significant emergency services events (e.g. HAZMAT incidents).

There were 6 months in the 2015-16 financial year where the SCC was activated for the entire month (September and December through to April).

The first AAR was conducted in October 2015 to identify lessons from the early activation and operation of the centre to incorporate into learning and improvement activities prior to the summer emergency season. Although the SCC had a paper based AAR process in place, it was identified that there was an opportunity to capture a large amount of information in a short timeframe by utilising informal face to face discussions. The second AAR was conducted in November relating to the operational period 18-20 November 2015. The third AAR was conducted in December relating to the operational period 29-31 December 2015.

In addition to AARs, a range of activities have been conducted to further support developing a learning and improvement culture within the centre. These include debriefs with the SCC Support Team, organisational culture sessions being held with SCC surge and support staff, a 'bring a plate and lesson' morning tea and a learning products development workshop.

Lessons Identified

A number of key lessons were identified through the 2015-16 financial year:

AAR Process - face to face discussions captured high quality and volume of data support effective and timely continuous improvement processes;

Command and Control - State level situational awareness and the ability to provide effective support to the line of control relies on effective communication, robust control structures and application of the command and control arrangements;

Experience and Familiarity - recent experience in the SCC was important for understanding of systems and process (e.g. who develops what products, technical processes);

Information Flow and Meetings - More frequent and regular interactions and meetings support effective information flow and shared understanding, particularly with functions in other areas of the centre;

Intelligence Function - Ensuring the Intelligence function is identified and used as the central source of information is critical to shared situational awareness, including connections with Emergency Management Liaison Officers (EMLOs), agency commanders, regions, and functional units;

SCC Structure - Complicated structures and lack of clarity of tasking processes can lead to confusion, task duplication and unclear priorities;

Resource Management - A strategic plan for resources is required to maximise the resource pool available, minimise fatigue and reduce reliance on good will of personnel;

Shift Planning and Rostering - Shift planning is most effective when supported by a base roster, forward planning, clear expectations of resourcing requirements at each tier and regular meetings to enable two way communication;

Surge Capacity - Business as usual work and manager expectations had an impact on availability, pressure and focus of surge staff during operational activation;

SCC Support - Some SCC surge personnel are not fully aware of the role of the SCC Support Team and what support they can provide;

Smoke Impacts - limited consideration of the implications of the smoke framework on SCC functional units leads to lack of clarity about whether any changes to work practices are required.

Conclusion

Personnel involved in the SCC learning and improvement activities during 2015-16 highlighted the processes as effective, efficient and great opportunities to contribute to the learning and improvement of the SCC. Ensuring feedback is actioned and improvements are made will continue to foster goodwill in personnel, which is crucial to effective and efficient operational activity within the SCC.

Source

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

SECTION 3: Themes and Insights

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2014-15 Theme Update

Incident Management Team (IMT) Relocation

Background

In some circumstances, an Incident Controller (IC) and Incident Management Team (IMT) need to relocate from one Incident Control Centre (ICC) to another. These circumstances include where the incident focus had moved from the area of initial impact (such as during a fast moving bushfire or during the downstream movement of a flood) or where the needs of the IMT have outgrown the capacity of the current ICC. Relocation may include the transfer of control to another IC and IMT, who may have a better understanding of local issues.

Due to further changes and clarifications in 2014-15, transfer of control continued to be a key theme that required ongoing emphasis and improvement. Joint Standard Operating Procedure (JSOP) J03.15 - Transfer Of Control and IMT Relocation had been released, outlining the procedure and considerations for relocating an IMT.

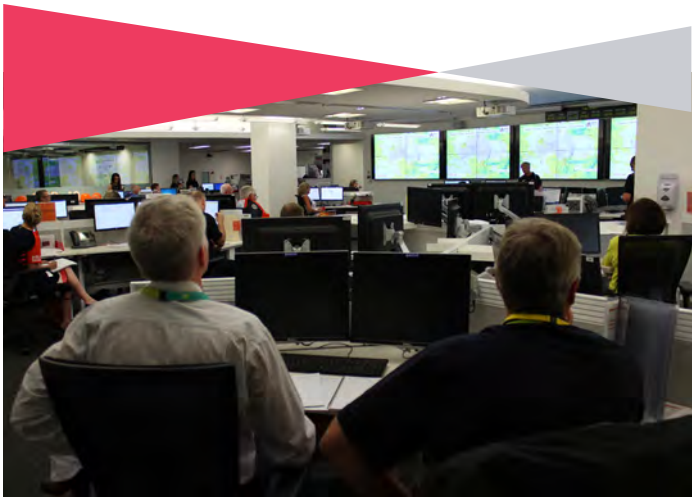
Progress

While no insights related specifically to formal IMT relocation during 2015-16, a number of incidents that occurred during the year highlighted learnings relating to transfer of control.

Insights

What worked well?

- Line of control has continued to be appropriately implemented and roles clearly identified.
- Communication regarding triggers for transferring control was mostly effective.
- When transfer of control was enacted, it was generally well managed and effective.



State Control Centre

Learning Opportunities

- Transfer of control needs to be undertaken at earliest convenience, particularly based on the potential consequences and complexities.
- The terms transfer of control and transition to recovery were often used interchangeably, suggesting lack of clarify about the differences and links.
- Having a phased approach to transferring control of the incident and transitioning to recovery was highlighted and could be utilised more frequently to allow for smoother operations.
- The definition of major emergency was still unclear and affected the establishment of line of control and expectations regarding regional support, role of coordination and reporting requirements.

- On a number of occasions, the location of the Emergency Management Team (EMT) was identified as important for effective management of the emergency, particularly locating EMTs on site at an incident ground, having a facility to accommodate a growing EMT and considering options for relocating as an incident developed .

Comments

Overall, this theme was not highly relevant for the current insights being identified through operational activity. The theme will be reviewed and transitioned to reflect an appropriate and relevant theme in 2016/17.

Further Information

EM-COP Library > Doctrine > JSOPs

- Joint Standard Operating Procedure J03.15 - Transfer of Control and IMT Relocation

Resource Management

Background

The Victorian 2015-16 summer emergency season started early with the Lancefield fire in October and continued with an extensive level of fire activity across the state throughout the rest of the 2015-16 fire season. In addition to this, personnel were deployed to Canada, the United States, Fiji and Indonesia, and interstate to South Australia and Tasmania. Resource personnel at the incident, regional and state levels worked in excess of eight months, under intense workloads and pressure, to provide the necessary people and equipment to fires and emergencies.

Progress

There has been considerable progress in addressing and improving resource management including:

- Developing a pilot multi-agency Resources Officer training, which will be tested in 2016-17.
- EMV approved an ongoing position Operational Resources and Logistics with responsibility for resource management.
- A governance group "Resource Capability Group" has been established to oversee resource management.

Insights

What worked well?

- Regions were generally able to meet Joint Standard Operating Procedure (JSOP) J02.03 readiness requirements, with some limitations at higher levels.
- Most Districts continued to have pre-planned strike teams broken down into both local and long haul to ensure efficient activation when required.
- First response to incidents was generally integrated, rapid, aggressive and safe.
- Regions and Districts continued to be in regular contact with adjoining Regions and Districts to ensure they had a joined up approach to resource management during peak times. In particular, the Metropolitan regions collaborated effectively to ensure efficient shared resourcing through the Super Controller and collaborative local government representation.
- Victoria was able to provide approximately 200 personnel to international deployments and over 800 personnel to support interstate deployments.

Learning Opportunities

- Regions and Districts need to ensure human resources (HR) planning occurs with adequate engagement of personnel and their line managers. Many personnel were unable to support HR planning due to business as usual expectations.
- It was difficult to establish a state wide understanding of resource availability and where resources had been deployed.
- Greater transparency of regional capacity and workload continues to be required to improve sharing of resources across regions to support efficiency of response to multiple incidents.
- Further work is required to improve clarity, education and awareness of municipality roles and responsibilities in resource management.
- Greater transparency of regional capacity and workload continues to be required to improve sharing of resources across regions to support efficiency of response to multiple incidents.

Victoria's Deployment to Tasmania, January 2016

"Personnel were deployed to Canada, the United States, Fiji and Indonesia, and interstate to South Australia and Tasmania"

- Further work is required to improve clarity, education and awareness of municipality roles and responsibilities in resource management.
- Some regions continue to have limited capacity to meet resourcing levels prescribed by JSOP J02.03 at Severe Fire Danger Rating (FDR) and above.
- Many local councils have a limited capacity to resource emergency management positions at the incident and region levels, particularly in more remote areas of Victoria.

Comments

Many of the insights are currently being addressed through a range of projects, including the establishment of the Standardised Resource Management Project. Incident Resource Information System (IRIS) is going to start being used for tracking deployments to incidents, and a Project Manager has been employed to oversee the project.

Further Information

EM-COP Library > Doctrine > JSOPs

- Joint Standard Operating Procedure J02.03 – Incident Management Team – Readiness Arrangements for Bushfire
- Joint Standard Operating Procedure J02.06 – Readiness Arrangements – Aviation Resources (Bushfire)
- Joint Standard Operating Procedure J03.09 – Resource Request Process

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies

- Managing very high tree hazard risk during initial bushfire response case study.

Traffic Management Points (TMPs)

Background

The management of traffic through an area impacted by an emergency is a significant ongoing issue with no easy solution. This topic has been the focus of much debate and consideration over many years. It is a balance of safety for road users, landowners and the broader community.

Traffic Management Points (TMPs) are established to regulate the flow of road traffic into an area where an emergency has occurred, is presently occurring, or has the potential to occur. Controlling access to an area during the response to an emergency has been recognised as a key step in reducing the potential risk to the public, especially in terms of vehicles accessing and driving through an area experiencing emergencies. The Guidelines For The Operation Of Traffic Management Points During Class 1 Emergencies state that "Victoria Police and all emergency services acknowledge that, for a number of reasons, travel through an area where an emergency is occurring can be dangerous and potentially fatal; therefore, such travel should be both controlled and minimised where possible".

Victoria has a set of arrangements and guidance documents that relate to traffic management, with four different levels of access possible to support flexible management and timely deactivation. The arrangements allow for discretion of TMP personnel and recognise the importance of community welfare, animal welfare, and landowner access (e.g. use of wristbands). These arrangements are predicated on the principle of primacy of life, in line with the Strategic Control Priorities. As a result, the safety of emergency responders, community members, and animal welfare personnel takes priority over all other considerations.

Progress

An increase in pre-planning as a result of lessons identified from 2014-15 summer season events provided impetus for Victoria Police to introduce refresher and additional training sessions in the establishment of TMPs, encompassing early appointment of a Traffic Management Manager at Incident Control Centre's (ICCs). Following this, additional testing of local plans was undertaken where TMP planning was incorporated with evacuation planning to provide a cohesive and cooperative process. Finally, exercising and testing reinforced the requirements to have traffic as a standing agenda item at Emergency Management Team (EMT) meetings.

Joint Standard Operating Procedure's (JSOPs) J03.10 (Traffic Management) and J03.12 (Evacuation) have also recently been updated to incorporate learnings from 2015-16.

Insights

What worked well?

- TMP planning was conducted and implemented in line with the state arrangements.
- Lessons identified in previous emergencies were used to inform continuous improvement of traffic management practices, including rapid assessment of roads after impact and allowing the entry of impacted residents.
- Opportunities were taken to ensure community members could re-enter when appropriate, including the use of bus tours for impacted residents of affected areas to enable residents to begin planning for recovery.
- Agencies were committed to evacuation and traffic management planning, with Deputy Incident Controllers appointed for these functions at some incidents.

- The process of recognising the consequences of the road closure, and planning for reopening at the same time as the closure occurred, allowed for effective management and consequence limitation.

Learning Opportunities

- Positioning and duration of traffic management points must be continually reviewed so they are consistent with the current situation.

- Further community engagement is required because at times public messaging is being used by community members as a trigger to leave, resulting in effects on traffic.

Comments

Victoria Police introduced improved training packages for TMP personnel with a separate package available aimed at the Traffic Management Manager role. During exercising, the combination of traffic and evacuation was invaluable to test the cohesive nature of the two previously independent tasks. A review of the TMP card conducted as a result of JSOP updates however was too late to make minor amendments for the 2016-17 summer emergency season. There will be a further review of the TMP card prior to 2017-18 summer season.

Further Information

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies

- Major Highway Closure: Barnawartha – Indigo Creek Road Fire

EM-COP Library > Doctrine > Procedures > JSOPs

- Joint Standard Operating Procedure J03.10 – Traffic Management

Broadmeadows Tyre Fire, January 2016

EM-COP Library > Doctrine > Technical > IMT Toolbox

- Guidelines for the Operation of Traffic Management Points During Class 1 Emergencies

Evacuation

Background

Evacuation is a risk management strategy that may be used to mitigate the impacts of an emergency by moving people to safer locations. All five stages of evacuation, as well as the evacuation of vulnerable people, need to be carefully and comprehensively planned for, exercised and underpinned by best practice evacuation planning principles.

Evacuations are conducted in accordance with the Evacuation Guidelines set out at Part 8 Appendix 9 of the Emergency Management Manual Victoria (EMMV). A Joint Standard Operating Procedure JSOP 03.12 (Evacuation) details the responsibilities through the five stages of evacuation; decision, warning, withdrawal, shelter and return. The incident controller, in consultation with Victoria Police (VICPOL), makes a recommendation to evacuate, and it is the choice of individuals as to how they respond to this recommendation. VICPOL is primarily responsible for managing evacuations, in terms of withdrawal, coordination of shelter, and subsequent return.

Exercising and testing of evacuation plans is crucial for agencies, communities, and affected parties. It is important to consider input to evacuation plans from community members as they can provide insights into likely issues that may be encountered. The JSOP provides clear intent in the planning stage for an evacuation.

Evacuation was enacted during the Wye River – Jamieson Track Fire. By 26 December, the Wye River – Jamieson Track fire had burnt nearly 2500 ha of forest, destroyed houses in the townships of Wye River and Separation Creek, and led to the evacuation of Separation Creek, Wye River and parts of Lorne. It also led to emergency alerts recommending that residents of Kennett River and Grey River evacuate being sent. Evacuation planning also took place during the Barnawartha fire in December.

Wye River - Jamieson Track Fire, December 2015

Progress

JSOPs J03.10 (Traffic Management) and J03.12 (Evacuation) have recently been updated to incorporate learnings from 2015-16. Training programs specific for evacuation have been prepared and are to be presented in the VICPOL Regions by Regional Emergency Management Inspectors and training officers to address highlighted issues from previous evacuations. Post-training exercising can then focus on the processes to be followed to ensure they are robust and will withstand scrutiny.

Insights

What worked well?

- The Wye River fire provided an opportunity to further develop and operationalise evacuation and return of residents, supported by extensive community engagement.

- Proactive pre-planning and a high level of cooperation and collaboration between agencies, local government and Incident Control Centre (ICC) resources were critical to the planning and successful implementation of evacuations.
- Evacuation and traffic management planning drew on state policy and guidance as well as pre-prepared local response plans to develop risk based evacuation plans.
- Having a deputy incident controller with a designated role for evacuation was effective.
- A 'dry run' of the evacuation was undertaken that informed planning with realistic timeframes and efficient practices, which ensured a seamless evacuation on the actual day.
- A process of using ribbons to identify houses where residents had evacuated was really useful and saved significant time for police members facilitating the evacuation.
- Lessons from previous emergencies were used to inform planning and practices, particularly in relation to the return of residents, including escorted visits of affected residents and property owners back into impacted areas so that they could understand their losses and start the grieving process.
- Exercising before a major emergency, with contribution from potentially affected communities was invaluable to the success of implementing an evacuation plan.

Learning Opportunities

- While there has been a significant focus on evacuation planning processes, there is an opportunity for greater coordination and communication during the return phase. Coordination and management of the return may require specific delegation of tasks.
- Where evacuation planning occurs well in advance of impact on communities, the rationale must be well communicated to minimise concerns or misunderstanding about the purpose for the planning.
- Combining evacuation exercises with a traffic management component to ensure they work cohesively during an emergency event is essential because the two processes, although often dealt with separately, are interconnected

Comments

This year saw the most destructive bushfire in terms of property loss since the 2008–09 bushfire season, which required an extensive evacuation operation. As noted in their Review of the initial response to the 2015 Wye River – Jamieson Track fire, IGEM considered the evacuation strategy implemented at Wye River to be prudent, well planned and executed. While there are some areas still to improve, efforts to develop systems, doctrine and training over the past seven years have made a significant contribution to a strong and robust approach to evacuation management.

Further Information

EM Knowledge > Doctrine > JSOPs

- Joint Standard operating Procedure J03.12 – Evacuation

https://emv.vic.gov.au/policies/emmv/

- Emergency Management Manual Victoria

http://www.igem.vic.gov.au/home/reports+and+publications/reports/report+review+of+the+initial+response+to+the+2015+wye+river+jamieson+track+fire

- Review of the initial response to the 2015 Wye River–Jamieson Track fire

Managing Multiple Emergencies

Background

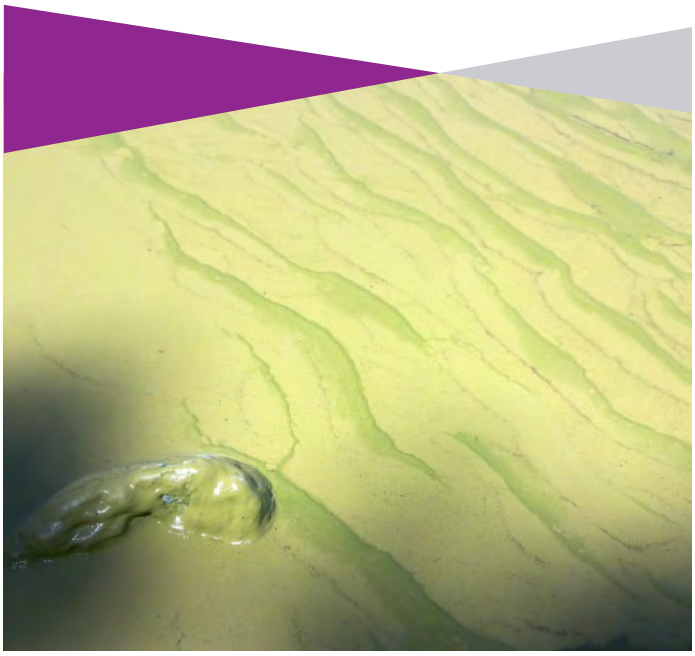
The management of multiple emergencies challenges the response capacity and capability of the state. Managing more than one emergency in the same geographic location or timeframe adds a layer of complexity for incident management, particularly in relation to transition of control, managing the emergency consequences, establishing regional arrangements, and managing fatigue levels.

The challenge is even more complex during concurrent Class 1 (e.g. fires, floods) and Class 2 (e.g. health, agriculture) emergencies where different arrangements may be required. Concurrent emergencies challenge the concept of a single agency with control responsibilities and may need to explore a partnership of control agencies with a lead agency. Flexible approaches ensure that the community is effectively supported through the critical functions of community connection, strategic communications and consequence management.

Progress

The implications for managing multiple emergencies played out on many occasions over the year, with multiple emergencies of different types often occurring at the same time across the state. In some cases, there were a series of large, complex and unusual emergencies that occurred over a number of months in a single region.

For example, a major thunderstorm in the Greater Geelong area occurred at the same time as a number of other actual or potential emergencies, including further storm impacts in other areas of the state, riverine flooding, bushfires, landslide, a plane crash and bomb threats to schools. The Blue Green Algae (BGA) event along the Murray River lasted for 115 days, during which time there were fires, storms and other emergencies.



Blue Green Algae Bloom, February 2016

A range of activity has been undertaken to betterunderstand the complexities of concurrent emergencies and provide more flexible guidance for operational personnel. This includes:

- The State Emergency Response Plan (SERP) was updated to provide more specific advice for managing multiple emergencies and clarified arrangements of control structures for concurrent emergencies.
- Managing multiple emergencies was a theme included in the 2015-16 Regional Pre Summer Emergency Season Briefings and a suggested exercise theme.
- A number of state and agency projects explored the implications of managing multiple emergencies on incident management infrastructure needs, including the investment strategies for operational communications, agency command facilities, Incident Control Centres and Regional Control Centres.

Insights

What worked well?

- Overall, the interaction, integration and cooperation between agencies during multiple emergencies was high quality and led to a positive community outcomes.
- The role of the Regional Emergency Management Team (REMT) was critical in maintaining oversight of multiple emergencies and the interaction of community consequences across the region.
- The use of a single Incident Management Team to manage multiple emergencies in a single area supported shared situational awareness, integration, resource management, communication flows and fatigue management.
- There was effective transfer of control during multiple emergencies and sharing of resources across incidents when required.

Learning Opportunities

- In some cases, the competing priorities at regional level during multiple emergencies may have diverted focus and influenced the level of oversight and support from regional and state level.
- There was uncertainty about roles, responsibilities and authorising environments for support agencies during multiple emergencies, particularly for responder agencies involved in response to Class 2 emergencies (e.g. BGA or heat).
- In some non-bushfire incidents, there was a lack of clarity around expectations for support agencies and triggers for multi-agency readiness, resourcing levels and prepositioning of resources.
- Some personnel felt that their training levels and skills base were not adequate to support operations in hazards they had not had experience in.
- Where public information for a particular hazard was run in parallel to the SCC public information function, there were times when there was a delay in the provision of messaging support to the incident level because of the lack of integration in processes and systems (e.g. lack of accessibility of message templates).
- The impact of multiple and long running emergencies led to high levels of fatigue at all levels.

Comments

There were many occasions during this year where multiple and varied emergencies occurred. This level of activity placed a significant burden on the workforce and challenged the traditional view of emergency seasons.

However, these events also provided the opportunity to explore how arrangements that have been developed for fires and floods (Class 1 emergencies) might be applied to other contexts and situations (Class 2 and 3 emergencies).

Primarily, these opportunities have highlighted the significance of relationships and networks, the value of a flexible and scalable emergency management approach, and the importance of integrated consequence management that maintains the community as the core focus.

Further Information

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

- Rapid onset storm events - Geelong Thunderstorm case study

https://emv.vic.gov.au/policies/emmv/

- Emergency Management Manual Victoria

Safety and Fatigue Management of Emergency Management Personnel

Background

The number one priority under the state's strategic control priorities is the protection and preservation of life. This includes the safety of personnel involved in emergency management.

Emergency management activities are inherently dangerous and any emergency management activity carries health and safety risks to personnel. In order to maintain safety, hazards need to be identified, risks need to be assessed and decisions made to manage those risks. Effective risk management must be supported by good communication and strong coordination. Everyone has a responsibility for safety.

The management of the impacts of smoke and emissions is a key piece of work being undertaken by the state. In response to the Hazelwood Mine Fire Inquiry, significant work has been done to reform the management of impacts of smoke and emissions during emergencies. A range of high level policy documents, referred to as State Smoke Framework, were released during 2015 to support a more collaborative and coordinated approach to managing the short and long-term risk of smoke and other hazardous emissions in emergencies.

The Somerton Tip Fire in November 2015 was one of the first fires of significant scale and complexity since the State Smoke Framework was released. A review was undertaken to capture what was put in place to address smoke impacts on responders and the surrounding community.

Progress

There has been considerable progress in addressing and supporting the safety of emergency management personnel. A range of activities have emphasised and strengthened front line safety, including the key issues of fatigue management and hazardous trees. Activities include:

- Safety messages strengthened in operational doctrine, including update of the Joint Standards Operating Procedure (JSOP) J08.03 – Tree Hazard – Bushfire Response in August 2015 and Safety Fact Sheet – Fatigue Management in January 2016.
- Program of work addressed improvements to the management of hazardous trees, including doctrine, training and vehicle modifications.
- Significant work undertaken by the Smoke Working Group and relevant agencies to develop the Smoke Framework and related policy and procedural documents to guide the management of smoke impacts on responders and community.
- Information about safety and fatigue management provided during the 2015-16 Preseason Briefing Program.
- Safety added as a standing agenda item on meeting and teleconference agendas (e.g. State Control Team).
- Safety Bulletins released during operational periods, including one specifically regarding fatigue management.
- State Occupational Health and Safety (OHS) Executive Advisor in the SCC continued to provide strategic health and safety advice to the State Response Controller and State Control Team.
- OHS Advisers deployed into the field during periods of operational activity.
- Safety included as a standing theme for all real time monitoring and evaluation deployments.

Victoria's Deployment to Tasmania, January 2016

> "Fatigue and welfare during operational activity was recognised and proactively managed in a range of ways, including regular shift changes, rest periods, variable shift lengths, rotating in resources from other regions, welfare checks, and scaling back resources overnight where possible."

Work is continuing to address the interoperability of OHS reporting systems, with a multi-agency project established to address the technology needs and align reporting codes to a national standard.

Insights

What worked well?

- Generally, data indicated there was appropriate consideration and management of the safety and welfare of personnel during the management of emergencies.
- Incident shift plans generally contained detailed information on welfare issues, including fatigue, external hazards, hydration and related JSOPs.
- There was strong evidence of the application of sound judgement and good decision making in hazardous environments that could have had adverse impacts on the safety and wellbeing of personnel.
- Welfare support to crews was very good with rapid deployment of the health monitoring teams where required and generally early recognition of situations that required the activation of the smoke management framework.
- Risk assessments of safety implications were routinely used to analyse options and inform decision making.
- Leadership at district, region and state level encouraged and empowered personnel to report safety incidents.
- Safety management at some incidents was supported by the establishment and deployment of OHS Advisors into the field to consider specific aspects of safety and provide specialist technical advice to the Incident Safety Officer or Incident Controller.
- Fatigue and welfare during operational activity was recognised and proactively managed in a range of ways, including regular shift changes, rest periods, variable shift lengths, rotating in resources from other regions, welfare checks, and scaling back resources overnight where possible.

Learning Opportunities

- Briefings and handovers are critical opportunities to share safety information. However, there was some variability in quality of briefings and reports of crews not being briefed, particularly at large incidents (e.g. Wye River fire).

- Data indicated that some safety incidents were still not formally reported. Delays in communication and lack of visibility of action also occurred when safety incidents or near-misses were reported through agency channels rather than through the incident line of command.

- Despite best efforts, fatigue remained a critical and challenging issue. The scale, nature and duration of operational activity across the financial year stretched resources and led to a high level of fatigue. In particular, fatigue of the recovery workforce was highlighted as a key challenge because disaster recovery can be intensive and long term, with successive emergency events creating a cumulative workload.

- At the Somerton Tip Fire, there was a delay in the provision of consistent health monitoring, with many fireground personnel electing not to participate during the first two days of the fire until health monitoring was made compulsory. It was reported that a small number of contractors deliberately compromised the monitoring of carbon monoxide in the cabin of their machines in order to avoid the possibility of elevated readings preventing them from completing the contract.

- Experience levels relating to management of hazardous trees varied, including some instances of limited understanding and confidence in the processes for managing hazardous trees. In some cases, personnel reported that the processes for managing hazardous trees restricted or delayed response operations. Others reported confusion regarding tree taping and marking systems, with some uncertainty about marking conventions.

- During the Wye River fire, there was a delay in notification to some personnel of the risk of asbestos and communication of instructions to mitigate the risk. Some personnel who were tasked in unfamiliar work environments (e.g. Department of Environment, Land, Water and Planning (DELWP) personnel undertaking asset protection and clean up) reported a lack of awareness of procedures to manage asbestos contamination, including decontamination of vehicles, equipment, or clothing.

- While the OHS Advisers deployed into the field were valuable for providing specific safety advice, there was some confusion about the scope of their role and how they connected to other safety roles at incident level.

- State OHS Executive Advisors sometimes found it challenging to maintain oversight over all safety incidents and injuries across the state because the data was held in different agency-specific systems.

- Some personnel reported no opportunity to input into debrief activities and a lack of transparency and accountability for addressing observations at local, region or state levels, leading to concern and frustration that debriefing was not valued or part of normal business.

Comments

Safety and welfare of operational personnel was a key focus this year and has received significant recognition and attention, particularly given the hazardous environments and duration of activity experienced. Nevertheless, personnel experienced some situations where the management of safety could have been improved.

Actions to support the continuous improvement of personnel safety have addressed many of the identified learning opportunities throughout the year, including governance, doctrine, training, and systems. Ongoing improvement in personnel safety and welfare requires continued assurance that safety messages are delivered, incidents are reported and fatigue is appropriately managed.

Further Information

EM-COP Library > Doctrine > Procedures > JSOPs

- Joint Standard Operating Procedure J08.03 – Tree Hazard – Bushfire Response

EM-COP Library > Safety > Safety-Introduction > EMV Safety Information > Safety Fact Sheet

- Fatigue Management

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

- Testing the new tree hazard procedure at an alpine forest fire case study
- Strathdownie Kaladbro Swamp Peat Fire case study Application of the State Smoke Framework – Somerton Tip Fire case study
- Wye River Health and Safety case study
- Use of a 'Wilderness Response Paramedic' to support firefighters at Wye River case study

EM-COP Library > EM Arrangements > Emergency Plans

- Community Smoke Air Quality and Health Stadard, Rapid Deployment of Air Monitoring for Community Health, Standard for Managing Significant Carbon Monoxide Emissions, State Smoke Framework, Smoke Management - Aide-Memoire

https://www.emv.vic.gov.au/how-we-help/reviews-and-lessons-management/operational-reviews/somerton-tip-fire

- Somerton Tip Fire Review

Broadmeadows Tyre Fire, January 2016

Community Engagement and Connection

Background

Involving communities in thinking about how together we will prepare, respond and recover from emergencies will lead to more resilient communities and a more effective response from emergency service providers and community agencies.

The focus on community engagement and awareness during the response phase was highlighted as an area needing more attention. The understanding that communities also had a role to play during response and recovery increased attention to extending the engagement needed to enhance our response with the community.

Relief Centre Exercise

Progress

Emergency management agencies and organisations undertook a wide range of community engagement and resilience building programs. The strong focus on building strong partnerships with communities continued through ongoing work supporting the Community Resilience Framework released in 2015.

Work continued to refine and support the Community Based Emergency Management (CBEM) approach that empowers and works with community members to explore the impact of potential emergencies and consider how community strengths can support improved resilience in these situations.

During 2015-16 a number of incidents had significant impact on the community. Fires at Lancefield – Cobaw, Somerton, Scotsburn, Broadmeadows, Barnawartha and Wye River as well as the severe weather event at Geelong all had significant impact on the community and required ongoing engagement during response and recovery.

Insights

What worked well?

- Community engagement has become a stronger focal point for emergency management personnel, including incident controllers.
- A number of assurance activities during and after a number of emergencies identified positive examples of community engagement. These included the provision of warnings, community meetings, use of social media and development of incident action plans with a stronger focus on community impact and community engagement.
- Community meetings were critical before, during and after the impact of the emergencies and this engagement was supported through online community newsletters and Facebook pages in some cases.

- Community recovery committees supported community engagement and community focused recovery by providing a forum for community and agencies to connect and share information. At the Wye River Fire, existing community safety plans provided a strong basis for the development of informed community engagement plans during the emergency based on a shared understanding of local risk.

- The engagement of Landcare groups and affected business owners during the Somerton Tip fire was extremely positive and supported the implementation of appropriate tactics for both response and recovery operations. The tactics implemented during suppression activities were developed with a better understanding of community impact and recovery needs.

- Having buses transport impacted residents back onto the fire ground after the Wye River Fire and Scotsburn Fire so that they could view damage and commence the recovery process worked well.

Learning Opportunities

- The value of community centred recovery was identified during the Wye River Fire. It was felt that more understanding was needed across the agencies to ensure community centred recovery was supported in the early stages of the incident with the appropriate considerations of public safety.

- While the process of transporting impacted residents back onto the fireground supported community engagement, there was limited structure and guidance available for those managing these processes.

- A stronger focus on community engagement in bushfire mitigation planning has been identified, particularly around fuel reduction and management of bushfire risk. A shift in engagement from a passive approach to a targeted and interactive approach to planning with the community has been identified and incorporated into the Safer Together strategy as a result of the Lancefield – Cobaw Fire.

Comments

The increased understanding and acceptance of community engagement in emergency management is evident as the sector's understanding of the benefit grows.

The analysis of major incidents has however identified that we still have work to do to fully embed community engagement in all incidents in all aspects of our practice. The effectiveness of community engagement is generally proportionate to the resources and overall commitment. An engaged community is likely to provide significant benefit to the emergency management system before, during and after emergencies.

Supporting communities to plan for emergencies, encouraging local leadership and networks, and cultivating trusting relationships between community members and the broader emergency management sector are some of the activities that improve a community's ability to plan for and adapt to emergencies.

Further Information

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

- Application of the State Smoke Framework – Somerton Tip Fire case study

- Managing very high tree hazard risk during initial bushfire response case study

- Tanker Rollover at Inglewood case study

https://www.emv.vic.gov.au/CommunityResilienceFramework

- Community Resilience Framework

Aviation

Background

Aircraft are contracted by the State over the summer season on a standing basis or on recall. The State Aircraft Fleet for 2015-16 comprised 47 standing contracted aircraft, with over 100 further aircraft available on a 'call when needed' recall basis.

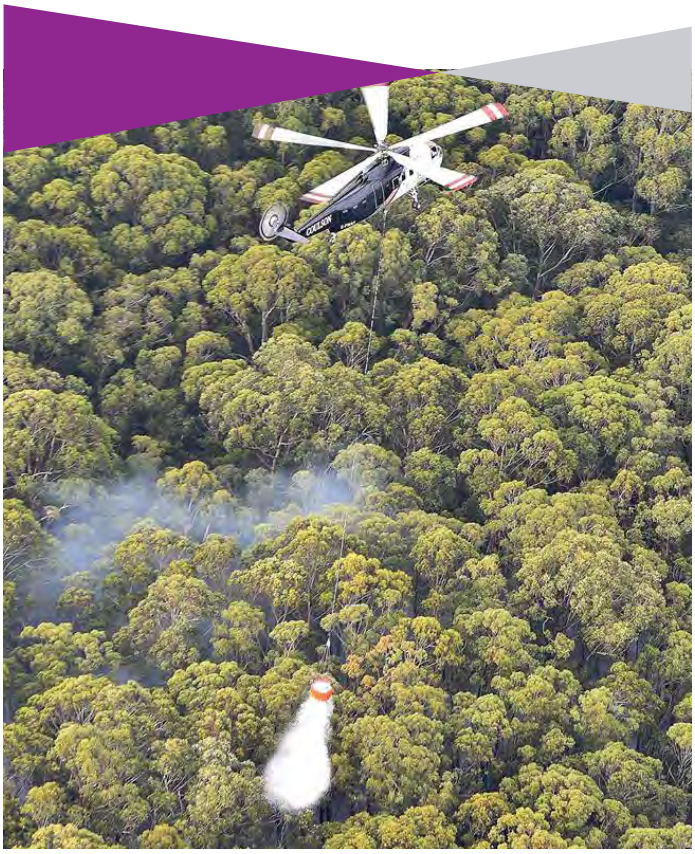
Aircraft flew in excess of 7,300 operational hours during 2015-16 responding to a variety of fire, emergency and land management operations.

Aircraft are positioned in strategic locations across Victoria in readiness based on risk. When requested, aircraft are dispatched to support response to incidents, with consideration given to readiness for other concurrent or potential emergencies. On days of high fire danger, aircraft are often deployed over high risk areas for reconnaissance and fire spotting.

Progress

The Department of Environment, Land, Water and Planning (DELWP) Aviation Services Unit oversaw the completion of a significant body of work in 2015-16 to update the State Aircraft Unit Procedures (SAUPs). These have now transitioned to the Interagency Aviation Operating Procedures (IAOPs) which better reflect changes to emergency management structures in Victoria and Civil Aviation Safety Authority (CASA) regulations. This project involved collaboration and input from personnel from across all the relevant emergency and land management agencies. The IAOPs will come into effect in 2016-17.

Minor updates recommended in the 2014-15 Operational Review were also made to Joint Standard Operating Procedure (JSOP) J02.06 Readiness Arrangements – Aviation Resources (Bushfire) together with the requirements for expanded PDD (Pre-determined dispatch) locations, and these were put in place prior to the 2015-16 summer emergency season.



Wye River - Jamieson Track Fire, December 2015

Insights

What worked well?

- Victoria's aviation program continued to expand its use of LATs in 2015-16 to assist in bushfire emergency response and evaluation of this has supported the decision for these aircraft to return in the 2016-17 fire season.
- A CH-47 "Chinook" Type 1 helicopter was used for a short period for the first time in Australia during the Wye River fire. This aircraft operated a 7500lt capacity bucket on a 200ft long line as was able to drop in extremely steep and heavily canopied terrain.

"An alternative strategy was subsequently used at the Broadmeadows tyre fire where Erickson Aircranes were trialled. Evaluation of this new strategy suggests that these larger capacity aircraft are better options for these types of fires, and this learning will be applied where suitable in the future"

Broadmeadows Tyre Fire, January 2016

- Victoria provided firefighting aircraft and aviation support personnel to Tasmania to assist in the significant bushfire containment challenges in that State. A number of LAT missions were also conducted from the Avalon airbase to Tasmania. Victoria also received aircraft support from New South Wales in October 2015 with the use of a LAT and Very Large Airtanker (VLAT) to respond to the Lancefield - Cobaw Croziers Track fire.

- Significant tyre and tip fires were encountered during the 2015-16 fire season (Broadmeadows and Somerton) which required the use of helicopter water bombing. Victorian fire agencies applied real time performance monitoring to evaluate the effectiveness of this, and was advised that on-ground firefighters had observed that helicopters with smaller firebombing capacity had the potential to exacerbate fire behaviour through fanning when hovering over the fire to deliver their load. An alternative strategy was subsequently used at the Broadmeadows tyre fire where Erickson Aircranes were trialled. Evaluation of this new strategy suggests that these larger capacity aircraft are better options for these types of fires, and this learning will be applied where suitable in the future.

- A high rotation Air Attack Supervision (AAS) roster was expanded last year to include all regions except Hume and Gippsland. The benefits realised from this expansion suggest it would be worthwhile expanding it to all regions to maximise access to and utilisation of personnel with specialist roles. Personnel with multiple roles continues to impact on rostering however the concept of role prioritisation particularly for specialist roles has been implemented for some non-aviation roles and may be considered to be expanded to include specialist aviation roles.

Learning Opportunities

- There were inconsistencies in the positioning and dispatching of Air Observers across the state to reflect the Fire Danger Index (FDI) forecast requirements in JSOP02.06. Air Observers provide fire behavior and fire potential intelligence to Situation Officers based in Incident Control Centres (ICC). This situation resulted in a reported lack of timely intelligence being received into the ICC and District Office.

- The DELWP Aviation Services Unit continues to conduct its annual training program to expand the number of agency personnel that are able to perform aviation fire roles. Whilst training of new personnel is an annual process, a push to increase numbers of available personnel across the state has been the result of needs in Regions to meet the JSOP02.06 requirements and to build a local response capacity. Regions are encouraged to annually review their aviation capacity and nominate appropriate personnel for aviation related training, with numbers to be monitored by the Aviation Services Unit. The aviation training calendar is reviewed and can be amended if demand for training significantly exceeds supply.

- The need for effective communications between aircraft and ground crews was again raised as a learning opportunity in 2015-16.

- There is still some confusion by ground personnel about the use of sirens on LATs. Unlike all other firebombing aircraft, LATs are not equipped with sirens. Further work needs to occur to ensure ground crews understand that a siren will be sounded prior to firebombing when using LATs and to reinforce that a siren is a secondary safety device that may not be heard when other firebombing aircraft are being used.

- It is essential that good communication between the AAS and ground crews is established and that the AAS can be assured that all crew are clear from the drop area before the commencement of firebombing operations.

Comments

The use of aircraft in emergency management continues to be highly valuable and new aircraft types provide further flexibility and responsiveness. The management of the safety and effectiveness of aircraft requires constant monitoring and improvement, particularly in relation to training and communication.

Further Information

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

- Managing very high tree hazard risk during initial bushfire response case study

EM-COP Library > Doctrine > Procedures > JSOPs

- Joint Standard Operating Procedure J02.06 – Readiness Arrangements – Aviation Resources (Bushfire)

Interstate and International Deployments

Background

The Emergency Management Commissioner (EMC) is responsible in Victoria for coordinating interstate or international resource movements for Class 1 and 2 emergencies, as defined in the State Emergency Response Plan (SERP). This applies to Victorian resources assisting other jurisdictions or to the resources of other jurisdictions assisting Victoria. In some cases, the EMC will coordinate a national multi-jurisdiction deployment in response to an international request for personnel.

Deployments are primary managed through the Interstate / International Liaison Unit (IILU) in the State Control Centre (SCC). The IILU supports both outgoing and incoming deployments of resources.

During 2015-16, EMV coordinated the deployment of personnel from all Australian jurisdictions for international deployments, as well as coordination for Victorian crews deployed interstate. Victorian multi-agency personnel were deployed to assist and support fire and storm incidents in the following jurisdictions:

- Canada – July 2015 (104 personnel from Australia)
- United States – August 2015 (72 personnel from Australia and New Zealand
- Indonesia – October 2015 (2 personnel from Australia)
- South Australia – November 2015 (311 personnel from-Victoria)
- Tasmania – January 2016 (621 personnel from Victoria)

Victoria's Deployment to Canada, July 2015

Progress

There has been considerable progress in addressing and improving international and interstate deployments including:

- Several improvements were made to the IILU area within the SCC to improve communications between the Resources, Logistics and IILU functions.
- A tool kit was developed including process documents and templates. This has now been shared with Australasian Fire and Emergency Service Authorities Council (AFAC) as a basis for their work developing the National Resourcing Sharing Centre.
- Accreditation process for SCC IILU Officers was developed.
- A deployment survey was developed to support the capture of feedback from any personnel deployed interstate or internationally to inform continuous improvement activities in real time and post deployments.
- Victoria was deployed to Tasmania in January to lead and help establish an IILU.

Insights

What worked well?

- When there was lead up time to plan and prepare documentation, the management of deployments was generally reported to be more organised and coordinated than previous years.
- Embedding the media function into the IILU function improved efficiency and clarity in communication and information flow.
- The room setup with close location of IILU, Logistics and Resources worked well for communication and information flow.
- The activation of the Deputy State Response Controller role primarily for the deployment worked well, particularly in supporting timely decision making and communication with other Australian jurisdictions.
- Liaison team roles were critically important in supporting the deployed personnel, including the use of field based liaisons.
- Excellent support arrangements were put in place for families and friends during interstate and international deployments, including the use of online and social media technologies.
- Where shadowing and mentoring was conducted, this was found to be highly beneficial.
- Camp standards were generally excellent across all locations, with a high standards of food, accommodation and facilities in most cases (e.g. Wi-Fi, first aid).
- Safety was recognised as a priority in all deployments, with many initiatives put in place to support the safety and welfare of personnel.
- Overall, personnel were generally well received by host agencies and communities in all deployments. Personnel found deployments to be a great learning experience and it was rewarding to work with other agencies. The hard work and dedication of deployed personnel was highly appreciated by the host agencies.

Learning Opportunities

- There was limited opportunity to plan or prepare for the deployment to Canada, which led to some challenges with the expression of interest (EOI) process, including lack of feedback to unsuccessful applicants, documentation not provided, omitted information in forms and missing medical assessments. In addition, personnel felt there was not enough information provided about the required kit and inconsistencies in the amount of information and support provided by different jurisdictions. However, the management of subsequent deployments was much improved, with a lot of work done to learn from those experiences by formalising guidance and support arrangements.
- Personnel deployed interstate or internationally were required to work within the host workplace arrangements and procedures, which were sometimes different to Occupational Health and Safety (OHS) standards for fatigue management and other work practices in Victoria. In a number of deployments, fatigue management was an issue with extended daylight, shift length and deployment length.
- When deployed, many personnel required more induction information specific for their particular role, including equipment, responsibilities, risks, deployment locations, maps, paperwork, key terms, processes, safety and structures.
- There was confusion about role equivalence during international deployments, which led to some inconsistent expectations regarding retasking of roles once deployed.

- The quality and arrangements of briefings and debriefs varied with deployment location.
- During international deployments, personnel were concerned about driving arrangements because driving briefings and familiarisation sessions were not mandatory.
- During international deployments, the provided timesheets were difficult to use and doubling up in forms occurred when home agency required different information for paying personnel.
- Where EMV took the lead on deploying agency resources, there was confusion regarding financial processes, including delegations, suppliers, travel insurance and cash advances. In addition, there was some confusion regarding the requirements for debriefing of deployed personnel between home agencies, host agencies and EMV.
- It was not clear whether there was a process to ensure any code of conduct issues from deployments were recorded and influence the selection process of future deployments.
- Demobilisation and return arrangements often did not meet the expectations of personnel, including flight routes, timeframes, efficiencies, coordination and communications.

Comments

The large scale and duration of deployments across the year, together with the high level of activity within Victoria, was highly challenging to manage and resource. Nevertheless, the deployments were highly successful, with other jurisdictions and organisations wishing to learn from Victoria's approach.

Victoria's Deployment to Indonesia, October 2015

A lot of work has been completed in IILU to support deployments, with processes and practices improving during subsequent deployments. There are still a number of aspects of managing deployments that could improve, particularly in relation to the consistency across deployments and ensuring positive aspects are sustained into the future. Personnel who were deployed found the experience highly rewarding and returned home with a strong feeling that their work had a positive impact for the community.

Further Information

https://emv.vic.gov.au/policies/emmv/

- Emergency Management Manual Victoria

Emergency Management Teams

Background

An Emergency Management Team (EMT) is a whole-of-government forum established at incident, region and state tiers to support the management of an emergency. EMTs enable coordinated emergency management activities in order to present the community with a unified approach from government before, during and after an emergency.

EMTs share information and provide support to the EMT Chair (the controllers or coordinators for the respective phase of emergency management at the particular tier, who are responsible for directing the actions of agencies). The forum assists the EMT Chair to more easily identify risks, establish priorities, and identify actions to mitigate the priority risks and the agencies responsible for action. This information forms the basis of a whole-of- government plan for managing the emergency.

Progress

A range of activity has been undertaken at the local, region and state levels to strengthen the role and coordination of EMTs. This includes:

- The arrangements and membership for EMTs at incident, region and state level were included in the updated State Emergency Response Plan (SERP), leading to the repeal of the Emergency Management Team Arrangements - for all emergencies (December 2014).
- Doctrine was updated to ensure inclusion of local government, key business, critical infrastructure operators and community representation in EMTs where appropriate.
- Emergency management teams was a theme included in the 2015-16 Regional Pre Summer Emergency Season Briefings and a suggested exercise theme.
- Local, regional and state level EMTs ran briefings, workshops and exercises to explore how they function and further develop connections across agencies.
- The State EMT had a series of briefings on key topics to enable greater awareness and opportunities to get to know each other in the lead up to summer.

The arrangements for EMTs have matured over this year, with many incident and regional EMTs evolving to support multiple emergencies with various control agencies. This is consistent with the State EMT, which has a broad oversight of consequences across all emergencies.

Insights

What worked well?

- EMTs played a critical role in many emergencies by connecting the command personnel into a broad network of government departments, partner agencies, non-government organisations, industry, business and community groups.
- Shared situational awareness through EMTs was supported by existing relationships, colocation of personnel, early engagement, scheduled meetings and a proactive approach to information sharing. Where this did not occur, it impacted the effectiveness of communications.
- The involvement of local governments in regional and incident EMTs was important for situational awareness and intelligence sharing. In some regions, local governments developed their own collaborative system for shared representation on EMTs with rosters to cover the summer period.

"Early engagement and coordination between agencies through the incident emergency management team (IEMT) was critical for recognition of local consequences for traffic management, school closures, environmental impacts and cause investigations."

Exercise Red Alert

- Notifications and communications through EMTs allowed for connection with stakeholders who were previously not advised of incidents and identification of consequences not previously known. This was particularly valuable for emergencies where the incident was localised but the consequences were significant beyond the incident boundary (e.g. smoke impacts, traffic management).
- Early engagement and coordination between agencies through the incident emergency management team (IEMT) was critical for recognition of local consequences for traffic management, school closures, environmental impacts and cause investigations (e.g. requirement for blood alcohol testing for drivers involved in serious accidents).
- The use of additional mobile command facilities worked well to provide adequate space to conduct IEMT meetings where required.

Learning Opportunities

- In some instances, there were differences in expectations of the REMT regarding the level of involvement, support and coordinated situation reporting.
- When internal agency structures were used to report through to the state level rather than through the REMT, the siloes of information led to disparate information being provided to the State Emergency Management Team (SEMT).
- In some situations, it was challenging for agencies to provide representation on incident and regional EMTs. In other cases, it was not clear what information should be held at the incident level and how best to ensure effective information flow through the EMT structures.
- Adequate physical space for EMT members was not available in some control facilities or they were in a location that did not facilitate connection with IMT members.

- Access to some agency or government systems was restrictive for volunteers, local government and non-government partners, limiting the ability to share and gain information.
- The workload and level of time commitment for EMT members was considerable, particularly in regions that had protracted or multiple emergencies.

Comments

Overall, significant progress has been made with regards to EMTs, and it is clear that collaboration and information sharing between EMT representatives at incident, region and state is working well. This is resulting in increased effectiveness of the management of emergencies, particularly during the complex emergencies and multiple concurrent emergencies seen during 2015-16.

Further Information

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

- Greater Geelong Thunderstorm Review
- Rapid onset storm events - Geelong Thunderstorm case study
- Application of the State Smoke Framework – Somerton Tip Fire case study
- Crib Point Fire case study
- Aircraft Incident – Barwon Heads case study
- Blue-Green Algae Bloom case study
- Marina Boat Fire case study

https://emv.vic.gov.au/policies/emmv/

- Emergency Management Manual Victoria

Regional Control

Background

The 2015-16 summer emergency season commenced earlier than in previous years and included the introduction of some new and enhanced incident management processes together with the continued focus on consequence management. Regional control played a leading role in implementation of these processes by supporting operationalisation at the incident level.

Progress

The updated State Emergency Response Plan (SERP) included updated and clarified role expectations and arrangements for Regional Controllers (RC), Regional Control Teams (RCT) and Regional Emergency Management Teams (REMT).

The focus on all communities in all emergencies was well explored in planning for, responding to and recovering from a range of hazards, including bushfires, tip and tyre fires, flash flood and the blue green algae bloom. In addition, the learnings from the 2014-15 Emergency Management Operational Review were used to good effect to continue developing the role of regional control.

Insights

What worked well?

- Regional Emergency Management Teams (REMTs) enabled a single whole of government view of all the emergencies occurring within a region. REMTs was able to utilise existing networks to coordinate a multiagency approach to managing potential community consequences and maintain strategic oversight of multiple emergencies.
- When outside the rostered period, early appointment of a Regional Controller was important to ensure EMT agencies were identified and notified so they could engage at incident level if required to manage the broader consequences.
- The role of the RCT and REMT members were better defined and understood through a strengthening of the relationships of the individuals involved.
- The expectation for Incident Controllers (ICs) to ensure the regional tier is provided with timely situation awareness reports and to identify emerging threats continues to improve.
- The support provided by RCTs in relation to implementation of new requirements and protocols (e.g. New Smoke Management Framework - November 2015, and the Revised Impact Assessment Guidelines for Class 1 Emergencies – October 2015) was evident. RCTs also demonstrated good support into non-traditional hazards (e.g. blue green algae event).
- Virtual or physical REMT involvement worked well during the readiness phase of emergencies, acknowledging the ability for incident management team personnel to better access regional and state-based Emergency Management Liaison Officers (EMLOs).
- A capacity building and mentoring program commenced in 2015-16 to help build Regional Controller roles.
- Regional control played a key role in the management of resources for deployment to Canada, United States, South Australia and Tasmania. Similarly when specialist international and interstate resources were brought into Victoria to assist, regional control provided assurance ensuring their safe and effective integration into Victorian operations.
- Arrangements were established to support regional control outside the rostered summer emergency period under the all communities/all emergencies approach.

Victoria's Deployment to Tasmania, January 2016

Learning Opportunities

- The new relief and recovery arrangements were implemented prior to the start of the summer emergency season and there is an opportunity to expand the understanding of these arrangements within regional control and ensure an integrated approach.
- Smoke can potentially impact on large geographic areas, which may be well removed from the fire itself. The potential roles for RCTs and REMTs should be highlighted in supporting or leading management of this type of offsite consequence, whilst leaving incident management and IEMTs to better focus on managing fire-ground related issues.
- There is a critical need to ensure strong connection and collaboration between the three tiers of emergency management (incident, regional and state), and the need to clearly define expectations and required levels of support to ensure that all required functions are resourced and performed.
- In addition, ensuring that any agency support requests continue to be coordinated through the responsible Regional Agency Commanders (RACs) will support regional strategic resourcing awareness.

Comments

The role of regional control has continued to strengthen and mature over time. Current arrangements and practice reflect a far greater integration and collaboration than in previous years, with the RCT and REMT generally working seamlessly to provide a whole of government approach.

The 2015-16 season was concluded with a regional leadership forum which provided good opportunity for all regional leaders to come together to share their experiences and broaden the knowledge base within the group.

Further Information

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

- Greater Geelong Thunderstorm Review
- Rapid onset storm events - Geelong Thunderstorm case study

https://www.emv.vic.gov.au/how-we-help/reviews-and-lessons-management/operational-reviews/somerton-tip-fire

- Somerton Tip Fire Review

https://emv.vic.gov.au/policies/emmv/

- Emergency Management Manual Victoria

2015-16 Emerging Trend

Transition to Recovery

Background

The formal transition of an emergency from the response control to recovery coordination is an important and requires considered planning, negotiation, handover and ongoing support to ensure there is a seamless delivery of services to the community.

The transition process primarily focuses on the transfer of responsibilities from the control agency to the recovery coordinator, though there will likely be a requirement for many response agencies to remain involved.

Section 3.13 of the SERP 'Integration of recovery into response' is largely focused on the transition from response to recovery, emphasising the importance of planning for the transition as early as possible and outlining key considerations. This is further supported by the template Agreement for transition of coordination arrangements from response to recovery.

The purpose of the transition agreement is to 'assist emergency management agencies involved in response and recovery to achieve a seamless transition from response to recovery'.

Insights

What went well?

- The need for a smooth transition between response and recovery was acknowledged as important and personnel made considerable efforts to integrate these aspects of emergency management.
- Transition to recovery worked well and communication was more consistent when the discussion about triggers occurred early through the Incident Emergency Management Team (IEMT) meeting cycle, ideally prior to the commencement of planning transition to recovery.
- A phased approach to the transition worked well in complex incidents because it allowed recovery planning and activities to progress while response continued in parallel in other locations.
- There was a strong recognition that response, relief and recovery operate in parallel and the importance ofworking in a collaborative, coordinated and integrated manner.

Learning Opportunities

- At a number of incidents, transition to recovery was perceived to be difficult and inefficient.
- Systems, processes and training did not support the effective management of the transition, limiting the maturity of the sector to truly integrate response and recovery.
- Neither the SERP nor the template agreement provided the required clarity about the objectives, outcomes, or consequences of the transition process, and there was significant room for interpretation within the arrangements. This lack of clarity and understanding was an impediment to smooth and timely transition.
- In many cases, there were differences in perceptions of the rationale, triggers and implications of transition to recovery, including:

- Responsibilities for recovery costs (i.e. unclear that agencies cover costs relevant to their own accountabilities).
- Implications for control, support and recovery agencies (e.g. is the ICC still available? what happens if there is a subsequent emergency in the same location?).
- Links between the transition and processes of impact assessment, evacuation return, reopening roads, releasing response resources or readiness of communities to start recovery (e.g. does transition occur as soon as initial impact assessment is complete?).
- Role of the transition document and who should be involved in its development.

- As the sector moves towards greater integration between response and recovery, decision making is influenced by the differences in approaches between the different phases of an emergency (i.e. the shift from a command and control structure to a coordination structure).
- In some cases, the development and approval of a formal transition document was a barrier to smooth transition and some agencies were reluctant to be responsible for coordinating recovery.

Suggested Treatments

This emerging trend will be reviewed at the end of 2016-17.

Further Information

EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Insights

- Rapid onset storm events - Geelong Thunderstorm

Relief Centre Exercise

- Rapid onset storm events - Geelong Thunderstorm
- Greater Geelong Thunderstorm Review
- Tanker Rollover at Inglewood Case Study
- Wye River Fire Case Studies

https://emv.vic.gov.au/policies/emmv/

- Emergency Management Manual Victoria

EM-COP Library > IMT Toolbox > IMTTB-Post Incident Actions

- An agreement for transition of coordination arrangements from response to recovery template

Conclusion

Blue Green Algae Bloom, February 2016

During 2015-16, significant operational activity across the state. The statistics provided in Section 1 demonstrate the level of activity and the impact of emergencies on the community.

Emergencies that occurred this year covered a broad range of hazard types, which is illustrated in the range of case studies in Section 2. These events stretched the capacity of Victoria's resources. Nevertheless, Victoria's emergency management sector effectively and efficiently managed the response and recovery of a large number of incidents.

As summarised in Section 3, significant work has been done across each of the existing themes to sustain good practice and address areas of improvement that were previously identified. This progress has required strong commitment effective and collaboration from many across the sector. Analysis of the data provided from the field suggests that many areas of the emergency management system continue to mature and improve.

The insights identified in this report are part of a two-year rolling cycle of learning and improvement processes. This supports continuous improvement processes that occur throughout the year, with insights incorporated into emergency management planning across the sector. The information provided in this report should be utilised to inform ongoing continuous improvement activities of all areas of emergency management, particularly the themes identified within section 3. For further information please do not hesitate to contact the State Review Team on sccvic.srt@scc.vic.gov.au