EMV
EMERGENCY
MANAGEMENT
VICTORIA

Emergency Management Operational Review

2016–17

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: Victorian personnel assisting members of the community affected by Tropical Cyclone Debbie during their deployment to Queensland. Courtesy of Department of Heath and Human Services (DHHS).

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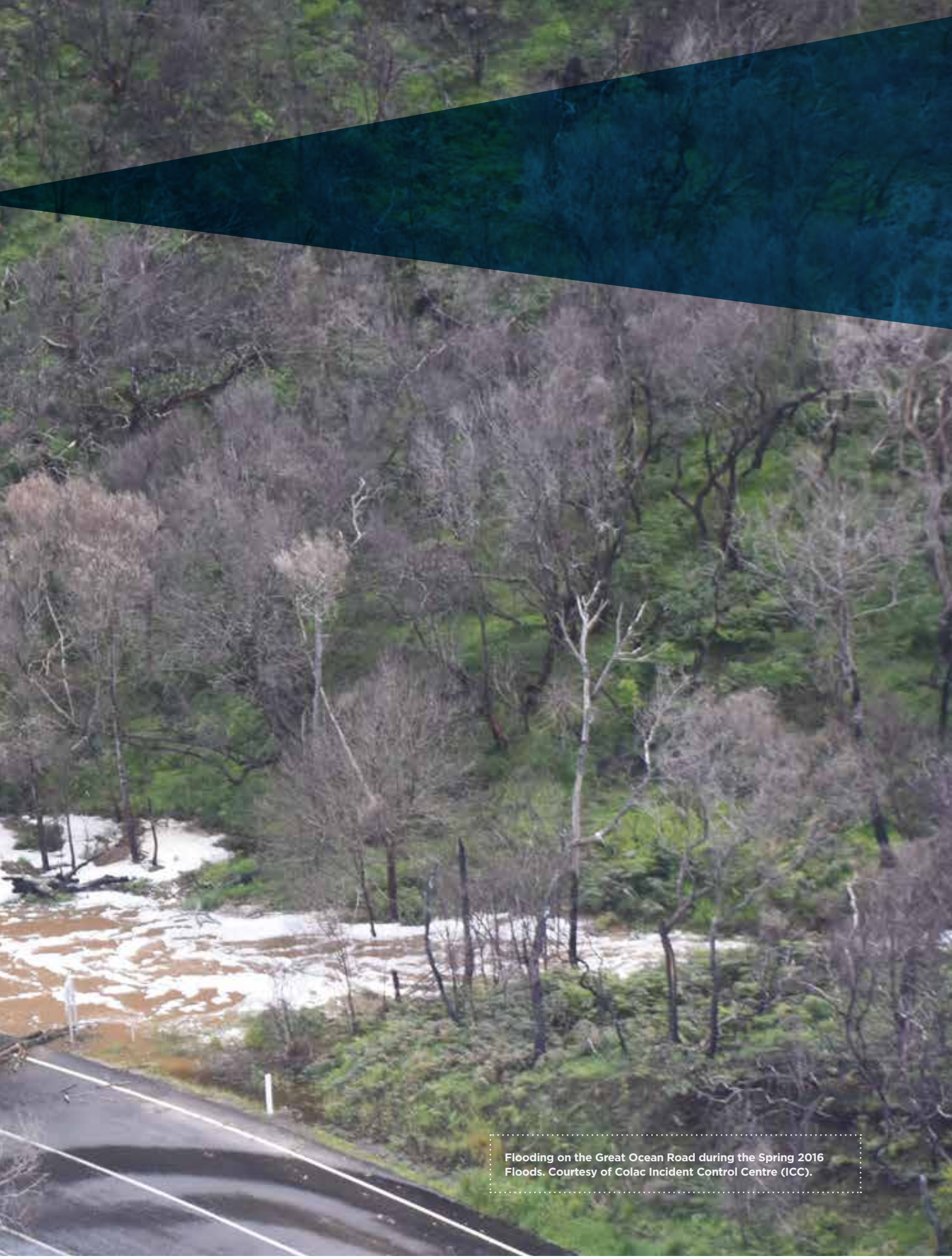


Flooding on the Great Ocean Road during the Spring 2016 Floods. Courtesy of Colac Incident Control Centre (ICC).

Message from Craig Lapsley

EMERGENCY MANAGEMENT COMMISSIONER

Continual learning and improvement occurs through internal assurance activities of debriefing, monitoring and reviews. Lessons are also regularly identified and adapted from interstate and international practice. In addition, exchange of informal knowledge and stories about when things go well and when things don't go so well supports real time learning and improvement to occur person to person and team to team.

This financial year has seen a range of assurance activities being undertaken, some led by the Inspector-General for Emergency Management (IGEM), Emergency Management Victoria (EMV) and emergency management organisations. IGEM provides independent systematic assurance, which is a critical oversight role for the sector. All emergency management organisations have a vital role to play in the sector's system of continuous improvement.

In 2015, EMV released the *EM-LEARN Framework*, to describe the sector's approach to learning and outline a model for lessons management. A major component of implementing the framework across the emergency management sector is a focus on embedding and supporting a culture of learning. We believe this work is starting to create change demonstrated by the move away from recommendations and towards lessons, away from reports and towards case studies and away from action tracking and towards monitoring improvement. Victoria is striving to embed this culture through being transparent, publishing more openly, communicating more frequently and connecting to a wider and more inclusive audience.

EMV and the State Review Team (SRT) develops the *Emergency Management Operational Review* (Operational Review) annually. This document includes a summary the operational activities that occurred over the year, a range of case studies of operational incidents and insights that highlight good practice and areas for improvement. This document supports the continuous improvement of the sector by openly and transparently sharing lessons and operational experiences, which allows individuals to learn independently and absorb the content that resonates for them.

Utilising the opportunities that come from internal and external reviews, together with the vision of the *EM-LEARN Framework* to embed a learning culture, is an essential foundation of a seamless approach to learning and improvement of emergency management before, during and after emergencies.

Executive Summary

The *Operational Review* is part of an ongoing cycle of learning and improvement, and aims to highlight good practice, changes and improvements that have occurred across the Victorian emergency management sector during 2016-17. Assurance activities occur throughout the year and the outcomes of these activities are then collated to analyse and identify good 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 continuous improvement activities.

The scope of this report includes operational activities within the 2016-17 financial year with input from the SRT which has representatives from more than 16 organisations. The SRT is Victoria's governance group that provides guidance and advice on assurance activities and the identification of state level/multi-agency lessons.

The *Operational Review* includes a narrative, case studies and theme updates highlighting the broad range of emergency management operational activity that occurred during 2016-17. 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".

Below is summary of key activities that occurred during 2016-17 that is covered within the *Operational Review*:

- The launch of the Learning Management System (LMS) provides a 'blended learning' approach for the sector, which incorporates online training, with traditional training and assessments to gain endorsements for State Control Centre (SCC) functional roles, incident management roles and operational systems. This year, 249 individuals completed 417 courses provided by EMV both on-line or in a classroom.
- Country Fire Authority (CFA), Department of Environment, Land, Water and Planning (DELWP), Metropolitan Fire Brigade (MFB) and Victoria State Emergency Service (VICSES) responded to approximately 11,000 incidents every month.
- The VicEmergency website had more than 50 million page views.
- Triple Zero (000) received almost 2.6 million calls for assistance.
- The Department of Health and Human Services (DHHS) issued heat health alerts for six days during the 2016-17 summer.
- The Victorian community received a total of 2,959 warnings and community notifications.
- There were 29 significant incidents / incidents of note and 4 interstate/international deployments.
- The SCC was activated to Tier 1 or above a total of 223 days and there were 4 months where the SCC was activated to Tier 1 or above for the entire month.
- Over 630 individuals representing 28 agencies were on standby or positioned in the SCC for over 12,500 shifts.
- 13 case studies have been developed providing learnings about a range of operational activities during the financial year including the Essendon Fields Aircraft Crash, the Springvale Commonwealth Bank Fire and rapid onset storm events as well as engaging the Victorian community through effective use of social media channels.
- 12 themes have been updated to highlight progress and learnings during 2016-17 together with an emerging theme focused on smoke management.

Introduction

The *Operational Review* is a summary of the operational activities undertaken by Victoria's emergency management personnel across the 2016-17 financial year. This report supports the continuous improvement of the sector by sharing lessons.

The State Response Controller with the DELWP State Agency Commander and, DELWP State Duty Officer in the SCC. Courtesy of Emergency Management Victoria.

OVERVIEW

The *Operational Review* is divided into three sections:

- Section 1 provides an overview and narrative outlining the broad spectrum of emergency management activities undertaken across the sector before, during and after emergencies experienced during 2016-17.
- Section 2 includes a selection of case studies that were developed over the 2016-17 financial year, and demonstrate the variety of incidents managed by Victorian emergency management personnel.
- Section 3 provides an update on the themes and insights identified during 2015-16 and highlights good practice, changes and improvements from 2016-17 as part of an ongoing cycle of learning improvement.

SCOPE

The scope of this report includes emergency management operational activities undertaken during the 2016-17 financial year. The information provided in this report reflects the activities overseen by the State Review Team (SRT) during the 2016-17 financial year.

The SRT is Victoria's governance group that provides guidance and advice on assurance activities and the identification of state level/multi-agency lessons. The SRT's primary objective is to promote a culture of learning and 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 and Planning (DELWP) / Forest Fire Management Victoria [1] (FFMVic),
- Department of Health and Human Services (DHHS),
- Emergency Management Victoria (EMV),
- Environmental Protection Authority (EPA)
- Emergency Services Telecommunication 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.

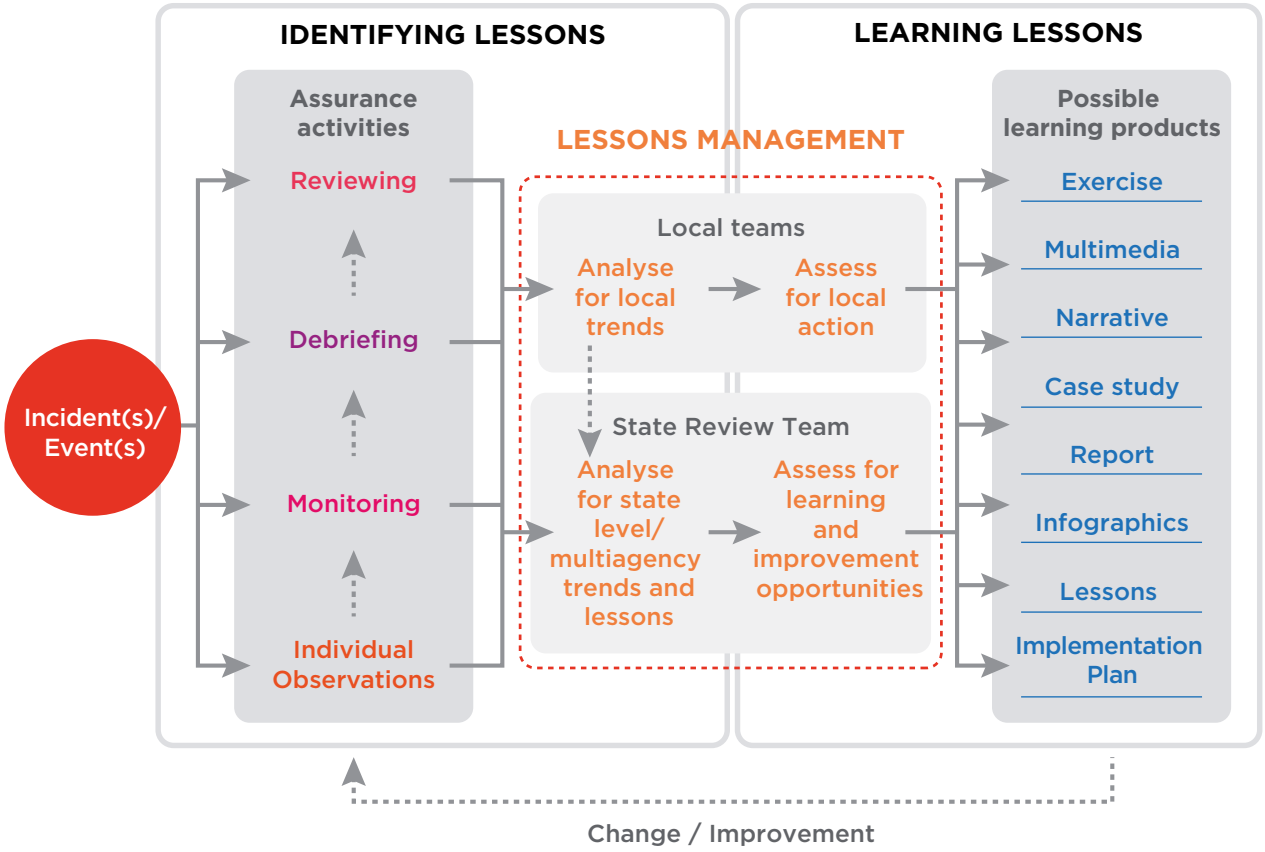
[1] Forest Fire Management Victoria (FFMVic): the name for the Department of Environment, Land, Water and Planning (DELWP) forest and fire management program. FFMVic comprises staff from DELWP, Parks Victoria, Melbourne Water and VicForests and is tasked to reduce the risk and impact of bushfires in Victoria's parks, forests and other public land.

PROCESS

During the 2016-17 financial year, observations were collected from all tiers of emergency management through individual observation collection and outcomes from assurance activities (monitoring, debriefing and reviews). The SRT supported these activities, and analysed the data using the approach outlined in the *EM-LEARN Framework* to ensure learning and improvement as shown in figure 1.

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

Figure 1: Process for identifying and learning operational lessons



EMV YEAR IN REVIEW

While the *Operational Review* 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 2016-17* 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 and more resilient communities.

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

Section 1: 2016-17 Overview

The information included in the overview section is intended to provide a summary of the operational activity across the 2016-17 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.

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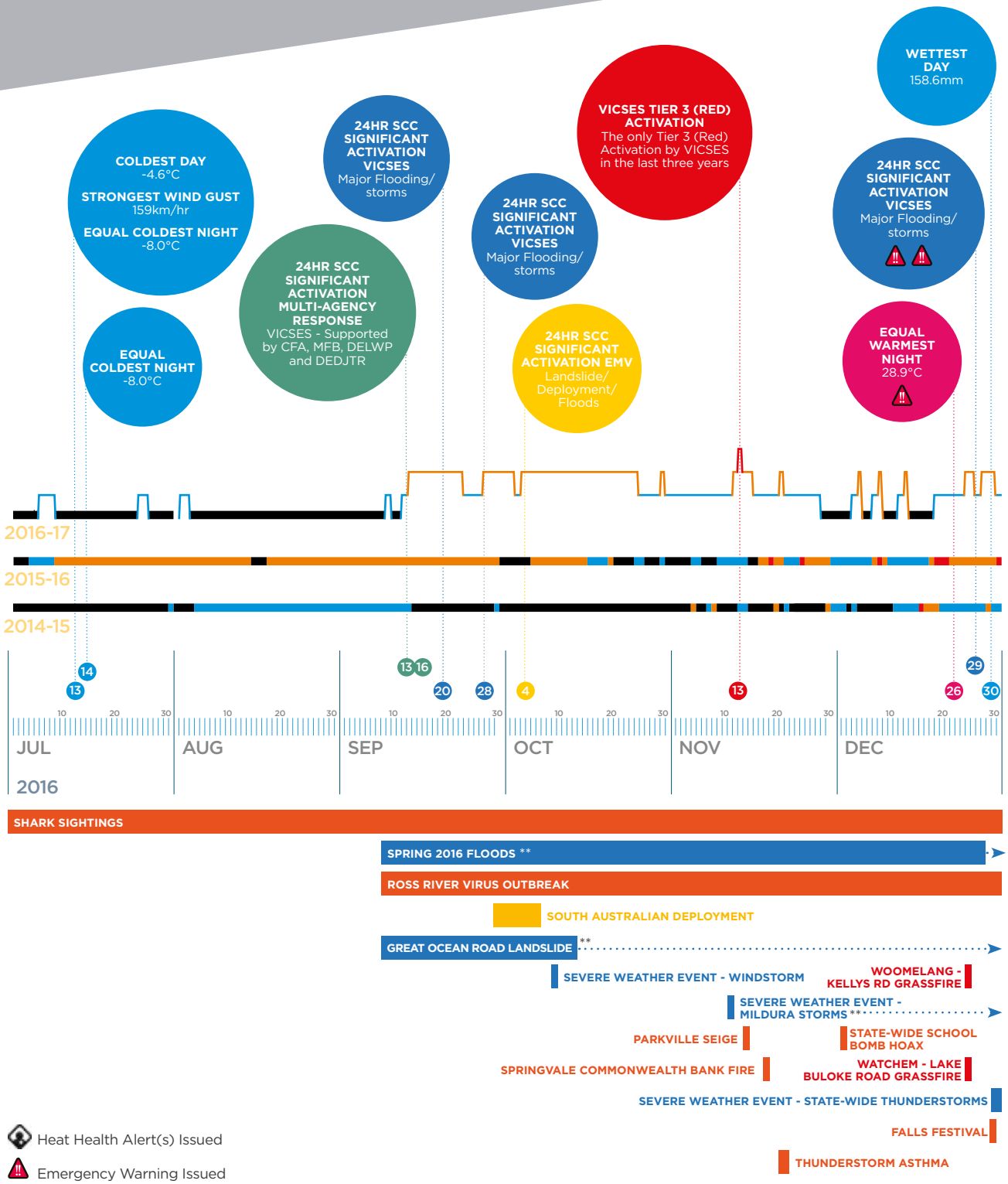
Timeline

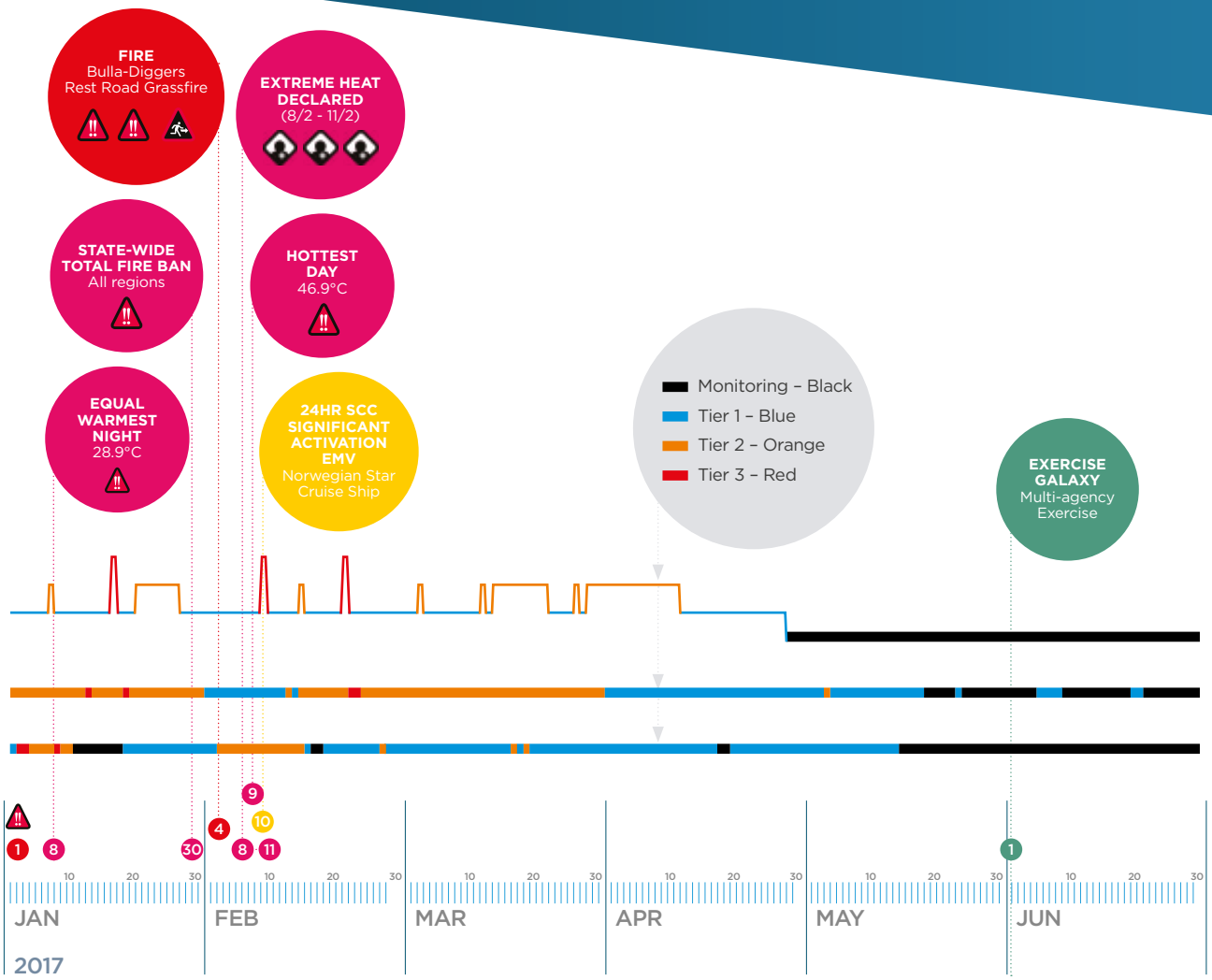


Heat Health Alert(s) Issued

Emergency Warning Issued

Recommendation to Evacuate Issued

** Recovery is coordinated collectively through the Flood Recovery Subcommittee



SHARK SIGHTINGS

ongoing recovery activities

ROSS RIVER VIRUS OUTBREAK

BOURKE STREET TRAGEDY **

ongoing recovery activities

ongoing recovery activities

STATE-WIDE SCHOOL BOMB HOAX

CROOKED RIVER - WONNANGATTA ROAD BUSHFIRE

ongoing recovery activities

SEVERE WEATHER EVENT – SEVERE WIND AND RAIN

SEVERE WEATHER EVENT - STATE-WIDE RAINSTORMS

NEW SOUTH WALES DEPLOYMENT

QUEENSLAND DEPLOYMENT

TRUCK VS TRAM COLLISION

NORWEGIAN STAR CRUISE SHIP

NAPIER STREET FITZROY HIGH RISE FIRE

BANGERANG - PIETSCH ROAD GRASSFIRE

NEW SOUTH WALES DEPLOYMENT

MALMSBURY SIEGE

ELECTRIC PARADE MUSIC FESTIVAL

HEATHCOTE - YEMMS LANE GRASSFIRE

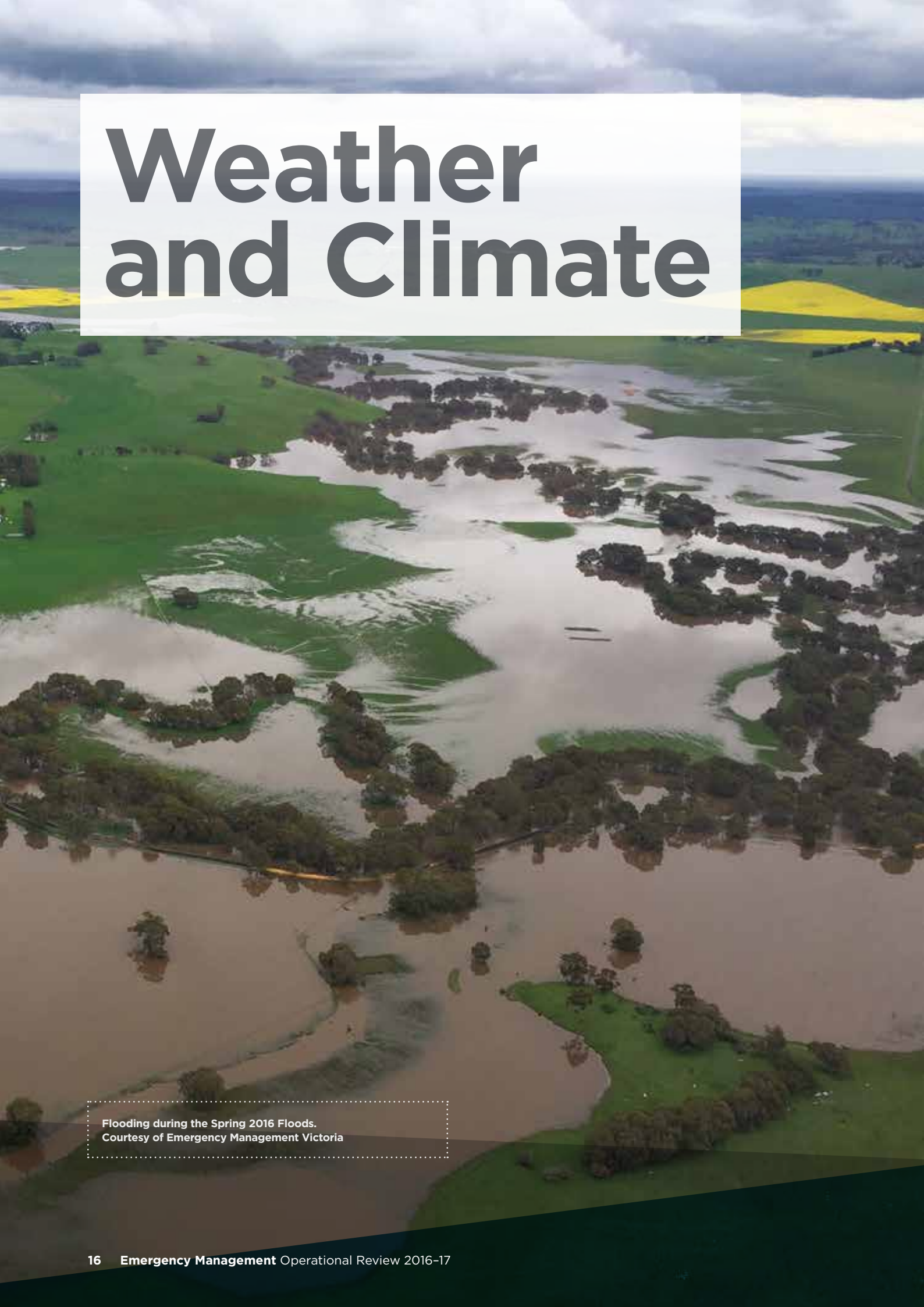
EXTREME HEAT

ANTHRAX OUTBREAK

BULLA - DIGGERS REST ROAD GRASSFIRE

ESSENDON DFO AVIATION CRASH

Weather and Climate



Flooding during the Spring 2016 Floods.
Courtesy of Emergency Management Victoria

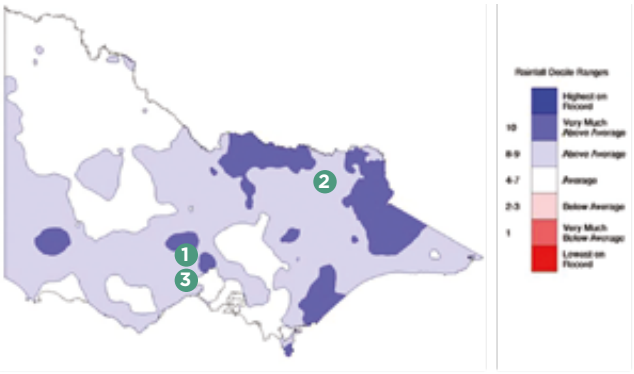
SEASONAL CLIMATE SUMMARY

Winter 2016

Winter saw above average rainfall across much of Victoria, particularly in the east, with state-wide rainfall totalling 23% above the winter mean. Victorian Rainfall deciles (which give a ranking that's compared with the average for an area) also reflect some areas in Victoria received "Very Much Above Average" rainfall for winter (figure 2).

This winter was record-breaking with a number of sites recording their highest winter daily rainfall on record including Merrimu Reservoir (near Coimadai) which broke its 1987 record and Yarrawonga broke its 24 year highest total rainfall record with 260.2mm of rain for the winter period.

Figure 2: Victorian Rainfall Deciles from 1 June 2016 to 31 August 2016



1 Merrimu Reservoir 2 Yarrawonga 3 Avalon Airport

Did you know?

Avalon Airport recorded its warmest winter night on record! On 19 August 2016, the site recorded a low of just 14.0°C, which is more than double its average of 5.5°C.

Did you know?

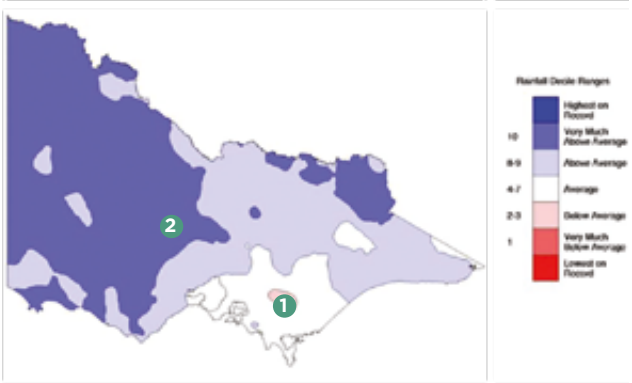
The entire state received a combined total of 66.92 metres of rain over 2016-17? A third of this total fell in September and October.

Spring 2016

Victoria experienced its tenth-wettest spring on record, or 42% wetter than an average spring, even with below average recordings in the Latrobe Valley, which is well reflected in the Victorian Rainfall Deciles for spring (figure 3).

This "Very Much Above Average" level of rainfall contributed to Tarnagulla (near Bendigo) breaking its spring daily rainfall record of 100 years and resulted in significant incidents / incidents of note (see page 48) that occurred early in the 2016-17 financial year including multiple severe weather events, landslides and flooding.

Figure 3: Victorian Rainfall Deciles from 1 September 2016 to 30 November 2016



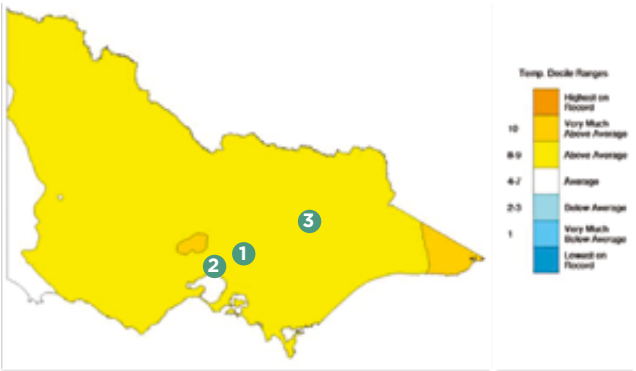
1 Latrobe Valley 2 Tarnagulla

Summer 2016-17

The mean maximum temperature for Victoria over summer 2016-17 was 1.13°C above the average (figure 4), which continued the warmer than average summer trend, the last cooler than average summer mean temperature was recorded in 2004-05.

A few Victorian sites set records for their warmest summer night recorded, including Coldstream, which experienced its warmest night on record of 24.7°C on the 29 December. Coincidentally, this is also the same day that boosted the summer season's rainfall levels to near-average, delivering several sites their highest summer daily rainfall on record and triggered damaging flash flooding in inner Melbourne (see *Significant Incidents / Incidents of Note*, page 48).

Figure 4: Victorian Maximum Temp Deciles from 1 December 2016 to 28 February 2017



1 Coldstream 2 Melbourne 3 Mount Hotham

In some aspects, summer 2016-17 directly reflects the Southern Australia Seasonal Bushfire Outlook 2016-17 November Update (the Update) from the Bushfire and Natural Hazard Cooperative Research Centre (BNHCRC), which predicted a "departure from long term drying trends". The Update can be found at www.bnhcrc.com.au/hazardnotes/23

Did you know?

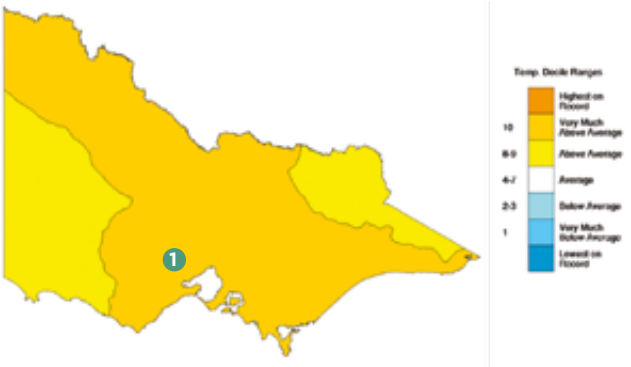
Victoria experienced its wettest day for 2016-17 in summer? 158.6mm of rain fell at Mount Hotham in the 24hrs leading up to 9:00hrs on 30 December 2016, and 5 more locations broke their highest December daily rainfall record on this day too.

Autumn 2017

Victoria experienced "Very Much Above Average" temperatures this autumn (see figure 5) resulting in the fourth warmest autumn on record at 1.08°C above the average. This included March experiencing its second highest recorded daytime temperatures, with a monthly anomaly of 3.03°C.

Even with increased temperatures, overall rainfall for the whole of Victoria was close to the long-term autumn mean of 156.8mm, and some places even recorded their highest autumn rainfall ever, including Durdidwarrah (between Geelong and Ballarat), which recorded 403.8mm (2.5 times its autumn average), a result assisted by thunderstorm events.

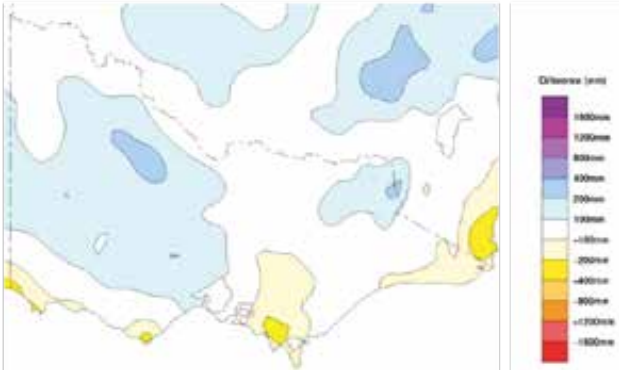
Figure 5: Victorian Maximum Temp Deciles from 1 March 2017 to 30 May 2017



1 **Durdidwarrah**

Comparing the last three financial years, figure 6 highlights the amount of rain Victoria has recorded over the last three financial years. Blue shades on the Inter-annual Rainfall Difference chart indicate areas which have been wetter this year compared to the last two years, and yellow shades indicate areas which have been drier this year.

Figure 6: Inter-annual Rainfall Difference over the last three financial years



Readiness

A Functional Unit Leaders roundtable discussion.
Courtesy of Emergency Management Victoria.

CAPABILITY DEVELOPMENT

It has been a year of change for capability development, employing a shift towards modern learning practises, with the implementation of an EMV LMS and the delivery of a range of sector wide exercises and learning programs. An increasing need to incorporate technology into learning has led to a number of projects aiming to improve the way technology is harnessed, creating a modern and more experiential approach to capability development.

Learning Management System (LMS)

The LMS has enabled a 'blended learning' approach, allowing approximately 480 active users from across 32 agencies to combine a variety of online learning programs with classroom and on-the-job training. Modules which have been developed and uploaded to the LMS (from an array of agencies) include:

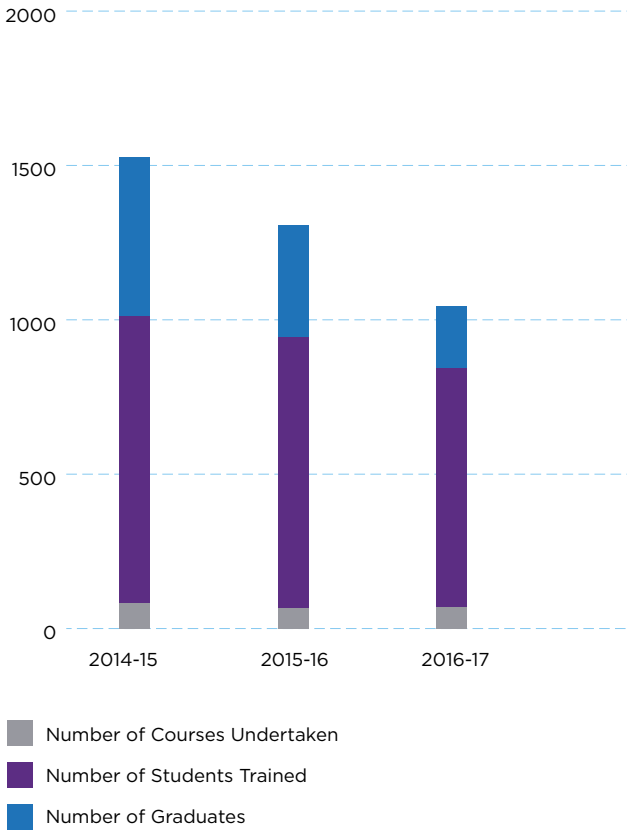
- Emergency Management – Common Operating Picture (EM-COP) Modules - including Public Publisher, Situational Awareness and Collaboration modules
- Fundamentals of Emergency Management
- Intermediate Bushfire Behaviour – including Fire Behaviour, Fuel, Weather and Topography modules
- Introduction to Logistics
- SCC Induction
- Tree Hazard Awareness

A blended learning approach, which incorporates completing online modules prior to attending face-to-face training then moving towards endorsement.

Incident Management Team Training

A number of Incident Management Team (IMT) training courses have been undertaken this past financial year, and are comparable to statistics from the last three years (figure 7). It is important to note that the number of graduates refers to those individuals who complete all required training programs for an IMT role.

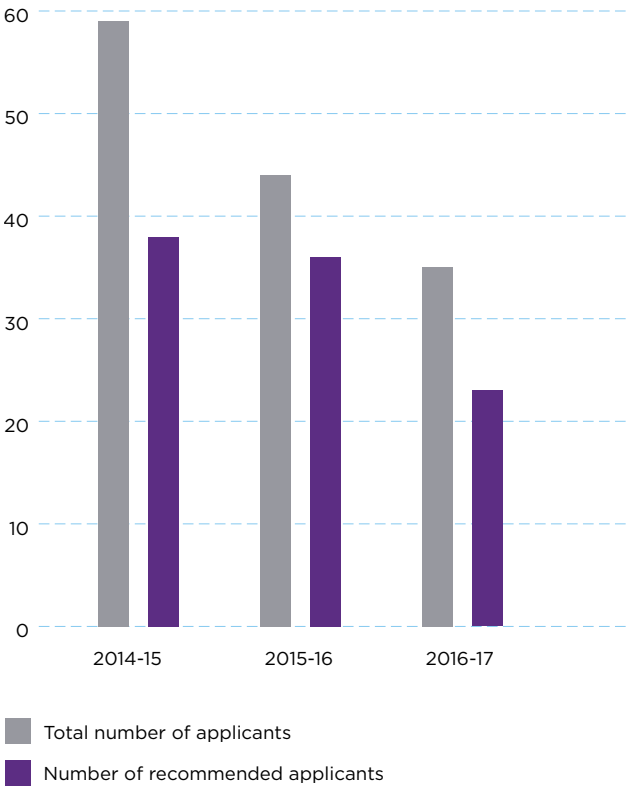
Figure 7: Three year statistical comparison for Incident Management Training



Multi-agency accreditation for Level 3 (L3) IMT roles has continued in the past financial year. The roles undertaken by candidates ranged from Incident Controller, Planning, Public Information to Operations.

Of the 35 individuals interviewed for L3 Accreditations in Incident Controller, Logistics, Planning, Public Information and Operations, 23 were recommended by the panel (65.71% overall accreditation rate).

Figure 8: Three year comparison of Level 3 accreditation statistics



Exercises

Hydra – Level 3 Incident Controllers

Hydra (formally known as Hydra Minerva) is an immersive, interactive environment for delivering exercises to develop decision makers to better manage critical incidents. The methodology provides highly realistic simulations of events, including emergency management incidents, enabling key staff to respond in real time to both immediate critical pressured events and also to consider their strategic impact on both their institution and the public. Delegates are able to record difficult decisions and uniquely, also record rich and detailed rationale.

Communications between the Emergency Management Commissioner (EMC) and the Chief Commissioner of Police led to EMV's opportunity to develop, in collaboration with VicPol, an exercise to provide Incident Controllers with an opportunity to practice L3 Incident Control in accordance with Victorian emergency management arrangements, which therefore maintains and develops their broad range of skills

Courtesy of Country Fire Authority (CFA).

In December 2016, a pilot Hydra exercise was conducted for a group of multi-agency Incident Controllers. This allowed opportunity for feedback and identifying improvement opportunities prior to the delivery of future exercises to a broader range of L3 Incident Controllers for both Class 1 and Class 2 emergencies.

Exercise Galaxy

Led by VicPol, Exercise Galaxy involved the development of a strategic discussion exercise in Victoria (Phase 1) on 21 March 2017 and a 'high-level' discussion exercise in South Australia on 5 April 2017, based upon a coordinated, multi-site terrorist attack within their capital cities.

The scenarios were further developed to create a jurisdictional based functional exercise in Victoria (Phase 2) on 1 June 2017 that examined the interaction between the various state crisis, control and coordination centres. It also facilitated engagement with relevant Commonwealth committees and coordination centres.

The exercise scenario incorporated a jurisdictional multi-agency response and was aimed at gaining an increased understanding of the capability, capacity, sustainability and coordination issues that may arise when dealing with a complex, coordinated series of terrorist attacks in the Melbourne central business district (CBD).

Exercise Off the Grid

Exercise Off the Grid, a drill-style field deployment exercise, was designed to meet the needs of the City of Melbourne in evaluating its relief and recovery arrangements during an extreme heat event and partial power outage in the city, which would require the setup of a major Emergency Relief Centre and internal communication aspects. The scenario, held 26 May 2017, involved a physical threat to people's health through the heat and power losses, together with significant disruption to public transport and the resultant interruption for the public and organisations.

The exercise also explored the multi-agency and collaborative council relief and recovery arrangements, and use of the Municipal Emergency Management Plan. Various council processes were also explored and validated, as well as the real time recovery responses by a number of agencies when there is a requirement to open the major Emergency Relief Centre at the Melbourne Cricket Ground (MCG) during a weekday.

Exercise Positano

In August 2016, a discussion based exercise called Exercise Positano was held which focused on an emergency incident resulting in the mass displacement of a rural community of up to 10,000 people.

The exercise used a scenario of increasing complexity that involved an initial emergency incident occurring within a rural community setting. It gave opportunity to explore the response capabilities and capacity of emergency management agencies that would work together to support a rural community mass displacement event.

Pre-summer Season Program

The pre-summer season program allowed for the provision of relevant and timely information, changes and updates to emergency management personnel.

During September and October 2016, Regional Control Teams (RCTs) and Regional Emergency Management Teams (REMTs) were briefed by EMV, which then allowed for regional modification to the content prior to presentation to respective L3 IMT personnel.

There were 16 L3 IMT briefings that were held around the state, most of which occurred in October 2016. In addition to this, numerous other briefings and pre-summer season activities aimed at information sharing across the sector were undertaken, which included:

- A presentation to both State Control Team (SCT) and State Coordination Team (SCoT) on the new control arrangements for Extreme Heat

- A State Leadership Forum provided a pre-season briefing for State Duty Officer's (SDOs), State Agency Commanders (SACs), Deputy Chief Officers (DCOs), Assistant Chief Officers (ACOs) and Chief Officers
- State Emergency Management Team sessions, with presentations from various agencies and organisations
- Three SCC pre-summer season briefings
- Agencies conducted internal pre-season briefings for their staff

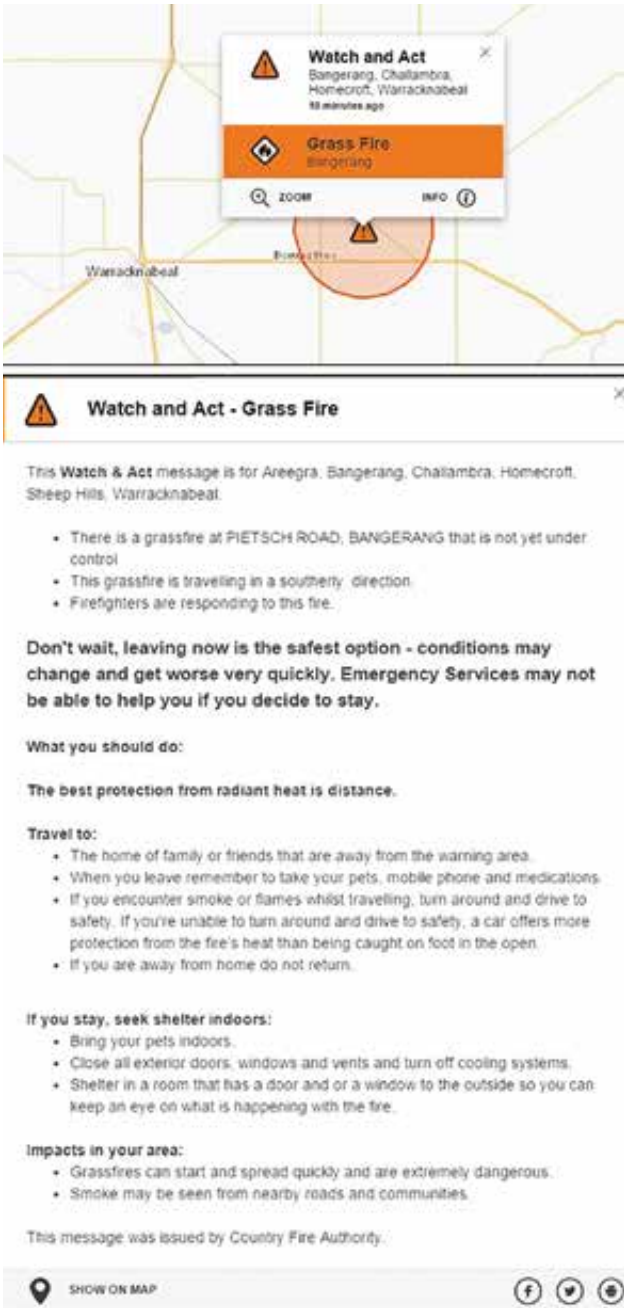
PUBLIC INFORMATION AND WARNINGS

In November 2016 a new all hazards warnings functionally was launched in EM-COP called EM-COP Public Publishing. This is the first time in Australia that a state has the capability to publish messages to the community via a range of outputs in the one centralised tool. One of the benefits for using EM-COP in this way, is it allows personnel to have access to a range of data sources that enhances their ability to provide timely, tailored and relevant notifications and warnings to the community.

The tool has also allowed for a consistent approach in the way Victorians receive information, with warning levels and information provided in a similar way regardless if it is a bushfire or a shark warning. This functionality has been developed alongside the new VicEmergency app and website and allows for an end to end warnings system when used in conjunction with Emergency Alert System (EAS) - the national telephone warning system.

Did you know?

Over the course of four months over 270 personnel from CFA, FFMVic, MFB, Parks Victoria and VICSES were trained in the new platform?



An example of a Watch and Act message issued on VicEmergency, based on (not actual) the Bangerang – Pietsch Road Grassfire.

AVIATION

The Victorian Fire and Emergency Aviation Fleet for 2016-17 comprised of 48 aircraft, with 31 of those fire bombing aircraft and the remainder made up of reconnaissance, supervision and camera/sensory equipped aircraft. As in previous years, more than 100 additional firefighting aircraft were available on a "call when needed" basis.

Victoria has progressively implemented Pre-Determined Dispatch (PDD) protocols since 2012-2013, which allows for rapid dispatch of aircraft (within predetermined parameters and triggers) through a direct notification of a fire rather than on scene personnel requesting aircraft (see further information in Section 3 page 118). Aircraft are prepositioned in readiness in strategic locations across Victoria based on risk. When requested, aircraft are dispatched, under PDD protocols, to support response to incidents, with consideration given to readiness for other concurrent or potential emergencies.

This year, PDD was expanded to include aircraft at Ballarat, Olinda, Moorabbin, Ovens and Heyfield. This resulted in all fire bombing aircraft being able to be respond under PDD, with the exception of the strategic aircraft; two Large Air Tankers (LATs) and two Erickson Air Cranes.

LATs continued to be used in the Victorian Fire and Emergency Aviation fleet. LATs deliver large volumes (greater than 8,000 litres) of fire suppressant or retardant. These aircraft were based at Avalon and also operated extensively from Albury supporting operations in Gippsland and southern New South Wales (see Interstate / International Deployments page 64).

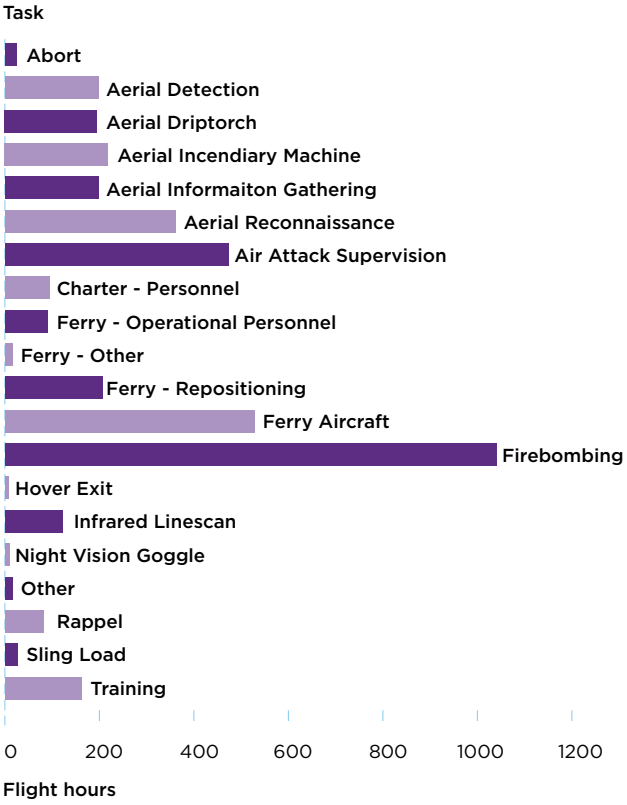
A range of preparedness activities were conducted to support aviation operations, including:

- Aviation Pre-season Briefings – attended by responder agency representatives and aviation contractors, these briefings reinforced safety requirements, aviation operations, the expansion of PDD and administrative processes.

Emergency Management Victoria aircraft.
Courtesy of Emergency Management Victoria.

- Six Regional Multi-agency Aviation Briefings – outlined safety, Interagency Aviation Operating Procedures (IAOPs), fleet composition, aggregated response, State Airdesk, retardant and airbases for the 2016-17 outlook.
- LATs Training – series of familiarisation and training days supporting the continuation of LATs into the Victorian Fire and Emergency Aviation fleet that were attended by aviation specialists from Victoria, Queensland, New South Wales, South Australia, Tasmania and Australian Capital Territory.
- Aviation Training – continued to be provided and covered both flight and ground based roles including Air Attack Supervisors (AAS), Air Observers, Airborne Information Gathering (AIG) specialists, Rappel crews and Air Base personnel.
- PDD Briefings – regionally based briefings provided information on changed to operating procedures and expansion of PDDs to pilots, aircraft operators and agencies.
- Remotely Piloted Aircraft System (RPAS) Advanced Sensor Project Trial – this sector wide trial was undertaken to evaluate the application of various advanced camera/sensory equipment and its integration into operations.

Figure 9: The total number of flight hours from all agencies by activity*



*** Note the data is current for all flight invoices received until 24 June 2017.**

Did you know?

Victorian Fire and Emergency Aviation Aircraft personnel racked up over 4,000 flight hours for 2016-17? Activities undertaken during these hours include firebombing, aerial reconnaissance, aerial information gathering and for use of the night vision goggle? (see figure 9)

DOCTRINE

Victoria's emergency management sector created or updated a wide range of state level doctrine over the 2016-2017 financial year, including:

- Joint Standard Operating Procedures (JSOPs)
- State Emergency Response Plan – Biosecurity Sub Plan
- State Emergency Response Plan – Earthquake Sub Plan
- State Emergency Response Plan – Extreme Heat Sub Plan
- State Emergency Response Plan – Flood Sub Plan
- State Emergency Response Plan – Public Transport Disruption Sub Plan
- State Emergency Response Plan – Storm Sub Plan
- State Emergency Response Plan – Tsunami Sub Plan
- State Maritime Emergencies (Non-Search and Rescue) Plan
- State Shark Hazard Plan
- Victorian Bushfire Handbook – Edition 5

In addition to this, agencies have continued to update and maintain their internal plans and procedures.

RELIEF AND RECOVERY

Under the Emergency Management Act 1986, the EMC and the Minister for Emergency Services have a responsibility for the coordination of the activities of agencies following an emergency, and ensuring that satisfactory emergency management arrangements are in place to facilitate the recovery from emergencies.

Responsibility for the coordination of relief and recovery at state, regional and local levels sit with EMV, DHHS and municipal councils respectively. Municipal councils lead the delivery of local relief and recovery services and the Victorian Government supports councils in fulfilling these responsibilities by establishing and coordinating all regional and state relief and recovery arrangements and activities.

The flexibility and adaptability of our current arrangements to a diverse range of emergencies and communities has been tested over the preceding years. In 2016-17, relief and recovery coordination operated at the state level for Class 1, Class 2 and Class 3 emergencies. This required coordination across the whole of Victorian Government, in particular in the development of plans and reporting.

Bulla-Diggers Rest Road Grassfire Relief Centre personnel. Courtesy of Department of Health and Human Services.

Relief and recovery practitioners responded to a range of emergencies that included the Bourke Street Tragedy, Thunderstorm Asthma, Essendon Direct Factory Outlet Aviation Crash, Spring 2016 Floods, as well as extensive involvement in supporting Ex-Tropical Cyclone Debbie recovery operations in the Queensland Deployment. Relief and recovery activities in 2016-17 have been further detailed in the *Significant Incidents / Incidents of Note* and *Interstate / International Deployments* sections (see pages 48 and 64).

EMV continues to strive for smooth integration of response and recovery through frequent communication and genuine collaboration.

Did you know?

The integration of Relief and Recovery within the SCC and emergency operations has been successful during 2016-17 as it was fed into response activities prior to transition from response to recovery?

Operational Activity

Across the 2016-17 financial year, the operational activity of responder agencies (CFA, DELWP, MFB and VICSES) again saw an increase in the number of emergency incidents compared to the previous year, responding to a total of 131,380 incidents.

A CFA member responding to a house fire with Breathing Apparatus (BA) gear. Courtesy of Country Fire Authority (CFA).

OPERATIONAL ACTIVITY SUMMARY

There was a fairly consistent number of incidents across each month, with an average of almost 11,000 incidents per month (including major emergencies). This is significantly higher than last year's average of 7,500 incidents.

October 2016 experienced the highest amount of activity with 17,869 incidents recorded, with 6,175 of these being Storm Related Response incidents (see Severe Weather Event – Windstorm page 53). Whilst June 2017 experienced the lowest amount of activity with 7,829 incidents recorded (see figure 10).

2016-17 saw Storm Related Response and Motor Vehicle Accidents, Rescue and Emergency Medical Service Calls incident totals reminiscent of the 2014-15 financial year, whilst Structure Fires incident totals was reflective of 2015-16 financial year (see figure 11).

Did you know?

False Alarms and False Calls (including those of good intent) continued to be the most common type of incident for the third year running? On average, there are over 30,000 of these incident types per year!

Figure 10: Monthly breakdown of the types of incidents for 2016-17

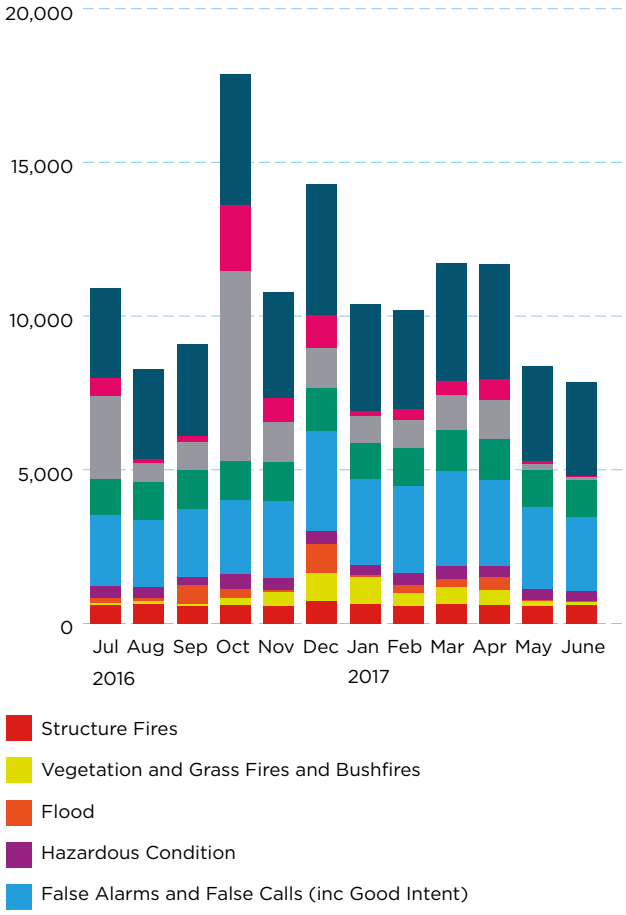
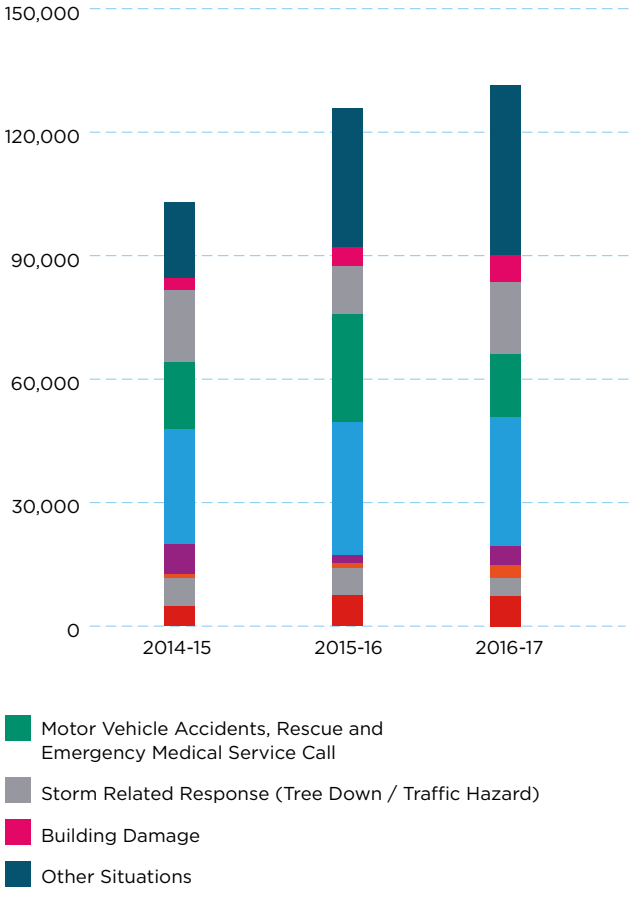


Figure 11: Three Year Comparison of Operational Activity



FIRE DANGER RATINGS

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

This financial year saw more benign conditions than last year, similar to 2014-15, with figure 12 showing an increase in Low-Moderate FDRs and a significant decrease in Severe and Extreme Ratings. In fact, there were only two Extreme and 30 Severe FDRs recorded for the whole 2016-17 summer period (figure 13), which is a 65% decrease to the Extreme and Severe FDRs recorded for 2015-16.

One Extreme FDR was recorded for the North-East weather district on 30 January 2017 which was also when the only state-wide Total Fire Ban (TFB) was issued. The other Extreme FDR was recorded for the Wimmera weather district on 22 February 2017, with this day also resulting in TFBs being declared for six of the nine weather districts.

Did you know?

Since 2014, Very High, Severe, Extreme or Code Red FDR declarations account for 17.8% (or 880 times) of the total FDRs declared? In comparison, Low-Moderate and High FDRs have made up 82.2% (or 4,061 times) of the total number of FDRs declared since 2014.

There were no Code Red determinations during this summer emergency season.

Figure 12: The comparison of 2014-15, 2015-16 and 2016-17 Fire Danger Ratings (FDRs) for all weather districts.

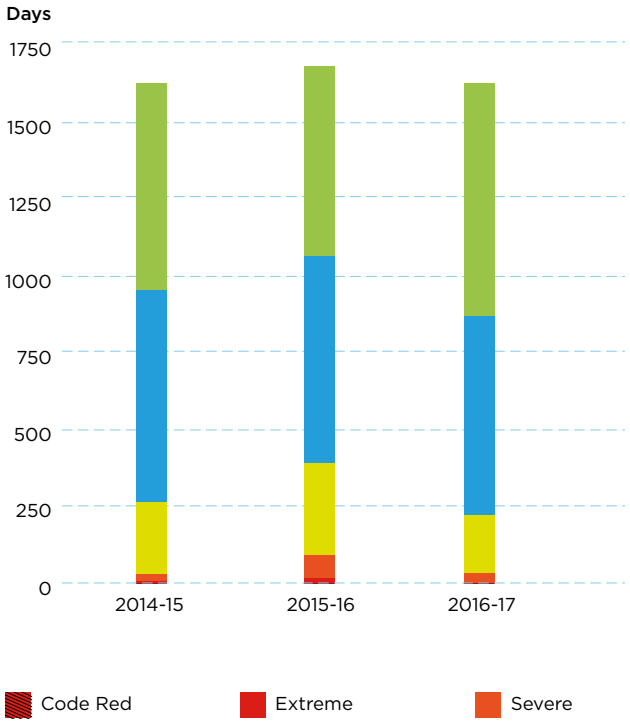
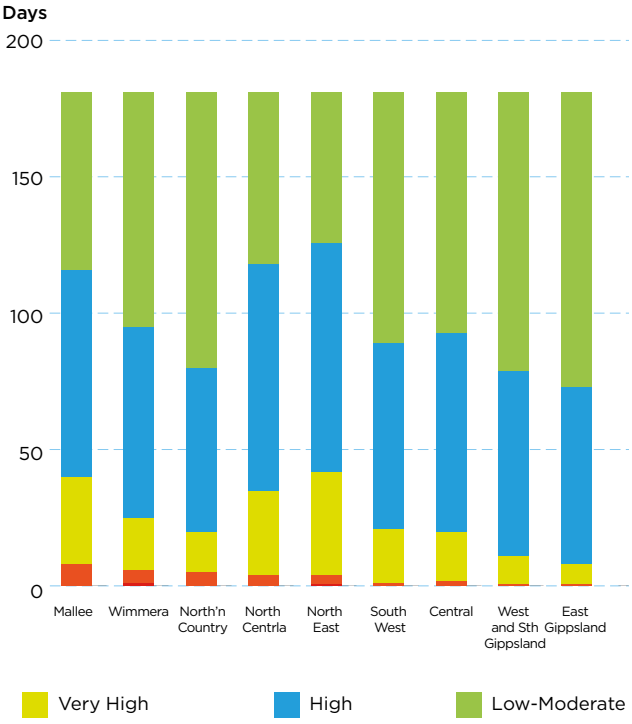


Figure 13: Forecast Fire Danger ratings (FDRs) by weather district for the 2016-17 summer emergency season

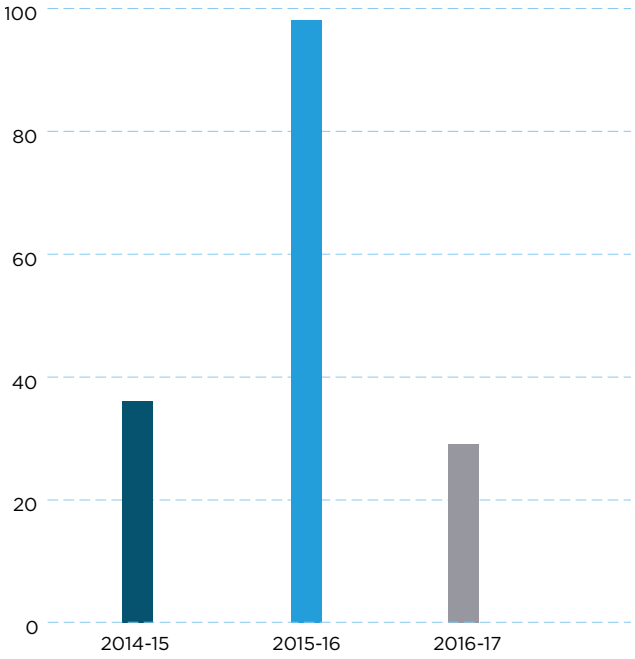


TOTAL FIRE BANS

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.

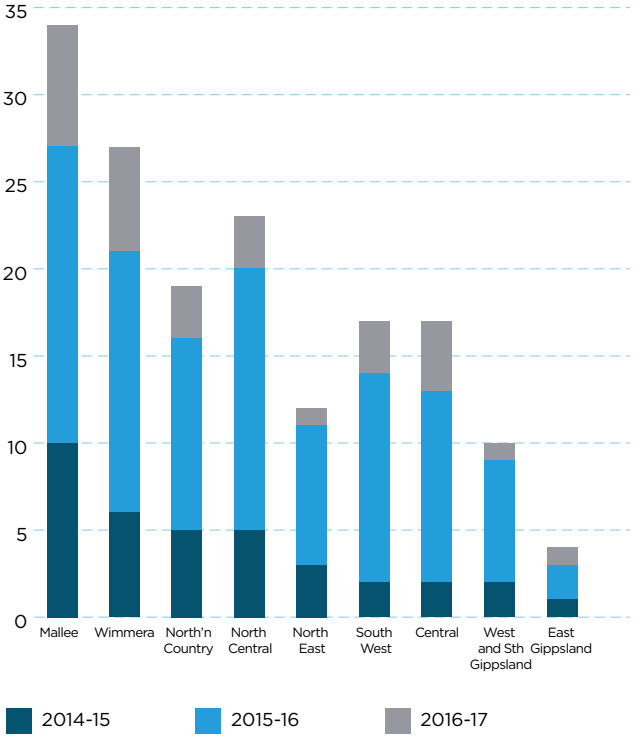
The 2016-17 financial year saw the lowest total number of TFBs declared in three years (see figure 14) with just 29 declared for the whole year. In fact, there were only eight days where a TFB was declared, a decrease to the 22 days in the previous year.

Figure 14: A Three Year comparison of Total Fire Ban ratings



Only once was there a state-wide TFB declared (30 January 2017). The Mallee weather district saw the most TFBs declared during the financial year with a total of seven, closely followed by the Wimmera weather district with six. In contrast, three weather districts; North East, West and South Gippsland and East Gippsland only experienced one TFB day (see figure 15).

Figure 15: Total Fire Bans by Weather District for the Last Three Years



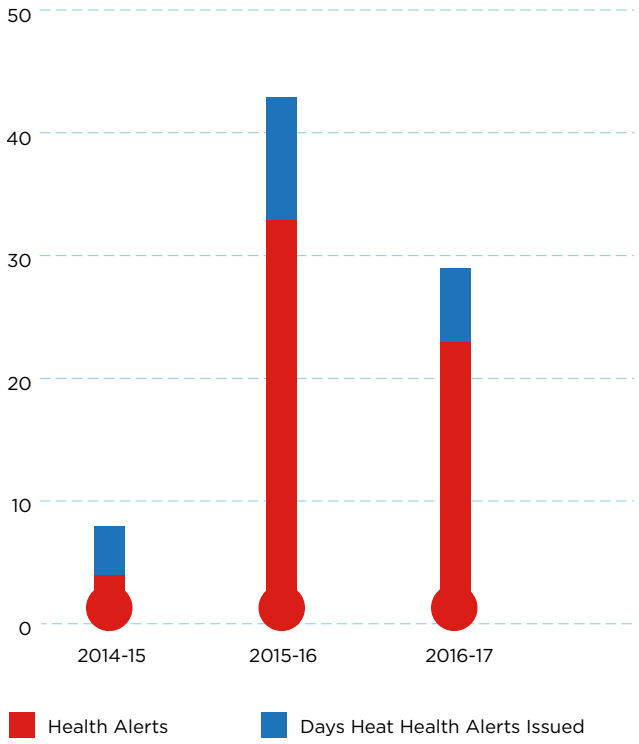
An Automated Fire Danger Rating sign. Courtesy of CFA.

HEAT HEALTH

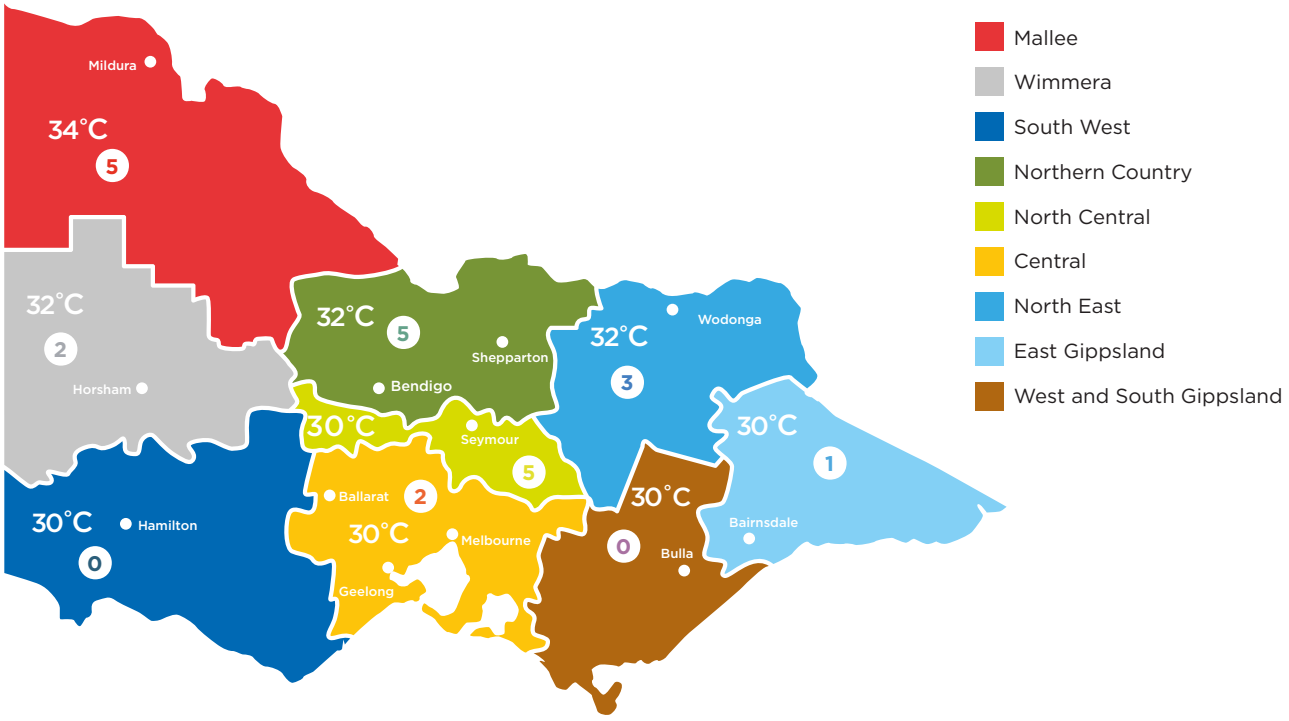
A heat health alert is issued when mean temperatures are predicted to reach or exceed heat health thresholds (see map below). Using the BoM weather forecast districts and boundaries, DHHS uses the heat health alert system to notify the department's program areas, hospitals, health and community service providers and the general public via email about forecasted extreme heat conditions which are likely to impact human health.

Between November 2016 and March 2017, there were 23 heat health alerts issued for six days of extreme heat across multiple districts. This is a decline compared to the issuing of 33 heat health alerts for ten days of extreme heat in 2015-16, see figure 16. Of the 23 heat health alerts issued, 10 of those occurred across two days 9-10 February 2017 (see *Significant Incidents / Incidents of Note* page 48).

Figure 16: Three year comparison of heat health data



Map of Victorian heat health thresholds for each weather district and the number of times the heat health threshold was reached for 2016-17

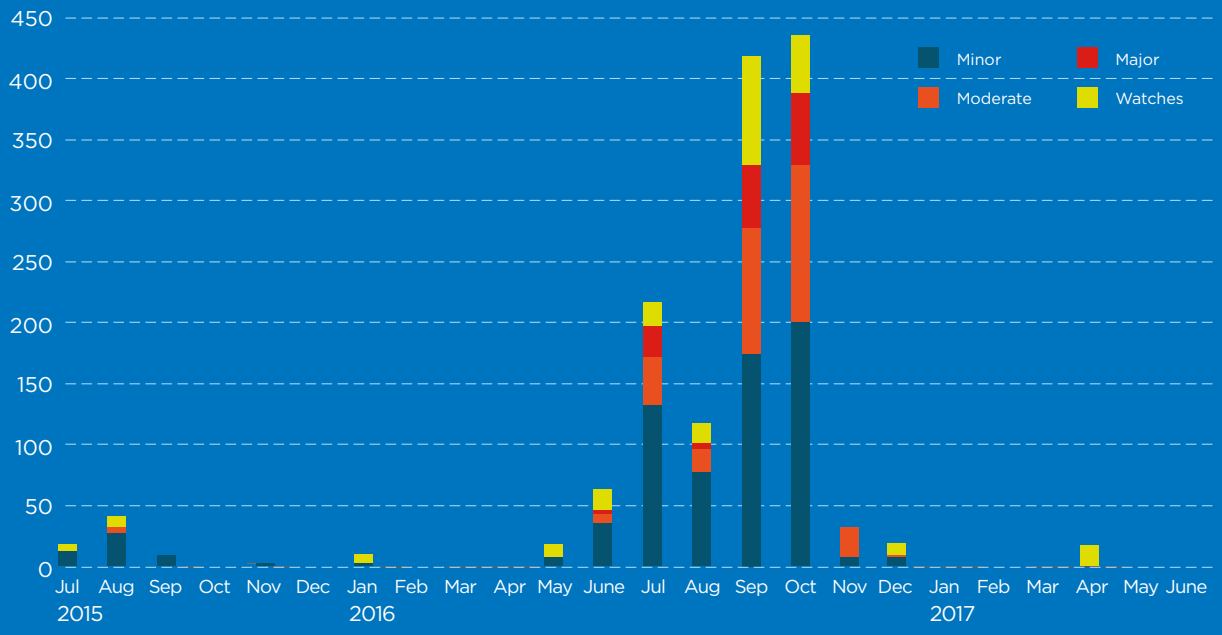


FLOOD WARNINGS

BoM provides flood forecasting and warning services for most major rivers in Australia. These services are provided with the cooperation of other government authorities, water agencies and local councils. BoM delivers this service through Flood Warning Centres in Bureau Regional Offices in each state.

Flood Warnings

Figure 17: A Graph Depicting the Monthly Flood Warnings from July 2015 to June 2017*



There are a number of notable events that contributed to the increase in Flood Warnings in 2016-17, including:

4-11 July 2016

Flooding in East Gippsland and West Gippsland weather districts, with Major flooding on the Snowy, Buchan, Mitchell and Avon Rivers

1-8 August 2016

Flooding across North Central and North East weather districts, with Moderate flooding on the Broken, Ovens, King and Kiewa Rivers and Seven Creeks

31 August–6 Sep 2016

Flooding across North Central and North East weather districts, with Moderate flooding in the Kiewa, Ovens, King and Upper Murray Rivers

9-24 Sep 2016

Flooding across parts of North West, North Central, North East and South West weather districts, with Major flooding in the Wimmera, Glenelg, Avoca and Loddon Rivers

29 Sep–15 Oct 2016

Flooding across much of Victoria, with Major flooding in the Wimmera, Ovens, King, Avoca and Loddon Rivers

*** Includes warnings, which impacted Victorian communities, issued by NSW Office**

A Flood Watch provides early advice of significant risk of potential riverine flooding to emergency services and communities at risk. A Flood Warning is issued to provide advice that flooding is occurring or expected to occur in a geographical area based on defined criteria.

BoM uses a three tiered classification scheme that defines flooding as minor, moderate or major at key river height stations. Each classification is defined by the water level that causes certain impacts upstream and downstream of the station. These levels have been determined based on standard descriptions of flood effects, historical data and relevant local information.

2016-17 saw a dramatic increase in severe weather events resulting in flood warnings, flood watches and flood related incidents, see figure 17.

Did you know?

BoM issued 1,111 Flood Watch and Flood Warning products over the 2016-17 financial year? That's a massive 630% increase from the 152 that were issued last year.

Flood marker along the Ovens River, Wangaratta. Courtesy of Benalla Incident Control Centre (ICC).

TRIPLE ZERO (000)

Triple Zero (000) received almost 2.6 million calls for assistance this financial year, a two percent increase from last year. These calls were dispatched (see figure 19) 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.

Did you know?

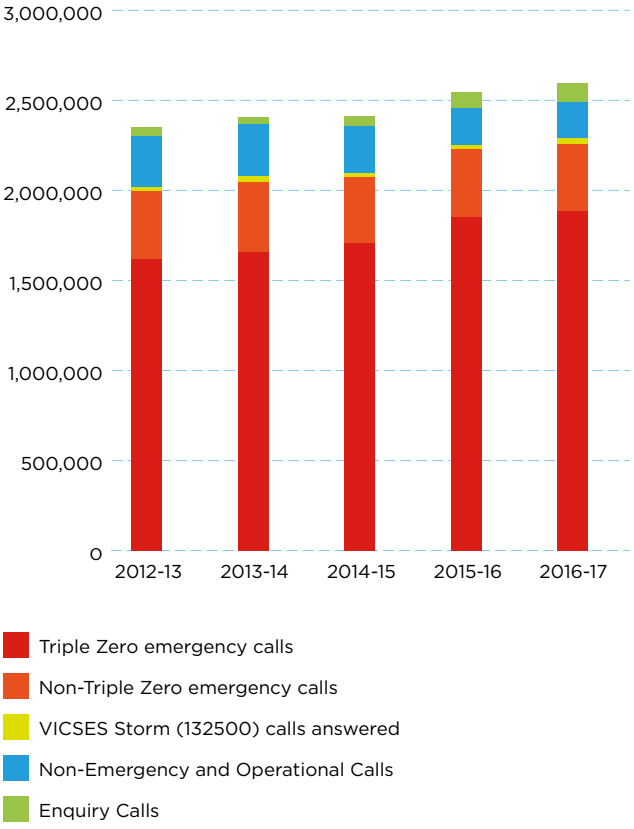
Average Triple Zero emergency calls per day

2014–15	2015-16	2016-17
4,677	5,052	5,162

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 EAS. However, it is best known to the Australian public as Triple Zero.

VICSES call activity jumped by almost 40 percent from September to December (see figure 19), largely due to storm surges and floods. Calls for AV assistance grew by 2 percent, following several major incidents including the Thunderstorm Asthma, the Bourke Street Tragedy and the Essendon DFO Aviation Crash (see *Significant Incidents / Incidents of Note* page 48).

Figure 18: Total ESTA triple zero (000) calls answered for emergency services agencies over the past five years.



These events demonstrate the diverse range of large-scale incidents across all agency partners for which ESTA manages the public response and emergency services resource allocation.

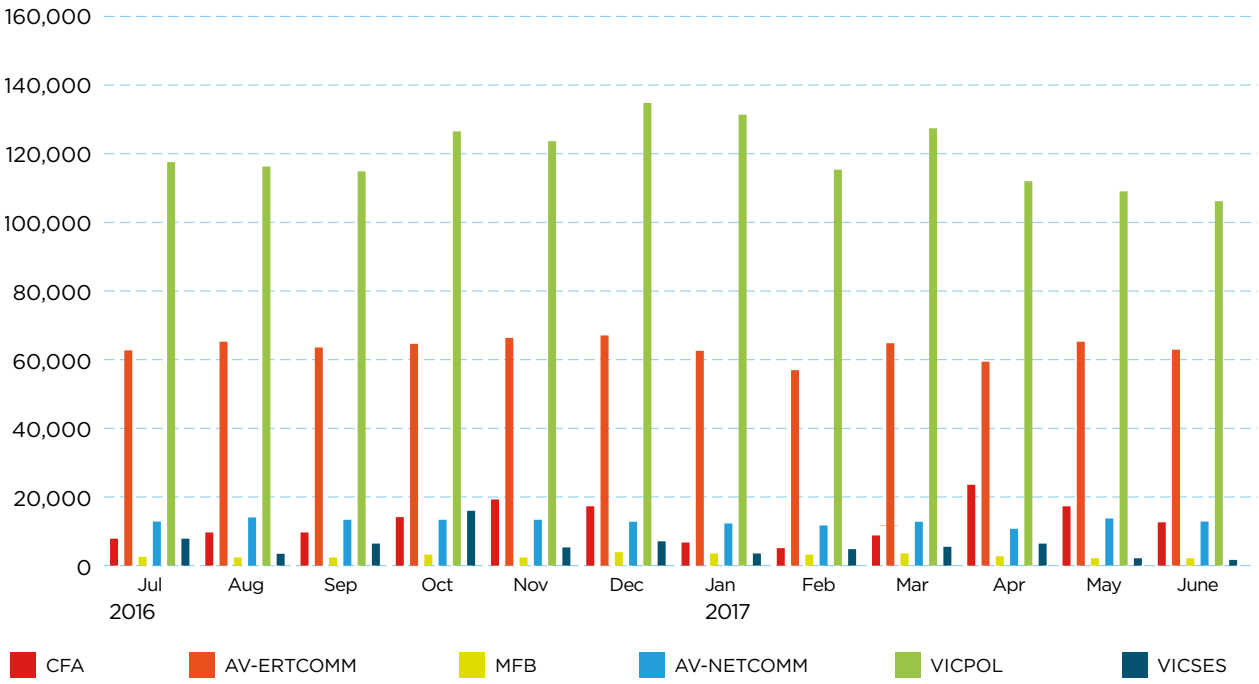
Did you know?

State-wide emergency call activity has increased by 1.7 percent from the previous year. This equates to ESTA receiving an extra 39,000 emergency calls, made up of a combination of Triple Zero emergency calls, direct emergency calls from agency personnel and VICSES storm and flood calls.

The growth in the number of surge events and increase in non-weather related events to include health-related surge and large scale criminal activity related surge, has offered the opportunity for ESTA to review its preparedness to provide resilient, capable services during these times.

Sector-level changes have already been undertaken to improve whole of sector processes and policies governing our response to unpredictable surge events. Work is also underway to ensure the alignment of ESTA's emergency plans with all agencies and government.

Figure 19: The number of calls to ESTA triple zero by agency and per month of the 2016-17 financial year



Data courtesy of Emergency Services Telecommunication Authority (ESTA).

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.

Following the launch of EM-COP Public Publishing in November 2016, Victorians have received warnings for air quality (smoke and pollution), shark sightings, landslides and police activities. This is in addition to warnings for fires (913), floods including flash flooding (95), storms (8) and hazardous materials (80).

During the 2016-17 financial year, the Victorian community received a total of 2,959 warnings. This marginal increase of 1% (see figure 20) compared to 2015-16, reflects a quieter fire season than recent summers but an increase in the range of other types incidents requiring warnings. From December 2016 to February 2017, 694 warnings were issued compared to the same period the year before which saw 1,528 warnings issued. The highest number of warnings were issued during September and October for flooding, with 15 evacuation warnings also being issued during this time (see figure 21).

EAS is a telephone alerting system used to send text messages to mobile phones and voice recordings to landlines. In the 2016-17 financial year, the emergency alert system was used 22 times with the majority of these also occurring during September and October to provide communities with information and warnings about flooding.

Figure 20: A Three Year Comparison Graph of Warnings and Community Notifications

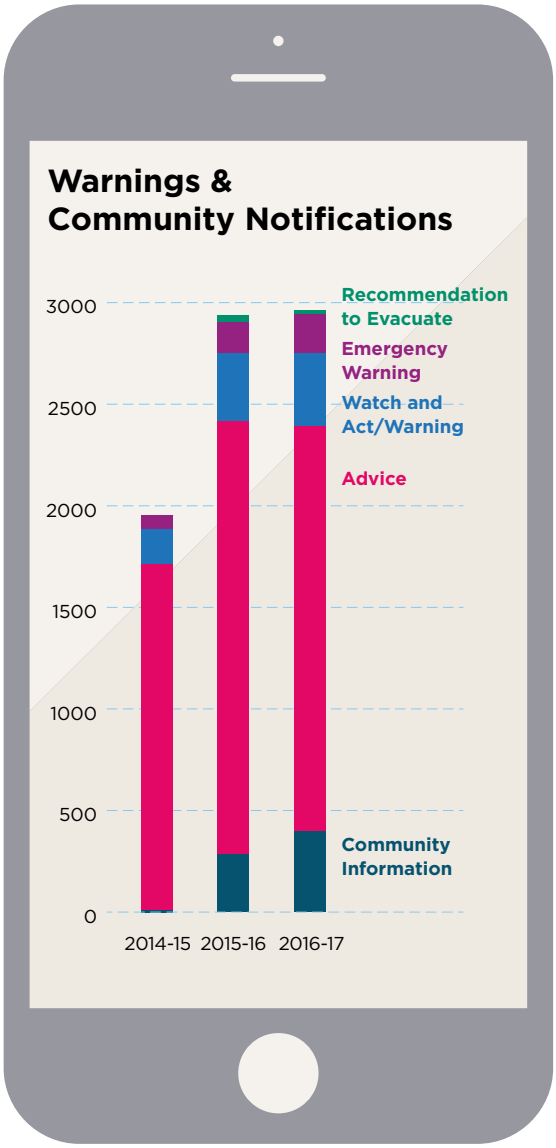
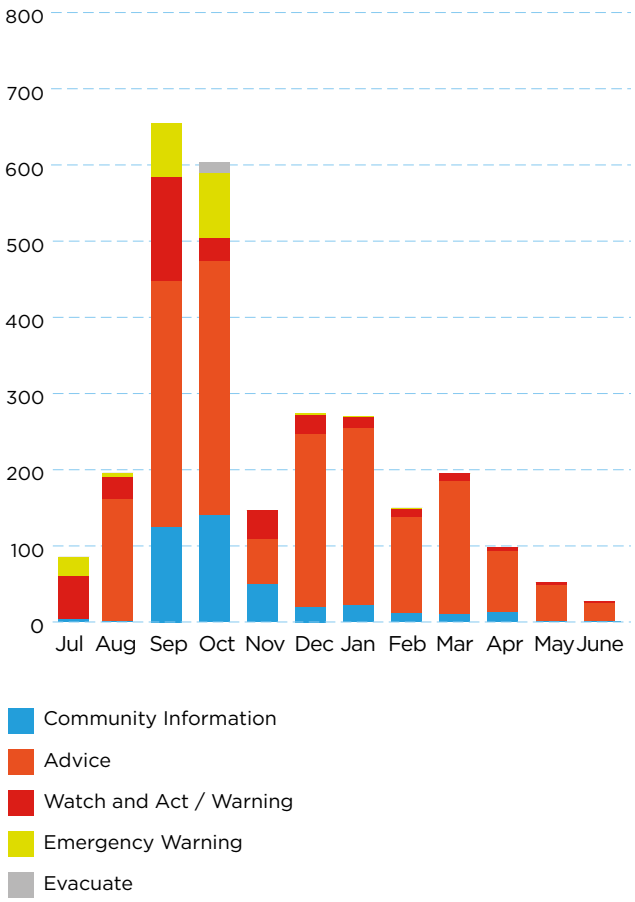


Figure 21: Number of Total Warnings and Community Notifications Issued over the 2016-17 Financial Year



Did you know?

The language for warnings and information has been updated? Warning levels have stayed the same - Emergency Warning, Warning (Watch and Act) and Advice. Additionally, Community Information notifications / newsletters (replacing Community Update) and Evacuate Now and Prepare to Evacuate messages are now provided.

VICEMERGENCY WEBSITE AND APPLICATION

The 2016-17 summer season saw the introduction of the new VicEmergency website, app and hotline, providing a single source for Victorians to access timely information for a number of emergencies across multiple channels.

For the 2016-17 financial year, the VicEmergency website and app had an extensive reach into the Victorian community (see figure 22).

The 2016-17 summer season has been very different for VicEmergency social media channels in comparison to the 2015-16 season, with the diverse range of state-wide incidents dictating a different array of online content.

Twitter @vicemergency

The VicEmergency Twitter account tweeted more than 3,330 tweets, was re-tweeted more than 6,365 times and garnered more than 8 million impressions (the number of times users saw a @vicemergency tweet). The VicEmergency Twitter account has 11,300 followers, with 51% being males between the ages of 25-34.

Facebook @vicemergency

The VicEmergency Facebook page generated 3,869 posts. VicEmergency Facebook content generated almost 49.9 million impressions and attracted more than 213,280 post engagements including almost 39,000 shares. The Facebook page has also grown by 102.9% to almost 57,000 fans, with the majority (66.3%) being females between the ages of 35-44.

Did you know?

The VicEmergency app has been downloaded on 416,000 devices since its launch in November 2016?

VicEmergency Hotline

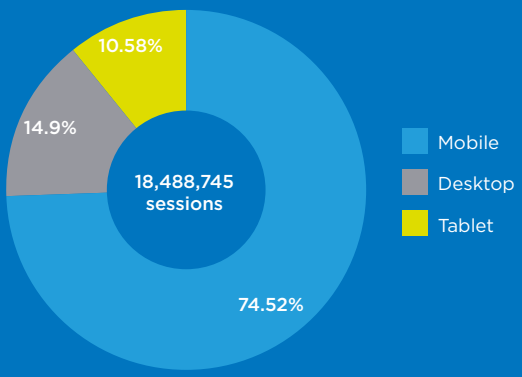
1800 226 226

The VicEmergency Hotline brings together all emergency numbers including the Victorian Bushfire Information Line (VBIL), the Victorian Emergency Relief Information Line (VERIL) and the VICSES Flood and Storm Information Line, making it easier for the community to access emergency information through one number.

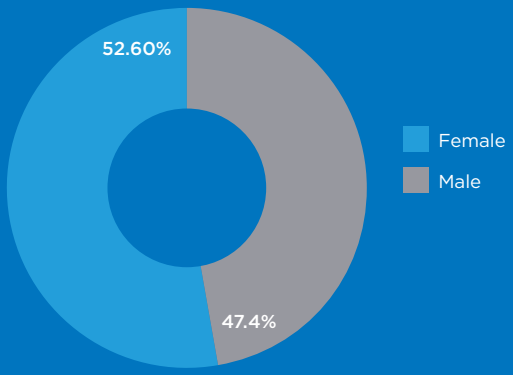
24,974	97%	91%
Callers	Calls answered	Calls answered within 30 seconds

Figure 22: Overview of VicEmergency website and app statistics for 2016-17.

VicEmergency sessions on web via device



Gender breakdown of VicEmergency users



2,511,679
New users

50,113,058
Page views (165% increase on 2015-2016)

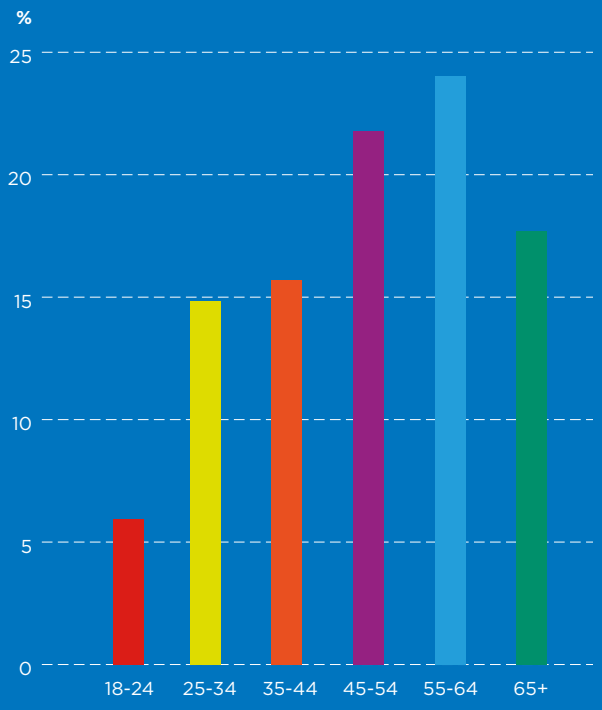
2.71
The average number of page views per session

12:55
Average session duration (minutes)

86.4%
Returning visitors (each session)

13.6%
New visitors (each session)

Age group breakdown of VicEmergency users



STATE CONTROL CENTRE

The SCC is Victoria's primary control centre for the management of emergencies and the hub of a network of Regional Control Centres (RCCs) and Incident Control Centres (ICCs) across the state, see figure 23. The EMC has the legislative responsibility for the management of the SCC.

Agency participation is crucial to the functioning of the SCC. Having multiple agencies, departments and other organisation liaisons not only allows interagency collaboration, but also allows personnel to harness specific knowledge and expertise which supports the management of all emergencies and support all communities.

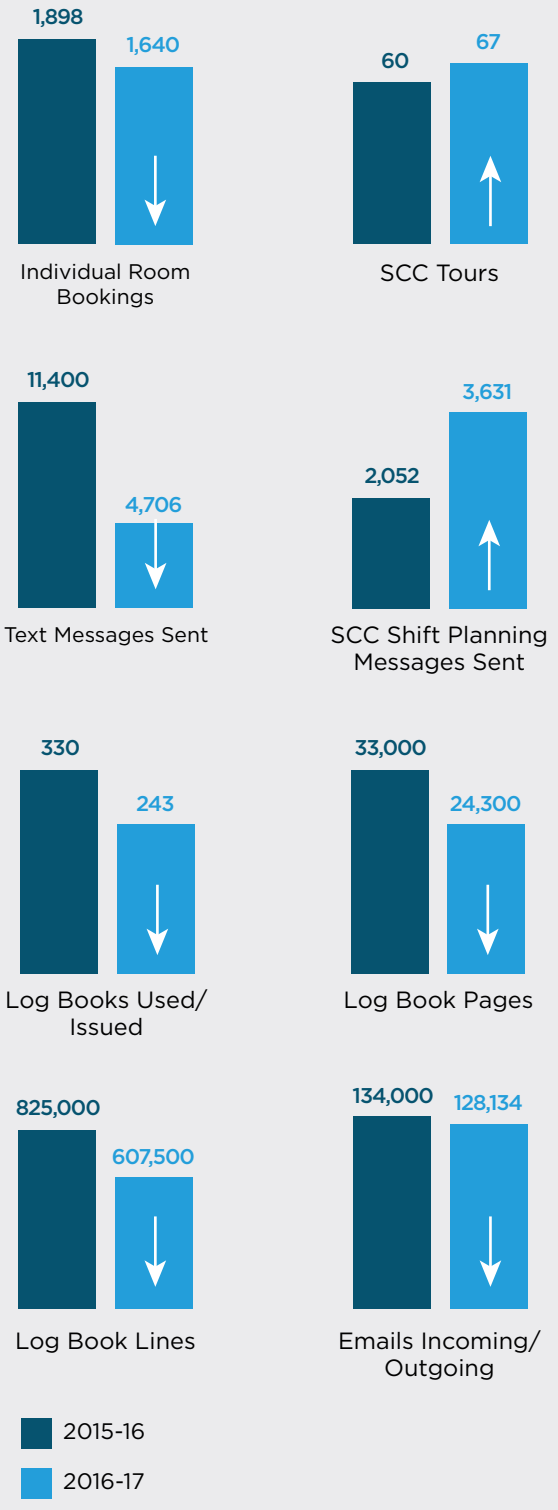
Over the 2016-17 financial year, 28 agencies were represented in the SCC, with a total of 632 individuals being on standby, on call, available or positioned for 12,532 SCC shifts. The SCC operates 365 days-a-year with staffing based on pre-determined triggers which are reflected in the operational tier structure. The majority of the SCC shifts occurred over the 223 days that the SCC was activated at Tier 1 (Blue) or above (see figure 24).

Did you know?

A total of 5,484 individuals were positioned (activated to work in the SCC) for the 2016-17 financial year? The busiest day was 17 January 2017, with 107 individuals from various agencies positioned throughout the day.

State Control Centre

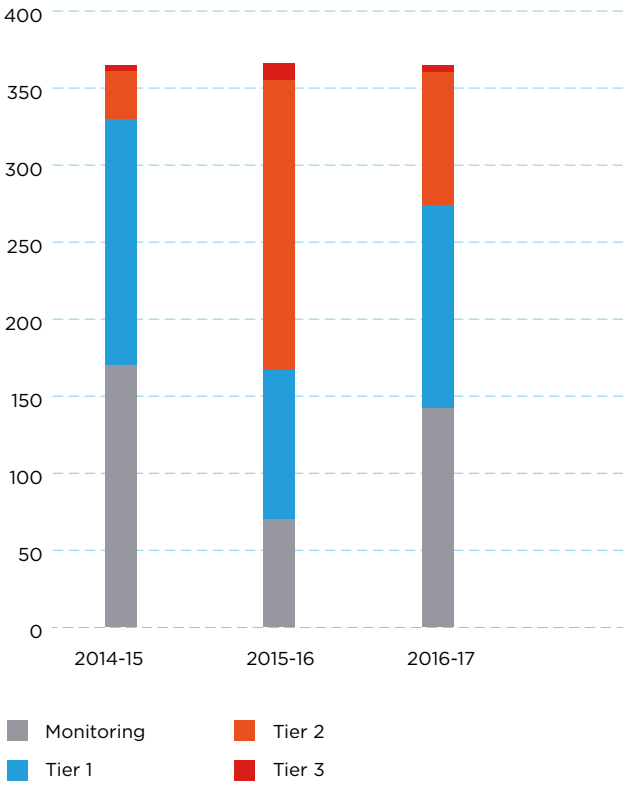
Figure 23: SCC Operational Comparison



Agencies have generally seen the average number of shifts per person stabilise or increase over the past three years, including VICSES who, since 2014-15, have doubled their average number of shifts per person. This increased presence in the SCC may be a result of the increase in severe weather events.

The SCC was activated with VICSES as the lead agency 80 times over the 2016-17 financial year. This is an increase to the past two years of VICSES lead activations (see figure 25).

Figure 24: Three Year Comparison of SCC Activation Levels

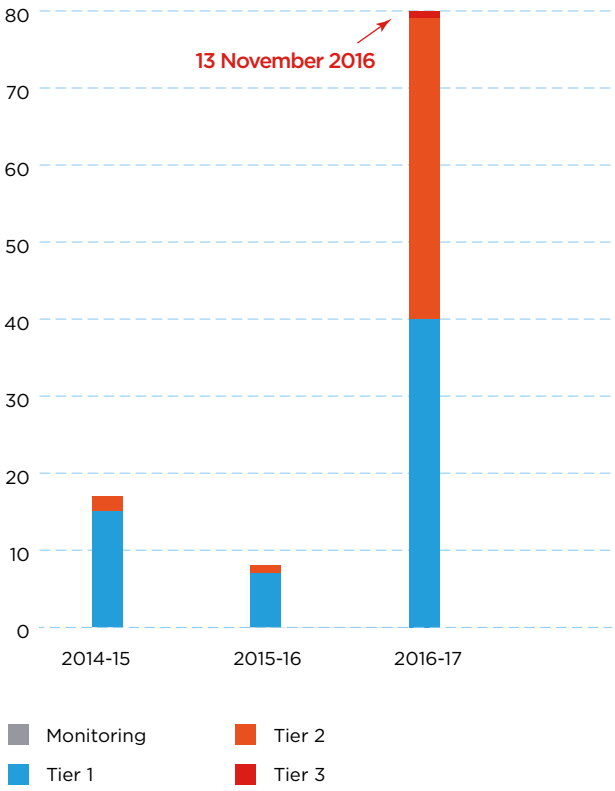


Did you know?

A total of 48 agencies have been represented in the SCC in some capacity over the last 3 years? These 48 agencies have supported their personnel in being available or positioned for over 38,000 SCC shifts!

A Room Intelligence Briefing at the State Control Centre. Courtesy of Emergency Management Victoria.

Figure 25: Three Year Comparison of Number of Day the State Control Centre was activated with VICSES as the Lead Agency



Types of activations

VICSES TIER 1 (BLUE) ACTIVATIONS

The majority of the 40 activations occurred in November 2016 as the Spring 2016 Floods moved through Victorian river systems

VICSES TIER 2 (ORANGE) ACTIVATIONS

The 39 activations occurred in September and October for the Spring 2016 Floods (page 51), Great Ocean Road Landslide (page 52) and Severe Weather Event – Windstorm (page 53) Significant Incidents / Incidents of Note.

VICSES TIER 3 (RED) ACTIVATIONS

The one activation occurred on 13 November 2016, to support state assistance to the Severe Weather Event – Mildura Storms.

Assurance Activity

Operational assurance activities include individual observation capture, monitoring (real time monitoring and evaluation), debriefing (after action reviews and formal debriefs) and reviews (targeted and ad hoc reviews).

Lessons Management Life Cycle.
Courtesy of Emergency Management Victoria.

ASSURANCE ACTIVITY SUMMARY

During the 2016-17 financial year, there have been a large number of incidents, including 29 of state significance and four interstate/ international deployments, resulting in a wide range of assurance activities being undertaken to identify learnings, see figure 26.

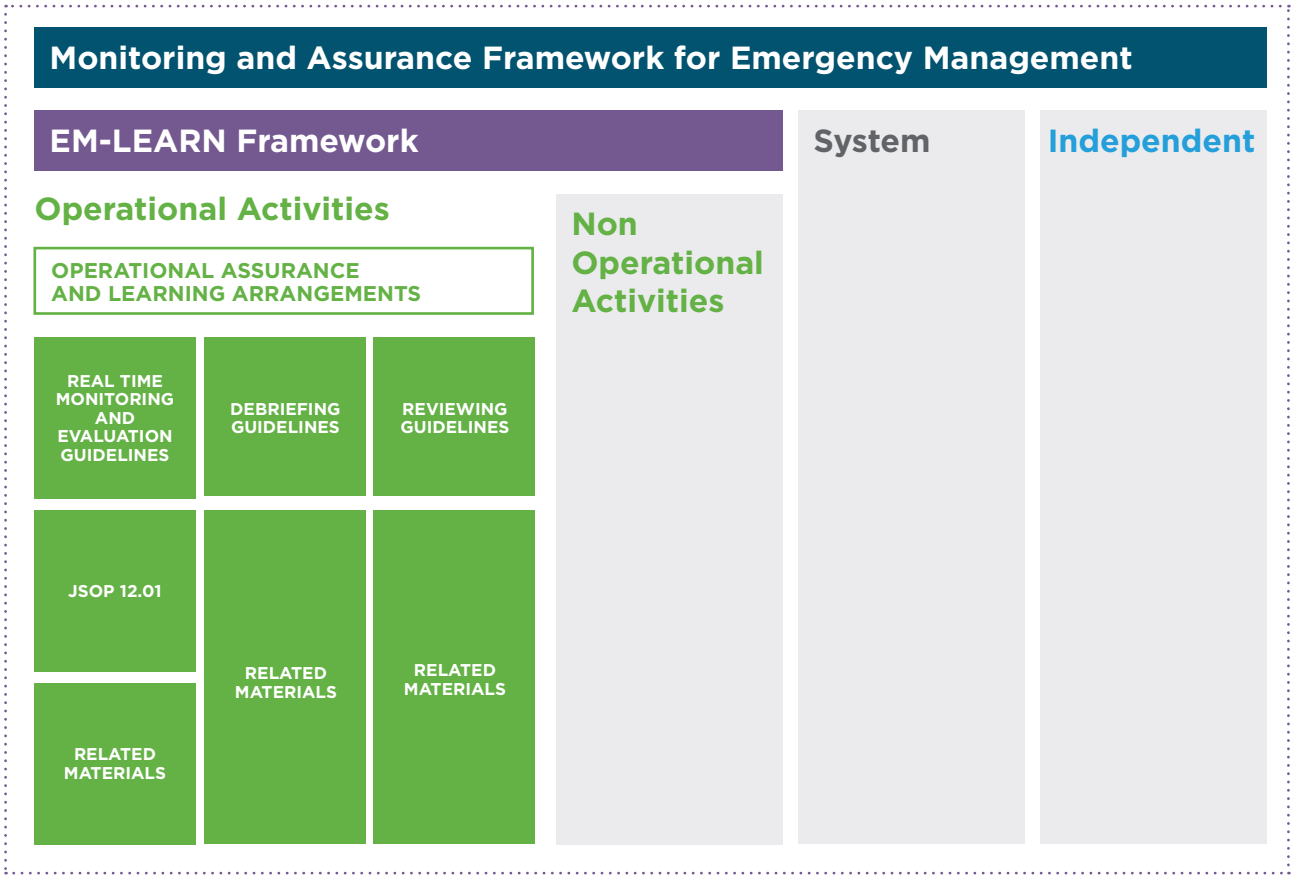
The findings from these Assurance activities are all included in the data that is analysed and reported in Section Three: Themes and Insights (page 112).

MONITORING

There were a wide range of monitoring activities that were undertaken by a variety of agencies including:

- IGEM Field Observations.
- Real Time Evaluation (RTE) of Emergency Relief Coordination,
- Real Time Performance Monitoring (RTPM – response focused), and
- Victoria Police Strategic Emergency Management Assurance Team (SEMAT)

Figure 26: Assurance and Learning Doctrine Structure



During 2016, EMV engaged the Cube Group to undertake the review of current RTPM, RTE and SEMAT processes and debrief those personnel who were involved in these processes over the 2015-16 summer season. The review identified that stakeholders of the various monitoring and evaluation processes reported confusion and uncertainty about the multiple processes, particularly given the overlapping focus areas.

The review provided options for more efficient and effective RTPM and RTE with a stronger focus on multi-agency processes, coordinated data collection and more transparent processes.

The State Review Team has explored the future direction of RTPM, RTE and SEMAT functions across the sector to ensure processes are clearly understood, efficient, relevant and well documented. Based on the recommendation and treatment options provided in the Cube Review Report 2016 which was endorsed by SRT and SCoT, the Real Time Monitoring and Evaluation (RTM&E) Program 2017-2020 Strategy has been developed to provide a roadmap for implementing the recommended model and activities to address the treatments options.

Real Time Monitoring and Evaluation (RTM&E) was deployed once in the 2016-17 financial year, for the Crooked River – Wonnangatta Road Bushfire (see *Significant Incidents / Incidents of Note* on page 62 and Use of Social Media in Dargo Fires Case Study in Section 2 page 99).

DEBRIEFING

Debriefing for incidents and deployments occurred throughout the year, with assistance provided by EMV and the SRT when requested. Individual observations were also collected to support debriefing activities, including 78 observations submitted through the online Observation Sharing Centre.

At the state level, After Action Reviews (AARs) and debriefs were conducted to review the functioning of the SCC.

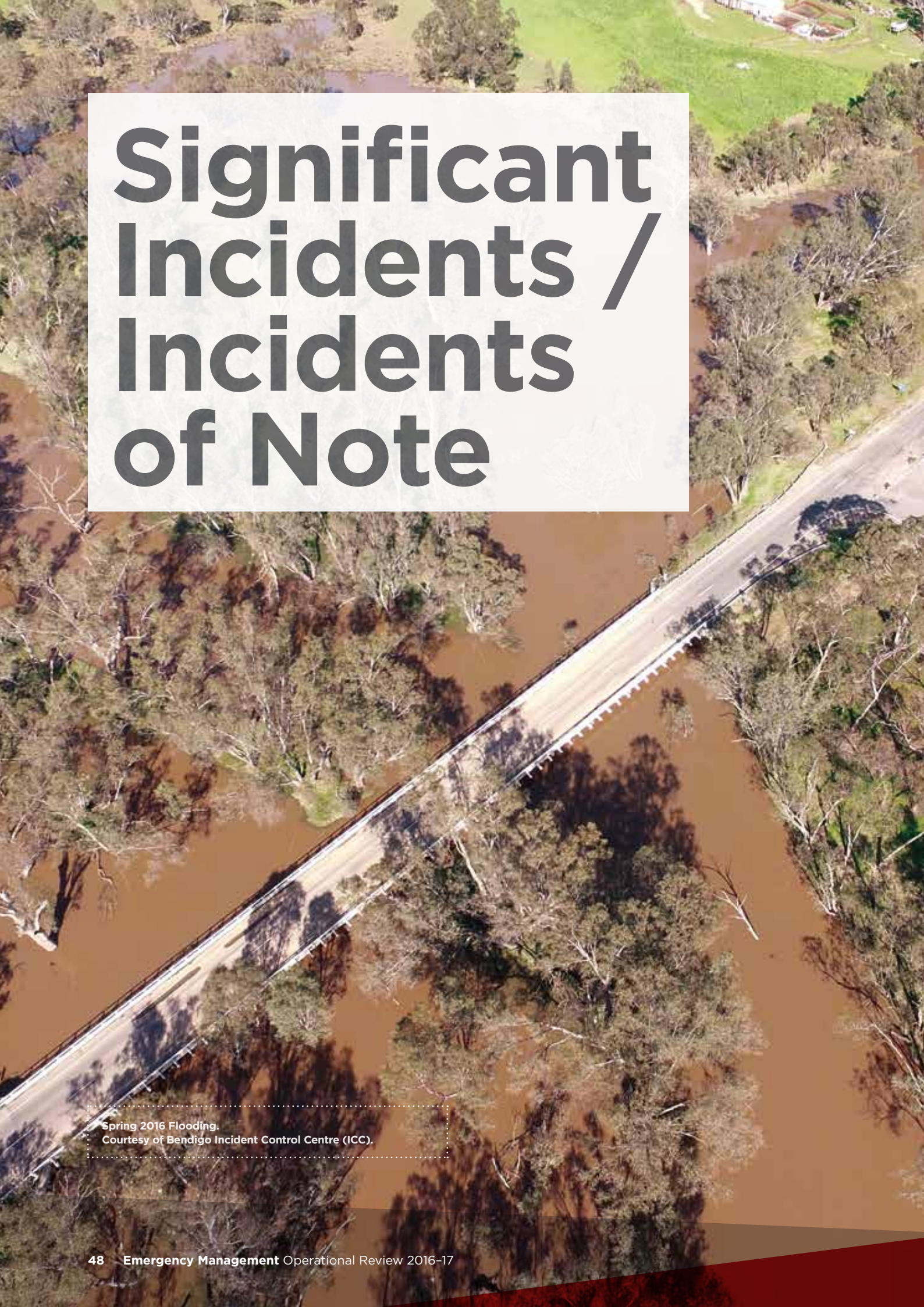
REVIEWS

A number of internal and external reviews were also undertaken throughout the 2016-17 financial year including:

- A formal investigation and confidential report led by ESTA into an event in Deer Park on 8 August 2016
- DELWP led an internal review into the flood warnings issued during the Spring 2016 Floods (see *Significant Incidents / Incidents of Note* page 51), which included Water Portfolio Agencies functional debriefs for Flood and Water incidents (dam safety, water supply / wastewater etc.)
- A formal investigation and report on the One Source One Message (OSOM) outage that occurred on 4 October 2016
- A formal investigation and internal report into a tanker burn-over during the Swan Hill – Parsons Road Fire on 21 November 2016
- Internal review by AV and independent review by IGEM into the thunderstorm asthma event of 21-22 November, see the Thunderstorm Asthma Case Study on page 108.
- EMV led a review of arrangements during Victoria's interstate support to New South Wales, which resulted in an internal report

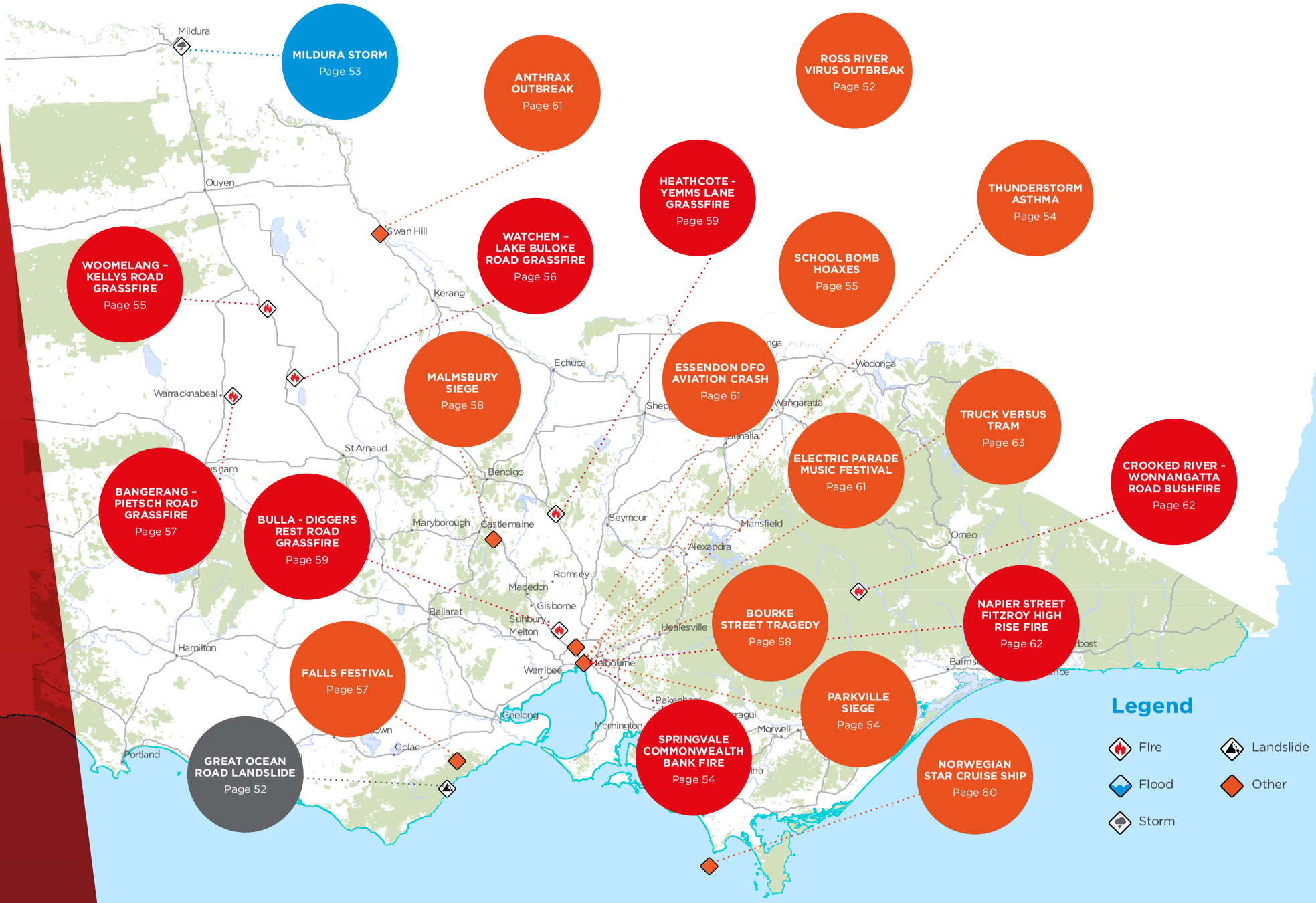
Review of response to the thunderstorm asthma event of 21-22 November 2016 Final report. Courtesy of the Inspector-General for Emergency Management.

Significant Incidents / Incidents of Note



Spring 2016 Flooding.
Courtesy of Bendigo Incident Control Centre (ICC).

Figure 27: Significant Incidents / Incidents of Note Map for the 2016-17 financial year



During 2016-17, there were 29 incidents identified as state significance / Incidents of Note, see figure 27. These incidents consist of a range of hazards including severe weather, storm events, grassfires, a bushfire, landslides, a stranded cruise ship, an aviation incident, biological outbreaks and unexpected tragedies.

WATER SAFETY INCIDENTS

Date: 1 July 2016 - 30 June 2017
Reported Drownings: 48
Rescues: 519
First Aid Treatments: 1,655

EXTREME HEAT (STATEWIDE)

Start date: 08/02/2017
Duration: 4 days
Heat Health Alerts: 10
8/2 - Mallee
9/2 – East Gippsland, Mallee, North Central, Northern Country, Wimmera .10/2 – Mallee, North Country, North East, Northern Country

FIRE SUMMARY

1 July 2016 – 30 June 2017
Grass and Scrub/Bushfires: 4,898
Hectares Burnt: 18,151 ha
Losses: 1 property
Structure: 7,156

FLOOD/STORM SUMMARY

1 July 2016 – 30 June 2017
RFA's: 33,441
Building Damaged: 6,635
Tree Down: 6,413
Tree Down - Traffic Hazard: 10,883
Flooding: 3,162
Rescue: 2,086
Fatalities: 11 (9 Thunderstorm Asthma)

STATEWIDE FLOOD/STORM/ SEVERE WEATHER EVENTS

Spring 2016 Floods
Start date: 08/09
Duration: 112 days
RFAs: 10,389
Residence (over floor flooding): 23
Rescue: 323
Relief and Recovery: 51 LGAs
Fatalities: 1 (Wallacedale)

Start date: 9/10
Duration: 1 day
RFA Count: 3,375
Buildings Damaged: 1,124
Trees Down: 989
Tree down traffic hazard: 1,150
Rescue: 8
Power Outages:
In excess of 145,000 properties
Fatalities: 1 (Millgrove)
Hospitalised: 20

Start date: 29/12
Duration: 2 days (to 6am 30/12/16)
RFAs: More than 2,500
Buildings Damaged: 698
Trees Down: 86
Tree Down Traffic Hazard: 104
Flooding: 862
Rescue: 48
Power Outages: In excess of 10,000 properties

Start date: 9/4
Duration: 3 days
RFAs: 1,219
Buildings Damaged: 305
Trees Down: 203
Tree Down Traffic Hazard: 481
Flooding: 123
Rescue: 34
Power Outages:
In excess of 20,000 properties

INCIDENT SUMMARIES

Spring 2016 Floods

Barwon South West Region, Grampians Region, Hume Region, Loddon Mallee Region, Northern and Western Metropolitan Region, Eastern Metropolitan Region, Southern Metropolitan

- Class: 1
- Start Date: 08/09/2016
- Duration: 112 days
- Requests for Assistance: 10,389
- Residence (over floor flooding): 23
- Rescues: 323
- Relief and Recovery: 51 Local Government Areas (LGAs) impacted
- Fatalities: 1

Extensive rainfall was experienced across the state on 8 September 2016, with significant impacts to communities on 13 and 14 September 2016. With the rain falling on catchments that experienced well above average winter rainfall, Barwon South West, Grampians, Loddon Mallee, Hume and parts of the Metropolitan Regions experienced widespread flooding. Numerous flood warnings and flood watches were issued and remained in place for weeks, as water moved through multiple river systems.

Many communities in these LGAs were affected by the flood event and experienced impacts to critical infrastructure, businesses, agricultural and horticultural industries, schools, transport (including road closures) and the tourism industry. Some communities were even isolated due to the flood waters. In most cases, recovery activities were being led by local councils and were supported through regional recovery coordination arrangements. A total recovery package of more than $3 million was announced in April 2017 to provide restoration funds for community infrastructure across Southern Grampians and Glenelg Shire Councils and provide dedicated recovery staff to support the recovery activities.

Flooding at the Robinvale Caravan Park during the Spring 2016 Floods. Courtesy of Mildura Incident Control Centre (ICC).

This significant incident also had significant secondary impacts, which included:

- The Wodonga Quarry experienced a potential for loss of gas and power to Albury
- An Ibis Rookery became under threat from flood waters with 20,000 - 40,000 eggs and chicks potentially in danger, however the rookery only experienced 5%-10% loss
- More than 3,600 roads and bridges were damaged, with 12 councils identified as having substantial restoration costs with significant impacts (over 45%) on their annual road expenditure budgets
- Damage to essential public assets estimated to be over $115 million
- The closure of the Murray River from Campaspe - Murray River intercept to Warren Street Bridge Echuca to boats from 11-26 October 2016.
- Approximately 283 Emergency Relief Assistance and Re-establishment Payments made totalling almost $420,000.

Ross River Virus Outbreak

All Emergency Management Regions

- Class: 2
- Start Date: 08/09/2016
- Data Collection Time-frame: 01/01/2017 – 24/04/2017
- Confirmed, Probable and Suspected Cases: 1,930
- Location: Geographically dispersed with hot spots in Greater Shepparton, Indigo, Wodonga and Wangaratta LGAs
- Communications Activities: Beat the Bite Campaign
- A State Consequence Assessment was undertaken for this event

Ross River virus is spread by mosquitoes and can cause joint swelling and pain, fatigue and muscle aches. A rash and fever may also develop. These symptoms can last for months, and in some individuals symptoms may recur for over a year or more.

A *Chief Health Officer Advisory – Health warning on mosquitos and Ross River virus* was issued on 4 January 2017, with an update issued on 15 February 2017. Advisory Health Warnings like this one outlines the risk, symptoms, transmission and prevention and treatment options.

The Beat the Bite campaign was launched in October 2016, and focussed on ways people can protect themselves and their family from mosquito-borne diseases.

Great Ocean Road Landslide

Barwon South West Region

- Class: 1
- Start Date: 14/09/2016
- Duration: 31 days
- Towns Impacted: Wye River and Separation Creek
- Impacts: Road Closures, Tourism, Local Business
- Road Closures: 14/09/2016-08/10/2016 and 16/10/2016-23/10/2016. One-lane between Wye River and Separation Creek until 23/12/2016
- Landslides: 82 above road, 40 below the road
- Debris: 10,000 tonnes removed
- A State Consequence Assessment was undertaken for this event

The Great Ocean Road was significantly impacted by landslides during the same severe weather that caused the Spring 2016 Floods significant incident (see page 51). The closure of sections of the Great Ocean Road continued for many weeks, impacting visitor experience, the impact on local community movement between towns in the area and leading to a reduction in trade for towns along the significant touring route.

Over 31 days, there were approximately 82 above road and 40 below road landslides with 10,000 tonnes of debris removed along the road with stabilising still ongoing. In total, 59 state roads and bridges were damaged, with an estimated damage bill totalling over $6.5 million. In addition to this, damage to essential public assets is estimated to be over $42 million.

Landslides above and below the Great Ocean Road. Courtesy of Colac Incident Control Centre (ICC).

Severe Weather Event – Windstorm

Eastern Metropolitan Region, Southern Metropolitan Region, Northern and Western Metropolitan Region

- Class: 1
- Start Date: 09/10/2016
- Duration: 1 day
- Requests for Assistance: 3,375
- Buildings Damaged: 1,124
- Trees Down: 989
- Trees Down (traffic hazard): 1,150
- Rescues: 8
- Power Outages: 145,000+ properties
- Relief and Recovery: 9 LGAs
- Hospitalised: 20
- Fatalities: 1

On 9 October 2016, damaging winds impacted areas of Metropolitan Melbourne with wind speeds averaging 50-60km/h and gusts peaking at 120km/h. The resulting damage was widespread in areas north of Melbourne, and the Yarra Valley and Dandenong Ranges were severely impacted. There were 3,616 requests for assistance during the event, with the majority of calls to ESTA occurring over a 4-5 hour window.

The severe storm caused damage to homes, roads, buildings and infrastructure, with fallen trees and debris the main cause of the damage. Major power outages across Melbourne resulted in 90,000 properties affected for a significant period. Power companies were engaged in ongoing restoration which took up until 13 October 2016 to resolve the majority of the power issues, however, several hundred properties remained affected for a longer period.

Even with the severe nature of this windstorm, there was minimal impact to municipal councils from the event, and much of the recovery was managed within general business. Although some councils incurred substantial green waste clean-up costs, the damage to roads and bridges was minimal.

Severe Weather Event – Mildura Storms

Loddon Mallee Region

- Class: 1
- Start Date: 11/11/2016
- Duration: 1 day
- Requests for Assistance: 550
- Buildings Damaged: 236
- Trees Down: 162
- Trees Down (traffic hazard): 93

Strong thunderstorms travelled west to east through the Mallee during the evening on 11 November 2016. These storms impacted Mildura and surrounding local towns, including Merbein and Red Cliffs. Damage reports ranged from minor flooding to fallen branches and trees to damaged houses, one house completely destroyed and no storm related injuries were reported. Multiple power lines were downed resulting in 5,700 houses in the greater Mildura area without power as of midnight. A relief centre was established in the Mildura ICC where residents affected by the storm were able to take shelter.

CFA, MFB and VICSES crews responded to many requests for assistance and supported initial impact assessments, which identified significant damages to property, infrastructure and agriculture, with a substantial number of primary producers affected by the storm. Horticultural losses were estimated at over 3,800 hectares.

Resources (both personnel and appliances) were deployed to the area by the SCC to assist with emergency repairs, relief and recovery efforts and the general clean-up. Mildura City Council implemented a governance structure for coordinating storm recovery and employed a dedicated Recovery Manager and Recovery Communications Officer to ensure that Mildura's diverse community and high proportion of small business owners and agricultural workers were able to engage with the recovery process. Additionally, a total funding package of over $17 million was announced in December 2016, which is jointly funded by the Commonwealth and Victorian Governments.

Significant damage revealed the day after the Mildura Storms. Courtesy of Emergency Management Victoria.

Parkville Siege

Northern and Western Metropolitan Region

- Start Date: 14/11/2016
- Duration: Overnight
- Incident: Inmate Unrest
- Location: Parkville Juvenile Justice Centre

More than 40 inmates were involved in the second riot in as many days at the Melbourne Youth Justice Centre in Parkville, which ended after 17 hours.

AV, MFB and VicPol responded to the incident, which saw property damaged and the fire alarms activated, however no injuries were recorded. The siege ended with all detainees returned to their cells or moved to another facility.

Springvale Commonwealth Bank Fire

Southern Metropolitan Region

- Start Date: 18/11/2016
- Duration: 1 day (Bank re-opened 1 May 2017 – 164 days after the incident)
- Incident: 21 year old male allegedly set fire to himself and the bank using an accelerant (believed to be petrol)
- Transported to hospital: 28 (6 suffered serious burns)
- Cause: Criminal activity

On Friday, 18 November 2016 at 11:32hrs, a Triple Zero (000) call was received stating a person had walked into a Commonwealth Bank on Springvale Road, and set himself on fire. CFA appliances from Springvale, Dandenong and Noble Park responded to the incident, along with AV and VicPol.

Fire fighters extinguished the fire, conducted a search of the bank, and helped people to escape. AV responded to the incident and transported 28 people, including six severe burns patients, to various metropolitan hospitals. At 12:26hrs the scene was declared safe and handed over to VicPol for investigation.

A relief centre was established at the Springvale Civic Centre at the request of VicPol. The centre was managed by the council customer service team with the assistance of the ARC. The Department of Education and Training (DET) was also contacted in regards to nearby schools and the closure of Springvale Road.

See *Springvale Commonwealth Bank Fire* case study in Section 2 page 79 for more information.

Thunderstorm Asthma

Northern and Western Metropolitan Region, Barwon South West Region, Southern Metropolitan Region

- Class: 2
- Start Date: 21/11/2016
- Duration: 2 days
- Presentations to public hospital emergency departments in Melbourne and Geelong: 9,909 people
- Fatalities possibly linked to this event: 9
- A State Consequence Assessment was undertaken for this event

A severe thunderstorm moved across western Melbourne on 21 November 2016. This thunderstorm resulted in increased requests for VICSES assistance (especially in Truganina and Altona Meadows), and a public health emergency. Thunderstorm induced asthma and respiratory issues affected a significant number of people with heightened requirements on emergency services, hospital emergency departments and health care providers. Overall on 21 November 2016, there were 1,626 more calls to the ESTA than were forecast (a 73 per cent increase).

The phenomenon known as “epidemic thunderstorm asthma” is thought to be triggered by a unique combination of high pollen levels and a certain type of thunderstorm, causing a large number of people to develop asthma symptoms over a short period.

A thunderstorm approaching Melbourne.
Courtesy of Stuart Coombs, Bureau of Meteorology (BoM).

The 21 November 2016 event mainly impacted Melbourne metropolitan regions, specifically western and north-western suburbs. This event even impacted individuals who had never experienced asthma symptoms or respiratory issues before.

There was a 681 per cent increase in asthma-related admissions to all Victorian hospitals in the 30 hours from 18:00hrs on 21 November 2016 (524 more admissions than expected based on the three-year average).

IGEM reviewed the State's response to this emergency to identify learning opportunities on preparedness and response arrangements and performance, as well as provide recommendations for potential improvements to future rapid-onset emergency planning and response arrangements. IGEM's final report *Review of response to the thunderstorm asthma event of 21-22 November 2016* was delivered in April 2017, and contained 16 recommendations, all of which were accepted in-principle by the Government.

The Victorian Government has committed $15.56 million over four years to support development and implementation of system improvements including:

- Emergency management training for hospitals and health workers
- More research to improve our understanding and treatment of thunderstorm asthma
- Education and engagement campaigns to assist communities to prepare for and respond to epidemic thunderstorm asthma
- Increased monitoring and interpretation of pollen data
- Research to inform forecasting, modelling and response protocols
- Improved real-time monitoring of data sources, including emergency department demand

See *Thunderstorm Asthma* case study in Section 2 page 108 for more information.

State-wide School Bomb Hoaxes

Barwon South West Region, Gippsland Region, Grampians Region, Loddon Mallee Region

- Class: 3
- Start Date: 01/12/2016 and 01/02/2017
- Duration: 3 days total
- Schools Affected: 24
- A State Consequence Assessment was undertaken for these events

A number of schools across Victoria including schools in Black Hill, Horsham, Bendigo, Hamilton, Portland and Traralgon received threatening phone calls on 1 December 2016. It was reported that the hoax calls were of an automated recording with shooting threats or threatening an explosive device could be within the school. The schools affected enacted their emergency management plans as a precaution to the threats.

The calls also coincided with similar threats made to schools across Queensland, Tasmania, New South Wales, the Australian Capital Territory and New Zealand.

Approximately two months later on 1 February 2017, eight schools and two early childhood centres were also affected by bomb hoax calls over two days. Investigations are continuing into the threats.

Woomelang – Kellys Road Grassfire

Grampians Region

- Class: 1
- Start Date: 25/12/2016
- Duration: 1 day
- Size: 1,816 ha
- Impacts: Road closures at Sunraysia Highway / Kellys Road and Sunraysia Highway / Acklands Road due to trees across the road
- Cause: Tractor exhaust

A grassfire broke out along Kelly's Road in Woomelang (near Swan Hill) on Christmas Day, forcing road closures including the Sunraysia Highway. A Watch and Act message (later downgraded to Advice) was issued to surrounding communities, which included advice for safely travelling in smoke affected areas. Approximately 33 CFA appliances, supported by extensive air support including LATs, helped contain the fire by the late afternoon. A firefighter suffered facial injuries during the incident, which required medical attention.

Watchem – Lake Buloke Road Grassfire

Loddon Mallee Region

- Class: 1
- Start Date: 25/12/2016
- Duration: 1 day
- Size: 583 ha
- Cause: Hot ember, ash / high wind

On Christmas Day afternoon, an out of control bushfire was reported for Watchem-Lake Buloke Road, Watchem. The grassfire, travelling in a southerly direction towards Donald, was attended by 21 appliances, including air support from a heavy water bombing aircraft with a 12,000 litre capacity being deployed from Avalon Airport. An Advice message was issued to surrounding communities, however there was no immediate threats reported. By late afternoon, the fire was contained, resulting is approximately 583 hectares burnt.

Severe Weather Event – State-wide Thunderstorms

Gippsland Region, Hume Region, Loddon Mallee Region, Northern and Western Metropolitan Region, Southern Metropolitan Region, Eastern Metropolitan Region

- Class: 1
- Start Date: 29/12/2016
- Duration: 2 days (to 06:00hrs on 30/12/2016)
- Requests for Assistance: more than 2,500
- Buildings Damaged: 698
- Trees Down: 86
- Trees Down (traffic hazard): 104
- Flooding: 862
- Rescues: 48
- Power Outages: 10,000+ properties
- Total Number of Relief Payments: 56

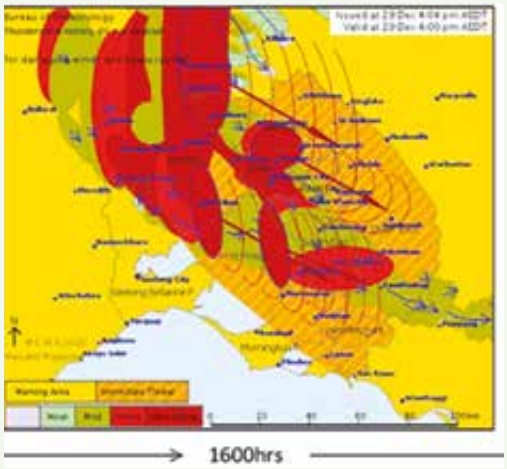
Large storm cells impacted Melbourne and surrounding areas from 14:00hrs on 29 December 2016. Severe weather warnings were issued for East Gippsland, North East, North Central, West & South Gippsland and parts of Northern Country weather districts, with flash flooding and storm damage occurring across multiple areas. Glen Eira and Phillip Island were two highly impacted locations.

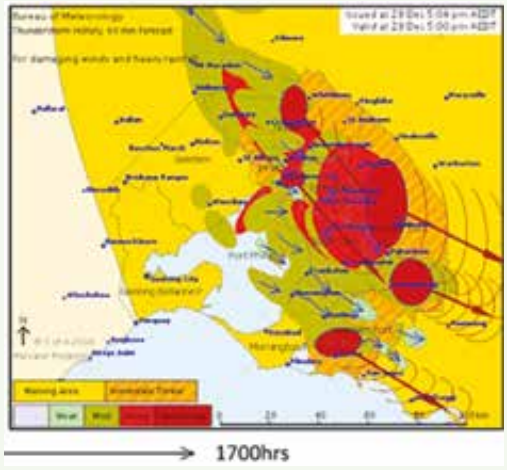
BoM recorded 18.0mm of rain in 10 minutes at Oakleigh South and 14.6mm of rain in 10 minutes at St Kilda. AV, CFA, MFB, VICSES and VicPol responded to over 2,500 requests for assistance relating to flash flooding, houses inundated with flood waters, landslips, sinkholes, traffic management issues, self-relocations, rescues and persons trapped by flood waters.

A large number of locations experienced power outages, with the majority of these outages being restored on 30 December 2016. In addition to this, there was an outage between ESTA and Incident Management System (IMS), which resulted in a breakdown of information flow at regional and incident level (the SCC utilised the ESTA Emergency Management Liaison Officer (EMLO) for access).

Significant amount of recovery work has been undertaken in those areas impacted. A total of 62 emergency relief payments totalling $42,380 were issued. Melbourne Water incurred costs in the order of $350,000 and the cost to councils is unknown.

Please refer to the *Melbourne Weather Event - Response* and *Melbourne Weather Event - Recovery* Case Studies on pages 82 and 86 for more information.





Timelapse of the thunderstorm warnings issued by BoM for the State-wide Thunderstorms moving over Melbourne. Courtesy of Bureau of Meteorology.

Falls Festival

Barwon South West Region

- Start Date: 30/12/2016
- Duration: Overnight
- Location: Lorne
- Incident: Crowd crush
- Hospitalised: 28 patients with dozens more treated on-site

The annual Falls (music) Festival, was held on a farm at Lorne with approximately 17,500 attendees. At approximately 21:45hrs, a large group of people moved between music stages through a bottle-neck with unstable ground. During the rush, some individuals lost their footing and fell, creating a domino effect as more people entered the bottle-neck. Approximately 80 people were treated by paramedics and contacted first aiders for broken bones, bruises, cuts and abrasions and other crush injuries. 19 people were transported to hospital.

AV escalated their Emergency Response Plan to Orange, the second highest level of response, to ensure that appropriate resources were in place to manage the emergency and the coordination of the event occurred at the State level. Geelong University Hospital activated its Code Brown Plan to mobilise additional capability and capacity to receive an influx of patients.

Bangerang – Pietsch Road Grassfire

Grampians Region

- Class: 1
- Start Date: 07/01/2017
- Duration: 1 day
- Size: 200 ha
- Losses: 1 abandoned house and several sheds
- Cause: Vehicle towing a trailer

Victoria was experiencing hot, dry weather on 7 January 2017 when a fast moving grassfire broke out near Pietsch Road, Bangerang. 18 CFA appliances responded with aircraft support to quickly contain the fire. A Watch and Act message was issued to surrounding communities at 12:01hrs, which was later downgraded to an Advice message once the fire was brought under control. One disused house was lost and several sheds and huts were damaged.

Bourke Street Tragedy

Northern and Western Metropolitan Region

- Start Date: 20/01/2017
- Duration: 1 day
- Incident: A vehicle struck a number of pedestrians in the vicinity of Bourke Street and Queen Street, Melbourne.
- Hospital presentations: 37
- Fatalities: 6
- A State Consequence Assessment was undertaken for this event

A vehicle struck a number of pedestrians in the vicinity of Bourke and Queen Streets just before 14:00hrs on Friday 20 January 2017. The vehicle travelled from Flinders Street, up Swanston Street to Bourke Street Mall, with the incident concluding at the corner of Bourke Street and William Street. The driver of the car was arrested at the scene and treated for non-life threatening injuries.

VicPol confirmed that the incident was not terrorism-related. There were six fatalities due to the incident, 37 people presented at hospital, and 59 people were identified as being severely impacted by the tragedy. The Melbourne CBD was re-opened for business on Saturday 21 January 2017, with all roads and public transport operating as normal. Legal processes relating to this event are ongoing.

Over 1,200 referrals were received by the Victims of Crime Helpline in relation to the Bourke Street tragedy and 1,213 people were referred to the Victim Assistance Program for ongoing case management. Additionally, the Victorian Government established the Bourke Street Fund (the Fund) to provide support to bereaved families and those who were hospitalised. More than 4,000 Australians donated to the Fund, which received approximately $1.5 million, with a portion of these funds donated from the Premiers Cup Professional Golfers Association (PGA) Golf prize money.

EMV supported the EMC to coordinate the provision of assistance, services, advice and communications for the victims of the tragedy. EMV gathered information from State departments and agencies to ascertain the spread of the impact and to understand who makes up the dispersed population. A geographic footprint of the tragedy was developed that guided, informed and targeted broader delivery of services for those who were potentially impacted.

Recovery for this event is ongoing. DHHS is coordinating regional recovery, and is working with the City of Melbourne to support planning for memorials.

See Bourke Street Case Study in the Emergency Management Victoria Year in Review for further information.

Floral tribute to the victims of the Bourke Street Tragedy. Copyright Victoria Police. Not to be used or reproduced without permission.

Malmsbury Siege

Loddon Mallee Region

- Start Date: 25/01/2017
- Duration: Several Hours
- Location: Malmsbury Juvenile Justice Centre
- Incident: Inmate unrest and mass breakout

On 25 January 2017, CFA and VicPol responded to the Malmsbury Youth Justice Centre, in central Victoria, after a riot broke out and 15 inmates escaped. Seven escapees remained on the run overnight, with VicPol arresting the final escapees in western Victoria at approximately 14:00hrs the next day. During this incident, no one was seriously injured inside or outside the Malmsbury Youth Justice Centre.

Heathcote – Yemms Lane Grassfire

Loddon Mallee Region

- Class: 1
- Start Date: 28/01/2017
- Duration: 2 days
- Size: 10 ha
- Losses: 1 house, 8 cars and a number of small sheds
- Cause: Lawnmower

Although only 10 hectares in size, the Yemms Lane grassfire, which began at approximately 15:30hrs in Heathcote, resulted in significant damage. One house, three sheds and eight cars were impacted by the fire, which was attended by approximately 21 appliances including air support. CFA remained on scene into the next day to continue to black out the area.
An Advice message was issued to Heathcote and surrounding communities.

Severe Weather Event – Severe Wind and Rain

Northern and Western Metropolitan Region, Eastern Metropolitan Region, Southern Metropolitan Region, Gippsland Region

- Class: 1
- Start Date: 05/02/2017
- Duration: 1 day
- Requests for Assistance: 440
- Buildings Damaged: 149
- Trees Down: 32
- Trees Down (traffic hazard): 57
- Flooding: 194

Significant rainfall on the night of 5 February 2017 was the result of a slow moving band of rain that crossed the state. The heaviest rainfalls were over Melbourne Metropolitan and Western Gippsland, with the highest rainfall recorded in Arthurs Seat at 58.2mm.

VICSES units attended approximately 440 Requests for Assistance (RFAs), which ranged from leaking roofs and building damage to flooding and downed trees. The Melbourne City Loop tunnel was also affected by the rain, with the tunnel closing for a period of time due to multiple fire alarms operating, services were restored by late morning.

Bulla – Diggers Rest Road Grassfire

Northern and Western Metropolitan Region

- Class: 1
- Start Date: 04/02/2017
- Duration: 1 day
- Size: 111 ha
- Evacuations: Organ Pipes National Park, Cooper Street, Loemans Road
- Property Damaged: 1
- Cause: Machinery

At 11:22hrs on 4 February 2017, CFA were called to a spreading grass and scrub fire. Upon arriving on scene, CFA requested additional resources. The fire burnt in a south easterly direction through difficult and rocky terrain under strong wind conditions. Aircraft, including two air cranes, assisted crews in protecting property and controlling the fire. An evacuation message was issued using the EAS (see Warnings and Community Notifications page 37) to the Organ Pipes National Park area, which was evacuated and closed as a precaution due to the proximity of the fire. Additionally, an emergency warning was issued to people on Cooper Street to shelter in place as it was too late to leave.

At the height of the incident, 36 appliances and seven aircraft were involved in firefighting operations, with additional resources required to backfill responding brigades. The fire was declared safe at 18:40hrs the following day.

Firefighters extinguishing the Bulla – Diggers Rest Road Grassfire. Courtesy of Emergency Management Victoria.

Extreme Heat

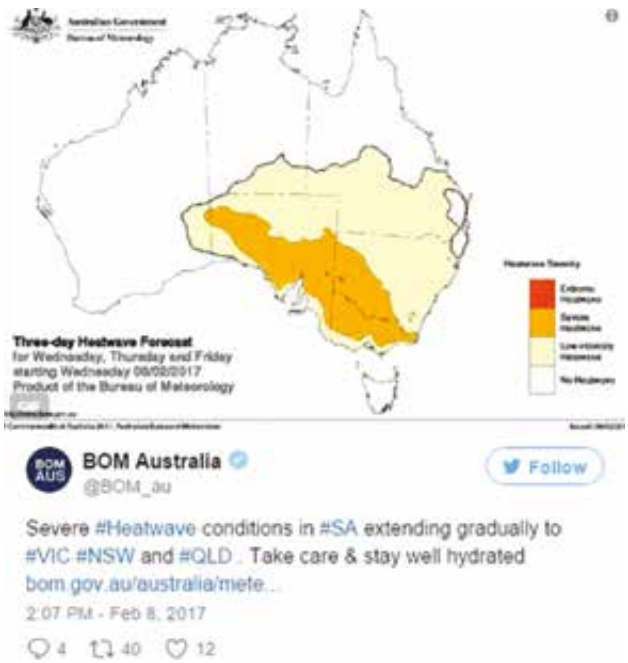
Grampians Region, Loddon Mallee Region, Hume Region, Gippsland Region

- Class: 2
- Start Date: 08/02/2017
- Duration: 4 days
- Heat health alerts Issued: 10
- Arrangements: State Controller - Heat appointed
- A State Consequence Assessment was undertaken for this event

Victoria experienced high temperatures across the state in early February 2017, particularly in northern Victoria, with night time temperatures remaining high for four consecutive days. DHHS issued heat health alerts for the following weather districts:

- Wednesday 8 February - Mallee
- Thursday 9 February - East Gippsland, Mallee, North Central, Northern Country, Wimmera
- Friday 10 February - Mallee, North Central, North East, Northern Country

Victoria also appointed a State Controller for Heat for the first time, which is aligned with the *Interim State Emergency Response Plan (SERP) Extreme Heat Sub Plan*. There were nil recorded significant impacts to health or infrastructure as a result of the extreme heat.



A tweet from the Bureau of Meteorology (BoM) that maps the areas that were predicted to have unusually hot conditions over three days.

Norwegian Star Cruise Ship

Gippsland Region

- Class: 2
- Start Date: 10/02/2017
- Duration: 3 days
- Location: 18 nautical miles off Cape Lip Trap. Towed back to and birthed at Station Pier
- Impacted: 3,130 passengers and crew
- Cause: Loss of propulsion
- A State Consequence Assessment was undertaken for this event

At 02:00hrs on 10 February 2017, the Norwegian Star Cruise Ship suffered propulsion failure South West of Cape Liptrap (near Wonthaggi) and began drifting in a northerly direction. The 295 meter long, 91,740 ton Bahaman flagged vessel was carrying 3,130 people (1,017 crew and 2,113 passengers).

The MV Hastings tug boat departed Geelong at 09:05hrs and the MV Tom Tough tug boat departed Melbourne at 12:00hrs to tow the vessel back to Melbourne. The ship was successfully docked at Station Pier at 00:30hrs on 12 February 2017. There were no reports of welfare issues or injuries upon arrival at port.

The Australian Maritime Safety Authority (AMSA) coordinated the incident working closely with the Victorian emergency management sector and, additionally, the SCC remained active throughout the incident.

The Norwegian Star Cruise Ship being towed to Station Pier. Courtesy of Tim Geddes, MT Hastings.

Electric Parade Music Festival

Northern and Western Metropolitan Region

- State Date: 18/02/2017
- Duration: Overnight
- Location: Sidney Myer Music Bowl
- Incident: Multiple overdoses
- Hospitalised: 34

The Electric Parade Music Festival was held at the Sidney Myer Music Bowl on Saturday 18 February 2017. AV responded to reports of overdoses at the music festival. Paramedics and contracted first aiders treated approximately 34 people and transported 21 people to hospital for overdosing on liquid ecstasy (GHB). Although there were no fatalities, it is reportedly the highest number of overdoses seen at a music festival in recent times.

Essendon DFO Aviation Crash

Northern and Western Metropolitan Region

- Class: 1
- Start Date: 22/02/2017
- Duration: 1 day
- Incident: A chartered aircraft collided into Essendon Fields DFO building causing structural damage and crashed into a carpark
- Location: Essendon Fields DFO (perimeter of Essendon Airport)
- Road Closures: Tullamarine Freeway in both directions, Calder Freeway inbound to the City between the Western Ring Road and Pascoe Vale Road, Bulla Road at the Tullamarine Freeway
- Fatalities: 5
- Cause: Under investigation
- A State Consequence Assessment was undertaken for this event

At approximately 09:00hrs on 22 February 2017, a charter aircraft crashed into an Essendon Fields DFO store, minutes after take-off. Crashing metres from the Tullamarine Freeway, the aircraft engulfed in flames, fuelled by the aviation fuel. AV, MFB appliances and other emergency services were on scene within eight minutes and the fire was brought under control by 11:00hrs. Unfortunately, all five people on board (including the pilot) died as a result of the crash and fire.

Disruptions to aircraft operations (excluding emergency services aircraft) and major roads were resolved to a functional capability within 24 hours of the event. Essendon Fields DFO management, Vicinity centres and Essendon Fields worked with partner organisations to manage the consequences to business, employees and community. Local government, ARC and the Victorian Council of Churches also conducted doorknocks in the area to provide information and advice to local residents. Essendon Fields DFO reopened five days after the event on 27 February 2017. VicPol, the Victorian Coroner and the Australian Transport Safety Bureau (ATSB) are involved in ongoing investigations.

See *Essendon Fields Aircraft Crash* case study in Section 2 page 96 for more information.

Anthrax Outbreak

Loddon Mallee Region

- Class: 2
- Start Date: 03/03/2017
- Duration: 38 days
- Location: Swan Hill
- Infected Properties: 5
- Losses: 113 sheep
- Interventions: 6,245 sheep, 109 cattle, 22 goats, 139 pigs, 7 horses vaccinated across 29 properties

Anthrax is caused by a soil dwelling bacterium which was introduced to Victoria in the 19th century. Occasional outbreaks of the disease caused by bacterial infection of grazing livestock are typically associated with hot and dry conditions. It is spread to livestock through contact with the soil and it causes a rapid death in animals once infected. On 3 March 2017, seasonal conditions led to such an outbreak of anthrax near Swan Hill.

With approximately 87 premises inspected, and multiple properties confirmed affected, preventive measures including destroying the carcasses of dead animals, vaccinating all at risk animals and placing affected properties under quarantine, effectively contained the outbreak.

See *Anthrax Sheep Burn* case study in Section 2 page 90 for more information

Crooked River – Wonnangatta Road Bushfire

Gippsland Region

- Class: 1
- Start Date: 12/03/2017
- Duration: 12 days
- Size: 3,066 ha
- Cause: Lightning

The Crooked River-Wonnangatta Road bushfire was the largest of three fires near Dargo that occurred on the Labour Day long weekend. This fire, along with the Waterford-McCarthy Spur Track West fire (which was also started by lightning), were subjected to intensive aerial suppression activities, multiple bulldozers and on ground suppression vehicles, and 300 FFMVic personnel.

The fire was contained on 24 March 2017, 12 days after it spread through isolated, difficult terrain with limited access. Billy Goat Bluff Track was closed as 20m flame heights were reported at the head of the fire and smoke limited visibility in the area. Watch and Act, and Advice messages were sent out to surrounding communities and holiday makers in the area, with community meetings also taking place.

The third fire in the area, the Wulgulmerang fire, was a planned burn operation, with fires spotting mostly into the target fuel reduction area.

See *Use of Social Media in Dargo Fires* case study in Section 2 page 99 for more information

Crooked River – Wonnangatta Road Bushfire.
Courtesy of John Schauble, Emergency Management Victoria.

Napier Street Fitzroy High Rise Fire

Northern and Western Metropolitan Region

- Date: 29/03/2017
- Duration: 1 day
- Impacts: 3 levels evacuated, 9 flats were deemed uninhabitable
- Hospitalised: 9
- Relief Centre presentations: 125-150 people
- Rehoused: 29 people
- Relief payments: 11

The MFB responded to a fire on the sixth floor of a Public Housing Estate building in Fitzroy early on 29 March 2017. Residents across the fifth, sixth and seventh floors were evacuated. The fire was extinguished by 06:42hrs and the Public Housing Estate was declared safe for floors five and seven, however the sixth floor was inaccessible for a period of time while impact assessments were conducted. Nine units were uninhabitable for a couple of weeks as a result of the fire, which displaced 29 residents.

DHHS along with Yarra City Council opened a relief centre for displaced residents at the Fitzroy Town Hall. Approximately 125-150 residents attended the relief centre, including some residents from floors that were not directly impacted by the fire.

A number of individuals were treated at nearby hospitals for injuries relating to the fire, including two Wilson Security guards, one MFB firefighter and six residents.

Severe Weather Event – State-wide Rainstorms

All Emergency Management Regions

- Class: 1
- Start Date: 09/04/2017
- Duration: 3 days
- Requests for Assistance: 1,219
- Buildings Damaged: 305
- Trees Down: 203
- Trees Down (traffic hazard): 481
- Flooding: 123
- Rescue: 34
- Power Outages: 20,000+ properties

A system of heavy rain and strong winds moved across Barwon South West and Grampians Regions into Loddon Mallee Region during the day on 9 April 2017, and continued to impact metropolitan Melbourne Regions and Hume Region around the Great Dividing Range into the night. Overall, VICSES had 1,219 RFAs, responding to trees down, traffic hazards and building damage.

At 20:15hrs, it was recorded that 18,000 Powercor customers remained without power within the Barwon South West and Grampians Regions between Cape Otway and Kyneton, with most being in the vicinity of Ballarat.

The Mount Helen ESTA dispatch centre was also impacted by the storm and suffered a power outage, however as per procedure, it smoothly transferred to auxiliary power that had 24 hours of power available from the generator. The power outage was resolved within this timeframe. The SCC was activated to Tier 2 (Orange) for a number of days around this event to support operations.

BoM issued a severe weather warning for the system as it continued to move into Gippsland Region over the next few days. No impacts to road, rail or agriculture were reported due to this severe weather event.

Truck versus Tram Collision

Northern and Western Metropolitan Region

- Start Date: 22/05/2017
- Location: Parkville
- Impact: Approximately 50 injured
- Hospitalised: 17 (29 treated on scene)

Approximately 50 Monday morning commuters were injured when a truck hit a tram near the Melbourne Zoo on 22 May 2017. The force of the impact pushed the tram several metres off its tracks, and tipped the truck on its side causing extensive delays in the area. Although there were several individuals taken to hospital, there were no reported major injuries.

AV, MFB and VicPol and worked together to secure the incident, treat passengers and clean up a diesel spill from the truck. The 12 hour operation required the damaged tram to be removed via crane.

Interstate / International Deployments

Response personnel deployed to Queensland on 28 March 2017. Courtesy of Emergency Management Victoria.

During the 2016-17 financial year, Victoria was deployed interstate four times including to South Australia, New South Wales and Queensland. These deployments were vastly different in length and hazard compared to last year's six interstate and international deployments. See Interstate and International Deployments theme in Section 3 page 128 for more information.

South Australian Deployment

- Class: 1
- Start Date: 30/09/2016
- Duration: 7 Days
- Incident: Severe Storms
- Resources: 325 IMT personnel, Ground Crews and Support Liaisons and 30 vehicles

On 29 September 2016, South Australia experienced a major storm that resulted in the entire state losing all power. The state-wide power outage was not completely restored for days due to limited access to downed transmission lines. After the initial storm system passed, there continued to be severe weather which hampered emergency services response and capacity.

A request for support was received by the EMC on 29 September 2016 and a deployment plan was approved on the same day. Over 300 personnel made up of Incident Management Team personnel, ground crews and support staff from CFA, EMV, MFB, DELWP and VICSES and were deployed starting on 30 September 2016. Additionally, 30 vehicles were also deployed to assist in the clean-up operation.

New South Wales Deployment

- Class: 1
- Start Date: 18/01/2017
- Duration: 1 day
- Incident: Fire
- Resources Pre-positioned: 4 Strike Teams
- Aircraft Pre-positioned: 9 aircraft with crew at Albury (2x LATs, 3x AAS Platforms, 2x Aircranes, 2x Bombers)

On 18 January 2017, New South Wales (NSW) had severe and extreme fire weather forecast and TFBs in 5 Districts from the Victorian border to the Greater Sydney area. To assist with readiness for the expected fire conditions, NSW Rural Fire Service (RFS) requested aviation resources and strike teams to be planned in readiness for interstate deployment.

EMV, in conjunction with CFA and DELWP, put plans and arrangements in place for four strike teams and nine aircraft to be available for deployment in accordance with the day-to-day cross boarder mutual aid arrangements.

As a result of this pre-planning, nine aircraft were strategically positioned at Albury and four heavy strike teams were stood up in readiness in Hume Region during the day. Although no personnel were deployed, a couple of the aircraft were utilised in firefighting operations and backfilling of aerial resources.

New South Wales Deployment

- Class: 1
- Start Date: 12/02/2017
- Duration: 2 days
- Incident: Fire
- Personnel Deployed: 3 forward Liaisons
- Aircraft Deployed: 4 aircraft with crew (2x LATs, 1x AAS Platform and 1x Linescanner)
- Aircraft Pre-positioned: 14 aircraft – 11 with crew at Albury and 3 with crew at Deniliquin (6x Bombers, 3x AAS Platforms, 3x Helitaks and 2x Aircranes)

As a 17:00hrs on 12 February 2017, there were 2,500 NSW RFS firefighters battling 82 fires across NSW, with 32 of those not contained. Of those 32, five fires saw Emergency Warnings issued to communities, and a further seven had Watch and Act messages issued. Catastrophic conditions were recorded in the Upper Hunter, Central Ranges and Upper Central West Plains over two days.

Victoria strategically pre-positioned 14 aircraft with crews to assist New South Wales as they experienced increased fire risk due to hot and windy conditions. This included 11 aircraft at Albury and three at Deniliquin. Additionally, two aircraft were based in Echuca to assist with the Southern 80 Ski Event and one was positioned in Mildura to assist with Very High FDRs in the Mallee Region.

Three Victorian Forward Liaisons were also deployed to assist New South Wales Rural Fire Service if any requirement for additional personnel, equipment or assistance arose.

Queensland Deployment

- Class: 1
- Start Date: 28/03/2017
- Duration: 32 Days
- Incident: Tropical Cyclone Debbie
- Incident Management Team / Response Personnel: 31
- Recovery Personnel: 32

Queensland experienced a category four cyclone on 28 March 2017 (“ex-Tropical Cyclone Debbie”), which was the first tropical cyclone to reach severe status (category 3 or higher) since the Australian 2014-15 cyclone season.

It made landfall on the central Queensland coast, near Airlie Beach, around midday on 28 March 2017. From 29 - 31 March 2017, the weather system continued to generate significant heavy rain and major flooding across eastern Queensland and Northern New South Wales, causing major impacts to these heavily populated areas. Significant power outages also occurred across the North Central and South East Regions, in addition to disruptions to communication landlines and internet broadband services.

As at 1 April 2017, Queensland State Emergency Service had received more than 25,659 calls for help and the Queensland Government had completed 4,660 Rapid Damage Assessments, predominantly in the Proserpine, Airlie Beach and Bowen Regions. The Victorian EMC formally offered a commitment of Victorian personnel to assist with Queensland’s response and state managed recovery efforts (which fell under the protocols outlined in the *Guidelines for Interstate Assistance (Community Recovery) 2015)*.

This included roles such as IMT personnel (to assist with functions such as Logistics, Planning and Operations) as well as National Resource Sharing Centre (NRSC) Leader and Support positions and MFB Swift Water Rescue (SWR) personnel.

The deployment of personnel to Queensland to assist in the response and to support the Queensland Department of Communities with the coordination of recovery activities, was managed through SCC. The SCC's Interstate International Liaison Unit (IILU) facilitated the preparation, movement, oversight and debriefing of all personnel deployed from Victorian agencies.

In terms of recovery assistance, a Victorian Liaison Team was deployed in advance to Queensland to establish incoming deployment arrangements. The first deployment of 20 Victorian personnel to support recovery travelled to Queensland on Sunday 9 April 2017.

The Relief and Recovery needs of Queensland in the aftermath of ex-Tropical Cyclone Debbie were extensive. Three rotated deployments of DHHS personnel supported and attended to the needs of the Queensland community after the IMT personnel had returned to Victoria. Recovery personnel undertook outreach activities which extended the support provided in recovery hubs out into the community. The ARC also deployed 36 personnel to assist in various recovery roles.

The SCC was activated to Tier 2 (Orange) during this time to support the deployments to Queensland. See *Deployment of Victorian Response and Recovery Personnel to Tropical Cyclone Debbie* case study in Section 2 page 101 for more information.

Members of the Metropolitan Fire Brigade (MFB) Swift Water Rescue Team helping stranded members of the public in Queensland. Courtesy of Andrew Carmichael, MFB Station Officer.

Volunteers from multiple agencies sandbagging whilst on deployment to South Australia. Courtesy of Emergency Management Victoria.

Section 2: Case studies

This section provides a selection of case studies that were developed over the 2016-17 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 lessons on what went well and what could be improved. Where case studies were originally published elsewhere, the content has been replicated and the source document has been referenced.

A comprehensive set of case studies is available on the Emergency Management – Common Operating Picture (EM-COP) Library > Review-Lessons > Learning Products > Case Studies and Insights.

Where case studies were originally published elsewhere, the content has been replicated and the source document has been referenced.

Please note: Some case studies included in this section are republished from other sources. 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 (e.g. dates, incident size, people impacted).

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STATE
SENIOR
POLICE
LIAISON
OFFICER

Exercise Galaxy. Courtesy of Peter Norman, Emergency Management Victoria.

Case study

KARALIKA HEIGHTS CROSS TENURE FUEL REDUCTION BURN

Incident overview

Karalika Heights is positioned between two settlements – Taylor Bay and Eildon in the Murrindindi Shire. It consists of large areas of private land and the Eildon Bushland Reserve. The final 'keystone' block in a mosaic of planned burns surrounding the township of Eildon, it was the closest proposed planned burn to the township itself. Taylor Bay is a popular holiday destination with many non-resident ratepayers and rental properties.

The planned burn was identified in 2005 as instrumental in reducing heavy fuel loads to protect key assets and properties in the Karalika Heights area. Significantly the planned burn comprised areas of private land (7%), land owned by Goulburn Murray Water (70%) and the remaining 23% public reserve.

The initial planning phases indicated that a cross tenure approach would significantly increase the overall reduction in risk as well as simplify burn implementation. Due to the proximity to residences and other infrastructure, the importance of an engaged and involved community was identified in the early planning stages. An engagement strategy was developed, considered a high priority and substantial effort was directed at engaging the local community to ensure community awareness, support and participation.

The planned burn was originally scheduled for 2015 however the only opportunity to burn coincided with the Easter long weekend – the busiest period for Lake Eildon tourism based businesses. In response to the concerns of local business owners and the potential impact on tourism, the planned burn was postponed.

The planned burn was lit on 22 March 2016 and ignition was completed within two days using a combination of ignition methods. The flexibility of the burn crews proved a key factor contributing to the overall success of the planned burn. Once successfully ignited the fuel was reduced over approximately 570 hectares.

It took almost three years from the initial planning stages to the completion of the works to involve the community and stakeholders, hold key conversations between the fire agencies and undertake negotiations with land holders and then finally to complete the planned burn. The initial challenges faced by Country Fire Authority (CFA) and Forest Fire Management Victoria (FFMVic) regarding shared planned burn responsibilities were collaboratively worked through and resulted in shared benefits and encouraged long term community support and involvement.

Community engagement activities included:

- **advertisements placed in local media and on radio;**
- **posters, flyers and letters;**
- **an intensive door knock to over 400 residents (over a peak visitation period);**
- **information packs containing planned burn information distributed to residents;**
- **local networks;**
- **The Eildon CFA Facebook page;**
- **variable message boards placed in town and on incoming arterial roads;**
- **a public meeting and BBQ held in the centre of town on Market Day; and**
- **Informing the community via numerous sources that the burn was complete.**

What worked well?

Integrated Approach

- A multidisciplinary burn team was established consisting of CFA, Eildon Action Group, Eildon Boat Club, Eildon Landcare Eildon Visitor Information Centre, FFMVic, Goulburn Murray Water, Goulburn Valley Water, Lake Eildon Marina, Murrindindi Shire Council and Victoria Police (VicPol).
- An extensive mix of engagement methods were utilised to ensure maximum outreach to resident and non-resident community members.

Linking Actions and Outcomes

- The significant success of the community engagement process was illustrated by the inclusion of adjacent areas of private land in the planned burn operations.
- The mulched control line created for the Karalika Heights planned burn was linked to other control lines in the area to increase the long term protection and defence of the town. This method of construction minimised soil disturbance and produced no adverse effects on local waterways.
- Door knocking activities integrated other bushfire safety information such as property protection and bushfire survival plans.
- Strategic "candling" of bark within the township removed fuel and bark hazards without impacting on the visual landscape close to residences and the aged care facility.
- CFA Brigades were utilised as local subject matter experts in community engagement which built capacity within local brigades and further connected them directly to the community.

Karalika Heights Cross Tenure Fuel Reduction Burn door knock. Courtesy of Alex Caughey, Country Fire Authority (CFA).

- The leadership, openness, honesty and flexibility shown by the agency burn controllers and local brigades built trust throughout the community.
- Through knowledge sharing and developing an understanding of different perspectives the relationships between agencies, brigades and the community have been reinforced, strengthening overall community resilience.

Community Engagement

- The timing of the door knock, over a long weekend, was an effective way to engage with holiday makers and non-resident ratepayers in the surrounding areas.
- The multiple methods of engagement were effective at engaging a wide range of stakeholders resulting in significant support for the planned burn both within and outside the Murrindindi Shire.
- No negative reactions were reported from the community in the lead up to, during, or following the planned burn.

What could we improve on

Community Engagement

- The intensive engagement process has established new community expectations and set a high standard for engagement for future planned burns in the area. However without the necessary community engagement, the planned burn may have been less successful.
- The door knocking component of the community engagement process cost the CFA approximately $15,000. Whilst extremely effective, it will not be able to be easily replicated.

Cross Tenure Fuel Reduction

- Clear identification of priorities and allocation of responsibilities was required and FFMVIC and CFA quickly established an appropriate burn implementation plan to outline accountabilities. Ultimately the two agencies worked closely together and got great support from the private landholders in a cross tenure, multi-agency environment.

Future Considerations

As some low intensity fire activity continued into the Easter long weekend, Emergency Services Telecommunication Authority (ESTA) received a number of reports of fire activity, mostly from houseboat occupants despite daily updates via the Eildon CFA Facebook page. A more targeted communication strategy directed at holiday makers could have mitigated the concern and inconvenience by alerting the community that the burn was ongoing. This highlighted the need to involve the community, stakeholders and other interested parties in all stages through to the completion of the planned burn.

There is a need to investigate more cost effective techniques to enable extensive, repeatable and thorough community engagement for future planned burns.

Map of Karalika Heights fuel reduction burn.

Conclusion

Overall, the significant community support for the planned burn was unexpected and resulted from a targeted engagement process that was tailored to suit the Eildon Community. The involvement of key stakeholders from the initial stages ensured the planned burn delivered the anticipated results of reducing the risk to Karalika Heights. Due to the extensive engagement processes undertaken by all involved, the benefits of the burn to the community were widely understood and supported.

The model will be utilised again in the area for planned burns in close proximity to townships as it has demonstrated a successful model of implementation which has placed the community at the centre of the process. The Karalika Heights cross tenure planned burn has illustrated that effective, targeted engagement and quality planned burns are not incompatible.

Source

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

Case study

NOBLE PARK HOUSE FIRE

Incident overview

In the early hours of 18 August 2016, Dandenong Fire Brigade was alerted to a house at Noble Park. The smoke column was visible 500 metres away. En route, the facts were gathered by the crew and communication was established between the responding vehicles. A plan was developed so the crew could hit the ground running. Two Country Fire Authority (CFA) pumpers quickly arrived on scene with a Metropolitan Fire Brigade (MFB) pumper one minute behind, followed by support vehicles.

The brigade was met by a house well alight. Neighbours told crews there were two people inside, one of whom needed a walking frame for mobility.

Incident Controller (IC) and Dandenong Fire Brigade Acting Station Officer reported 'not yet under control' immediately as firefighters began an internal search. The MFB crew did an external attack, knocking down the main fire to help CFA carry out a fast primary search.

In the search, they found and rescued a woman within 30 seconds of entering the house. She was cared for by emergency medical response (EMR) trained firefighters until Ambulance Victoria arrived. The second occupant was found in the kitchen at the other end of the house as the crew continued the search. The man was found around two minutes after the woman but, despite the best attempts by firefighters and an Ambulance Victoria (AV) crew, he couldn't be revived.

Despite the tragic loss, the IC praised firefighters for the dynamic response to this fire. The attending fire crews put in a fantastic effort and the incident was brought under control within 30 minutes.

What worked well

- The IC worked towards an objective, and conveyed tasks accordingly to crews on the fireground.
- The rapid response of crews ensued enough personnel were on the fireground to "have sufficient crew to meet the control objective and implement the chosen strategy" (CFA Standard Operating Procedure 9.28).
- Having the appropriate equipment – trucks, thermal imaging camera, communications between CFA and MFB and personal protective equipment.
- Crews on the fireground have responded and trained together for some time. Training was instrumental to the safe and efficient operation of this incident. Training for proficiency helps crews to carry out their roles well in adverse circumstances.
- An after-action review, or debrief, was carried out on the following shift on the next day. This allowed for internal evaluation of the incident and an opportunity for all members to have input.
- The teamwork demonstrated on scene with AV and MFB was outstanding. AV, CFA and MFB are dedicated to providing a common operating platform in all areas of service delivery, equipment and training.

What we could do better

We need ongoing training and development for our crew leaders and prospective incident controllers to help them deal with dynamic and challenging incidents. We train and prepare our people for competency and at times don't have the time or resources to push for proficiency.

Conclusion

Following this type of incident, members need to be assured that CFA can't undo what's already been done and are unable to turn back time. In this tragic incident, as with others we have been exposed to, the call to Triple Zero was well after the fire had taken hold.

Despite the loss of the resident, all members at the scene were proud of their dynamic response to this fire. This incident was a multi-agency event involving CFA career and volunteer members, AV, MFB and Victoria Police (VicPol) all working hand in glove to best achieve the objective.

Source

Adapted from CFA Brigade Magazine Learning from Incidents – Summer 2016

(EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Lesson Sharing)

Case study

KALLISTA TREE FALL

Incident overview

On 9 October 2016, a Country Fire Authority (CFA) firefighter was injured by a falling tree in Kallista in CFA District 13. At the time of the incident, CFA was supporting the Victoria State Emergency Service (VICSES) in response to a storm that had caused widespread damage across the Dandenong's (Dandenong Ranges) in Victoria's east. While Silvan Fire Brigade members were removing a fallen tree that was blocking a road, another tree fell which knocked one member unconscious and trapped him under the fallen tree.

En route to the first job, a tree was cleared from Belgrave-Gembrook Road that had blocked their passage. Once they had cleared this tree they continued on towards Belgrave taking Grantulla Road. Travelling along Grantulla Road they came across another tree blocking the way which they also cleared. This tree was on an uphill slope above the road level and had fallen downhill over the road.

At around 15:25hrs, after clearing the downed tree on Grantulla Road, an adjacent tree, less than one metre from the first came down on top of the chainsaw operator who was preparing to leave for another job in Belgrave. The tree that fell on the member was around 30 metres tall and had a trunk diameter of roughly 70 centimetres.

The crew leader was standing a short distance away and heard the thud of the tree landing. He turned around to see his crew member pinned under the trunk of the tree. He immediately went to help and transmitted a Mayday call. Kallista-The Patch tanker, Monbulk Rescue and Ambulance Victoria (AV) arrived shortly after and extracted the injured man from under the tree and transported him to hospital. This member has since made a full recovery.

Photo courtesy of Daryl Owen.

Lessons identified

- Situational awareness appears to have been impacted by the workload placed on the crew. It's important for members to understand that a high workload may affect their ability to maintain situational awareness.
- During storms, individual fallen trees are often treated as separate jobs. This often leads to perceived pressure to respond to and clear them as quickly as possible. This can lead to rushing and losing situational awareness.
- It can be difficult to establish whether a tree's stability has been affected by a storm. When working around storm-affected trees, it's imperative that crews conduct an effective risk assessment of the area and work methodically through their tasks.

Conclusion

The work required of CFA and VICSES during storms reduces the impact on communities. Our members, who are often part of the communities they serve, often feel pressured to assist beyond a level that is reasonable. During these times, details get missed and shortcuts are taken.

For the safety of the members and the community, it's vital to remain vigilant and think clearly. This incident highlights the importance of situational awareness and good communications.

Source

Adapted from CFA Brigade Magazine Learning from Experience – Winter 2017

(EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Lesson Sharing)

Photo courtesy of Daryl Owen.

Case study

SPRINGVALE COMMONWEALTH BANK FIRE

Incident overview

On Friday 18 November 2016 at 11:32hrs, it was reported that a man was on fire in the Commonwealth Bank of Australia (CBA), an explosion had taken place and around 50 people were trapped inside. Springvale pumper arrived on scene within three minutes, closely followed by Dandenong pumpers 1 and 2, Ambulance Victoria (AV) and Victoria Police (VicPol). The incident was further supported by the Country Fire Authority (CFA) Springvale tanker, Noble Park pumper and Patterson River mobile communications vehicle.

The primary objective was to provide a safe egress for the occupants still trapped in the heavily smoke-logged building, provide first-aid treatment to the casualties and prevent further spread of fire.

To achieve this, two firefighters donned breathing apparatus (BA) and entered the building with 38mm hose in a Cleveland hose lay configuration, dry chemical extinguishers and a thermal imaging camera. They were advised that electricity and gas would be difficult to isolate and they should consider both services live until told otherwise. The rest of the crew helped people escape from the bank to a location where triage was conducted for the injured.

Based on their familiarity with the area and previous premises inspections, the crew knew of a laneway which provided access to an open area at the rear of the building.

The Senior Station Officer from Springvale established a control point at the front of the building and tasked the Dandenong crew to the rear of the building where they could complete his 360 size-up.

An additional two firefighters in BA entered the building to help with the search and rescue.

Good communications between the BA teams and the casualty triage area allowed for quick extraction of people and an up-to-date understanding of the situation inside.

Photo courtesy of Victoria Police.

Photo courtesy of Victoria Police.

At 11.45am, the fire was declared under control. After completing a secondary search and the fire being deemed extinguished, the air was sampled to ensure the safety of anyone entering the bank not in BA.

The majority of the flame damage occurred in the entrance of the bank. However, the entire ground and first floors had extensive smoke damage though very little damage was caused by the water and foam used to put out the fire. At 12:26hrs, control was transferred to the police.

Lessons identified

The following contributed to the successful management of the incident:

- The first CFA pumper on scene established control outside the bank's entrance, ensuring effective and efficient deployment of crew and equipment. The main objective was to rescue occupants still inside the bank while providing medical aid to casualties. The strategy was an offensive internal attack using BA crew to suppress the fire and create a way out for those trapped inside.
- It was recognised that explosive devices may have been placed at the scene. While the alleged offender was in police custody, he was questioned to determine whether there was a risk of another explosion. The use of secondary devices is a common tactic in incidents overseas, and first responders need to be on the lookout for secondary attacks or explosions during deliberate attacks.
- The control was transferred from CFA to VicPol after the fire had been controlled because it was declared a crime scene. The briefing included the circumstances and the number of injured. The SMEACS[1] briefing process was used to ensure all relevant information was passed on effectively.
- An emergency management team (EMT) was established early with AV, CBA, CFA and VicPol representative. The early establishment of an EMT is critical for information sharing and good decision making.
- The crew inside the bank provided regular situation reports while assisting casualties, allowing the crew outside to effectively lead casualties to the triage area.
- Thermal imaging cameras were used to find people still inside and identify hot spots in a heavily smoke-logged environment.

Areas for improvement

- Response tables and word back tables should be reviewed regularly to reflect support brigade capability and capacity.
- On initial response, CFA couldn't gain access to secure the area of the bank because there were two locked areas on the ground floor. Even though firefighters had good knowledge of the premises due to area familiarisation and premises inspections, CFA tools couldn't gain access to the rear area. Access was eventually gained using keys sourced from a CBA employee from another bank. When inspecting premises, it's important to discuss contingency plans with the occupants.

1 SMEACS refers to a briefing format incorporating: Situation, Mission, Execution, Administration and logistics, Command and Communications, Safety, and Questions.

Conclusion

CFA crews were faced with a difficult firefight because of the thick smoke, an alleged offender still on scene and the complexities of the premises. Control was effective and understood with good communications between CFA crews and supporting agencies. The early establishment of an EMT, good local knowledge and planning contributed to the successful management of this event. Crews inside the building were faced with scenes that training could not sufficiently prepare them for. They did an extraordinary job in difficult circumstances, using initiative and teamwork. This was a good example of inter-agency cooperation and emergency management.

Source

Adapted from CFA Brigade Magazine Learning from Experience – Winter 2017

(EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Lesson Sharing)

Photo courtesy of Victoria Police.

Case study

MELBOURNE WEATHER EVENT - RESPONSE

Incident overview

On Tuesday 27 December 2016 the Bureau of Meteorology (BoM) predictions were for strong winds on the morning of Wednesday 28 December 2016 for the Mallee, Wimmera and South West districts. Exceptionally moist air was predicted to be left over Victoria in the wake of this system so large thunderstorms capable of Flash Flooding could follow later on Wednesday as well as Thursday in the Central and eastern districts.

It was clear in the advice provided by BoM there was going to be a weather event experienced on 29 December, but by 14:00hrs nothing had presented as yet. In preparation for the two days the State Control Centre (SCC) had been activated to tier 2 with emergency management liaison officers (EMLOs) present.

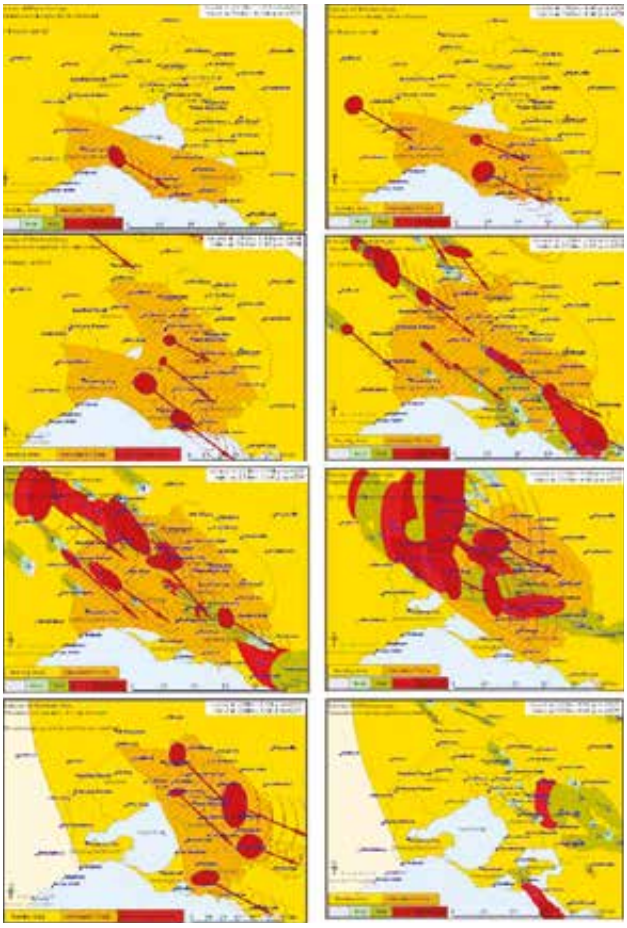
Victoria State Emergency Service (VICSES) had begun preparations on the 27th for the predicted weather event with personnel prepositioned at two incident control centres (ICCs) located at Sunshine and Dandenong and a number of personnel on standby. Other Regions across Victoria were also placed on standby for this event and possible impacts.

Large storm cells began impacting on the state of Victoria from 14:00hrs on 29 December. By 16:00hrs the impact of the storm event had affected the City of Melbourne Local Government Area (LGA) and surrounding areas lasting into 30 December, see figure 28.

Flash flooding and storm damage occurred across multiple areas with the most impacted areas being Glen Eira and Phillip Island. The Bureau of Meteorology recorded 18.4 millimetres (mm) of rain in 10 minutes at Oakleigh South and 14.6mm of rain in 10 minutes at St Kilda.

Severe weather warnings were issued and remained current through 30 December for East Gippsland, North East and parts of Northern Country, North Central and West and South Gippsland forecast districts.

Figure 28: Severe thunderstorm warnings from BoM



Courtesy of Bureau of Meteorology.

Once the impacts were being realised the decision was made to stand up additional ICCs.

Over 2,500 requests for assistance (RFAs) across Country Fire Authority (CFA), Metropolitan Fire Brigade (MFB), and VICSES were received between 12:00hrs Thursday 29 and 14:00hrs Friday 30 December. Initial impact assessment was undertaken. A total of 56 relief payments have been issued amounting to $37,440 as at 10 January 2017.

Power outages were experienced in a number of locations. Highest impact areas were Mooroopna and Shepparton (1,800 customers) and Phillip Island (4,000 customers). Most were restored by 10:20hrs on Friday 30 December.

Residents from a three storey apartment complex in Plenty Road, Kingsbury were evacuated, however there was no requirement for long term shelter. Residents from three houses across southern and eastern regions had to be relocated.

Major roads affected were Western Ring Road, Tullamarine Freeway and Queens Road, St. Kilda. There were 41 flood rescues across the State with Ambulance Victoria (AV) dispatched to 37 of these related to people trapped by flood waters. None required transport to hospital. Seven metropolitan rail services were impacted and all lines were partially suspended due to flooding except the Belgrave line where buses replaced trains.

The storm event significantly increased impact on Emergency Services Telecommunication Authority (ESTA) Dispatch and Call taking. The increase in call volumes caused an issue with presenting data to CFA/MFB/VICSES via Data Transfer Server (DTS) link between 16:30hrs 29 December and 00:30hrs 30 December. When compared to the 9 October 2016 wind event, the December event actually had higher RFAs over a shorter duration.

Source: http://www.abc.net.au/news/2016-12-29/melbourne-hit-by-heavy-storms-causing-transport-delays/8152964 Courtesy of ABC: Ben Lisson.

The multi-agency recovery efforts from this event are described in the Melbourne Weather Event – Recovery Case Study.

What worked well?

Planning – Due to forecasted weather and the amount of preplanning that occurred at all levels, the response to the event was prompt and effective.

Intelligence - Use of intelligence resources meant that Firebird300 was utilised and provided real time intelligence from the sky. Intelligence from social medial was also utilised, particularly due to the event hitting such a large population, social media provided a lot of information.

Burnley ICC – It was the first time Burnley ICC had been stood up and relationships allowed this to happen as well as it did. Planning arrangements for the ICC occurred back in September, with a number of IT and connectivity issues found and worked through. It was recognised that local knowledge at the ICC was required so a resource was deployed from VICSES Central Region and was immensely beneficial.

Transition to Recovery - In general handover from response to recovery was timely and very well done. To ensure this occurs more effectively the recovery function can be better integrated into Regions.

Communication and Relationships - Communication between the Regional Control Centres (RCCs) and ICC's was good, particularly due to relationships that were already in place within VICSES and across the agencies. Everyone worked as one even with the dynamic nature of the event.

Flood Analyst - Having a flood analyst within the SCC was critical to being connected with Melbourne Water and being able to provide timely flood intelligence during a rapidly developing flash flood event

What could we improve on

Managing multiple concurrent emergencies - The SCC was managing a number of other events when this weather event started to unfold. This required the focus of the centre to quickly change focus on the unfolding event.

Control Structures – The Regional and Incident footprints were revised during the event to manage the high level of RFA's over specific geographical areas. This structure had not utilised before which presented some issues, particularly from a systems perspective. Initially it created some discomfort and confusion but the end result was establishing control boundaries/footprints based on municipalities.

Resourcing – VICSES only have finite resources, nd had originally planned to resource only one ICC initially and when three ICC's were activated this stretched the agency's resourcing capabilities to meet the needs of the three facilities.

Intelligence – There was a data issue between ESTA and agency incident management systems resulting in a delay of several hours of data. The SCC had access to an ESTA EMLO and a range of intelligence through the centre which was not immediately available at the RCCs and ICCs. This resulted in manual workarounds and a misrepresentation of what was being seen at the SCC, RCCs, ICCs and VICSES units.

Call volume – The VICSES flood, storm, tsunami and earthquake emergency number 132 500 was overwhelmed during the event. 2,700 calls were made to the number with 2,000 of those going unanswered due to the demand.

Burnley ICC – Although the facility worked well it has never been transitioned or tested. Therefore, personnel were operating from a facility with no previous concept of operations.

Impact Assessment – Issues were experienced with accessing impact assessment data through Emergency Management – Common Operating Picture (EM-COP) and two tools of impact assessment were being utilised that are not integrated.

What would we do next time

There was a range of good practices and areas that need to be improved highlighted through this event. These include:

Impact Assessment – Better coordination across the Regions and Agencies for impact assessment is required to ensure it drives relief and recovery services based on need.

Burnley – Exercising the facility would help reduce the concern from personnel who may be activated to operate from the ICC about using a new facility in response.

Intelligence – The sector needs to better understand how to manage situations when the data feed is delayed and then how to manage the influx once up and running again. There also needs to be clearer understanding of what intelligence ICC's, RCC's and the SCC is accessing and where there may be gaps to ensure there is a common operating picture for decision making.

Call Volume – Capability and capacity of the 132 500 line or alternative, needs to be improved to ensure public RFAs can be taken and triaged in a timely manner.

Communication and Relationships – Regular and clear communication across the Regions, and established relationships across Agencies is integral for all emergencies, and ensured Regional Controllers (RCs) and Incident Controllers (ICs) were able to respond to the changing nature of the event and boundary changes.

Control Structure – Further work needs to be done on control structure and boundaries for metropolitan events with a wide scale of impact to ensure planning can occur in advance.

Flood Analyst – Triggers could be developed that would prompt for flood analyst support at the SCC for predicted or actual significant flash flood events.

Conclusion

Overall, this event had a significant impact on Melbourne within a short duration resulting in significant demand on emergency services, but the end result was the sector and agencies coming together and working as one to ensure impacts could be dealt with effectively and communities could return to normal as quickly as possible.

Since this event a number of changes and improvements have been put in place to ensure continuous improvement into the future. Including a Situation Update every two hours published from the SCC onto EM-COP to support the sharing of intelligence across incident, regional and state.

EMV State Control – Advisory Bulletin 06 was released on 18 January 2017 which provides advice on the roles and responsibilities and reporting arrangements during response and early relief and recovery phases for regional relief and recovery coordination.

VICSES Chief Officer and the Emergency Management Commissioner (EMC) have also begun working through a Regional emergency management model for Metropolitan Melbourne events.

Source

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

Further Information

Melbourne Weather Event - Recovery Case Study (EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Lesson Sharing)

Case study

MELBOURNE WEATHER EVENT - RECOVERY

Incident Overview

From September 2016, Victoria had been experiencing major floods across large areas of the state. On 29 December 2016, large storm cells began impacting the city of Melbourne and surrounding areas from 14:00hrs. By 16:00hrs, flash flooding and storm damage had impacted multiple areas, with the most impact in Banyule, Glen Eira and Phillip Island. In the Banyule council area around Macleod and Watsonia, this was a 1 in 400 year event. In areas of Glen Eira and Elwood, this was about a 1 in 25 year event.

Between 12:00hrs Thursday 29 and 14:00hrs Friday 30 December, over 2,500 requests for assistance (RFAs) across Victoria State Emergency Service (VICSES), Country Fire Authority (CFA) and Metropolitan Fire Brigade (MFB) were received.

There was a substantial multi-agency response to the event, which is described in the *Melbourne Weather Event - Response Case Study*.

The storm led to power outages, major road disruptions (e.g. Western Ring Road), partial suspension of all metropolitan rail lines and impacts to numerous tram lines. A number of metropolitan hospitals were impacted by minor flooding and damage. Banyule Council's Customer Service Centre and library in Rosanna were also significantly damaged due to flash flooding. Residential areas in Springvale were affected by overflowing sewerage.

Residents of a three story apartment complex in Kingsbury were evacuated, although there was no requirement for long term shelter. Residents from three houses across southern and eastern regions had to be relocated. A number of apartments had flooded basement car parks.

As the storm was during the holiday period, the reporting of impacts to business and community was delayed in some cases because people were away and access was not able to be gained.

Significant amount of recovery work has been undertaken in those areas impacted. A total of 62 emergency relief payments totalling $42,380 were issued. Melbourne Water incurred costs in the order of $350,000 and the cost to councils is unknown.

Incident Insights

The following sections provides some reflections on the aspects that worked well and some possible areas for improvement for future events, based on observations from personnel involved in the event.

Planning and Preparedness

Historically, the emergency management sector is effective at managing slow moving riverine flooding in regional areas but are challenged by rapid onset events (e.g. flash flooding or swift water events) that are more difficult to predict and manage. The management of emergencies in the metro areas, including relief and recovery models, need to be different to the traditional regional scenarios.

Flood modelling is used to inform land use planning, operational planning, intelligence and community engagement. Greater urbanisation, population increases and climate change are all influencing the frequency and intensity of rainfall events and the fast catchment response experienced in many locations.

The incidence of flash flooding is likely to increase, which will change the flood predictions that are the basis of planning and community engagement.

The preparedness and planning phase for flash flood events needs to be based on verified available information, latest flood mapping, identification of high risk areas and vulnerable communities and consideration of consequences. More mature and integrated consequence planning, in collaboration with government, agencies, industry and business, will support greater preparedness for future events.

Intelligence

During the response phase, there was good connection with predictive services and hydrologists, which provided important expertise in interpreting information and indicating likelihood of flood impacts. In particular, liaison officers that are trained to support in flash flooding events provide critical information about impact areas, drainage, water convergence and the influence of tides. However, this connection can sometimes be challenged by personnel availability and accessibility, particularly in rapid onset events.

There was less intelligence sharing during the recovery phase, with a major vacuum of information and limited sharing of information because of overwhelmed capacity and uncertainty about mechanisms for information sharing. At times, there seemed to be sources of intelligence at the state level that was not visible at the regional and local levels. For example, a Melbourne Water liaison was positioned at the State Control Centre (SCC) but those links were not as strong at the incident tier. Similarly, there was intelligence held by crews from local council and VICSES that was not shared as much as possible or used to inform impact assessment processes. Further connections at the local level would have supported greater information sharing. It is important to ensure effective integration and sharing of intelligence across all tiers.

A range of intelligence products were developed to share timely information during the first 24hrs. These products provided good base level data that enabled a rapid understanding of where relief payments were needed.

However, there was a missed opportunity of developing products to share information during the following days, including mapping of the storm impacts and RFAs to inform the focus and prioritisation of response and recovery activities.

In future incidents of this nature, Melbourne Water have committed to release a summary of which councils they have been in contact with and what assistance is required to inform partner organisations. This will assist all parties in determining the correct level of recovery response.

Impact Assessment

Assessment of the storm impact was challenging, particularly given the delays in impact reporting and the difficulty of recognising impacted properties when damage is not visible from the street. This is consistent with other storm incidents, where residents and business owners take some time to recognise and report impact to properties.

Impact Assessment Teams were deployed to gather intelligence about the extent of the damage. They collated important information that could be cross checked against other information sources, including basement flooding and other impacts that weren't previously identified. However, deployment of teams in subsequent days could have identified further impacts, particularly given the delays in reporting and property access during the holiday period.

In addition, Melbourne Water in conjunction with VICSES volunteers deployed ground assessment teams to update modelling and planning. However, this was not integrated into the broader understanding of impacts and there were challenges with information flow to councils.

A greater understanding of the capability of Melbourne Water and councils to support the stages of assessment would lead to more consistent understanding of impacts and greater sharing of knowledge about the local area.

There also was not a single central point for collating and interpreting impact data, which should have been managed at the incident level. Stronger processes were needed to integrate impact assessment data collected by responders, utility companies, Melbourne Water and local councils.

Recovery Coordination

Recovery coordination was not activated at the regional tier for this event. In many cases, this is appropriate because the required connections are at the local council level rather than requiring regional coordination.

However, the potential need for regional coordination was perhaps not visible due to the challenges in impact assessment. The full impact on the community was underestimated for a number of days, leading to a disconnect between scaling down response structures and establishing recovery structures. For example, Melbourne Water activated their incident management structures for recovery activity over a week after the storm.

There were additional challenges because of varying levels of capability, capacity, connection and comfort with sharing information by various the agencies and organisations involved, including local councils and Melbourne Water. It was not clear whether community members were getting the same level of recovery support across different local council footprints.

Community Engagement

The delay in community reporting and the lack of a total view of the impact made it difficult to proactively and collaboratively engage the relevant communities. After this event, there was a significant level of community expectation and a large number of media inquiries.

Information provided to the community through different sources was not always consistent, leading to confusion. There is a need to strengthen the coordination to ensure connected processes are established and public information is based on consistent key messages from a single source.

During community engagement processes (e.g. secondary impact assessment), councils and water corporations reported that there was an emotional impact and stress on personnel who were engaging with the affected community to support the clean up process. In some cases, community members were angry, emotional and struggling with processes of insurance, clean up, water build up and rubbish removal. This was challenging for local officers, particularly where they were not trained to engage with affected communities during and after emergencies.

A range of emergency management organisations have capabilities for providing psychological first aid, outreach support and identifying community psychosocial needs. These services can be provided through the emergency management system but were not enacted by any councils or other organisations in this event.

Role of Melbourne Water

Managing stormwater is complex due the high number of land managers depending on the location (e.g. water corporation, municipality, Parks Victoria and property owners). Melbourne Water is the catchment management authority and the water corporation for the Melbourne area, which means they are the owner and operator of the large drainage network that is fed by the smaller drainage systems of councils (see figure 29). Melbourne Water manage more than 1,400 kilometres of drains, as well as the 8,400 kilometres of rivers and creeks that flow into Port Phillip Bay or Western Port. A further 25,000 kilometres of local drains are managed by councils.

This arrangement for the drainage system is different to most Water Corporations and this difference in roles and responsibilities may not have been well understood across the emergency management sector and by the community.

Melbourne Water received a substantial number of letters, calls and emails in the weeks after the impact. The delay in getting timely accurate information (e.g. size of the event, rainfall intensity data, flood frequency assessment) and proactively engaging with councils contributed to this increase volume of correspondence. To address this need, Melbourne Water established recovery structures for several weeks to manage the emergency work, reporting requirements and higher levels of customers inquiries. These structures were established in isolation of recognised emergency management recovery sector arrangements, which could have provided guidance and support to Melbourne Water if activated.

Figure 29: Diagrammatic explanation of stormwater system

Courtesy of Melbourne Water (https://www.melbournewater.com.au/whatwedo/manageflooding/pages/drainage-system.aspx)

Once these structures were established, Melbourne Water worked locally with VICSES, local council and a range of organisations to engage jointly with residents impacted by the event. Significant work was required to fill the initial vacuum of information by reactively educating and engaging the community. Input and engagement from councils varied, with some councils taking a very proactive approach to flood recovery and others relying heavily on Melbourne Water as the floodplain Manager to undertake clean-up activities. There is a challenge of inconsistency of sharing information and unclear expectations about roles and responsibilities.

Melbourne Water put significant effort into inspecting and clearing drains, communicating with residents, and briefing Ministers and other stakeholders, throughout the event and are continuing to work with a small number of affected residents and stakeholders.

However, regional and state level emergency management recovery agencies did not have visibility of this activity and there was a lack of connection with the broader emergency management sector once the response structures had transitioned.

This disconnect led to duplication in activity between the emergency management structures, VICSES, local councils and Melbourne Water resources. For example, there was an opportunity to better embed and integrate Melbourne Water resources into the emergency management structures at all tiers during the response and recovery phases. There is an opportunity for stronger partnerships and integration at all levels of the emergency management sector to ensure greater connection and information sharing.

Conclusion

This event was a valuable example of the potential impact, possible consequences and long recovery needs of a flash flood event in metro areas. However, this event highlighted that the emergency management sector is not yet mature in integration of information sharing systems and processes, including linking to trusted networks across business and industry.

A range of activities have been undertaken since this event to sustain good practice and address a number of areas for improvement. In particular, the focus has been on strengthening networks across the sector, enabling greater information sharing and clarifying roles and responsibilities. This work will continue to ensure the emergency management sector delivers effective and efficient outcomes that support safer and more resilient communities.

Source

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

Further Information

Melbourne Weather Event - Response Case Study (EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Lesson Sharing)

Case study

ANTHRAX SHEEP BURN

Incident Overview

In February 2017, Whittlesea Fire Brigade in Country Fire Authority (CFA) District 14, attended a livestock burn involving anthrax. The crew was requested to support the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) by securing the burn and patrolling for spotting and fire outbreaks.

Although very few cases of anthrax have been reported in Victoria, it's important that all CFA members are aware of the risks and procedures before entering a property with anthrax.

On 7 February at 18:31hrs, the rostered duty officer (RDO) received a phone call from Agriculture Victoria, DEDJTR, requesting CFA attend a livestock burn. Because the burn was during the Fire Danger Period, a permit was issued and CFA attended to provide fire protection. A suitable area had been identified with limited vegetation surrounding it.

The RDO contacted the State Duty Officer (SDO) and the scientific officer for guidance and precautionary recommendations for the crew attending. The brigade was to stand a minimum 30 metres from the fire, upwind, wear P2 masks (protective masks – class 2, capable of filtering .3μm particles) and to be only used for fire protection. The crew was also given decontamination instructions to follow before leaving the premises.

Whittlesea tankers 1 and 2 and the RDO arrived on the property at 19:47hrs and were well informed and briefed of the situation and the risks before entering the property. The crew supervised the burn from a distance and, by 23:27hrs, all carcasses had been destroyed. The crew then followed the decontamination procedure and returned to Whittlesea Fire Station.

What is Anthrax?

Anthrax is an infectious disease in animals caused by the spore-forming bacteria Bacillus anthracis. It can affect humans and a wide range of animals, though in Victoria almost all cases have been in cattle and sheep.

There are two types of anthrax that can affect humans: cutaneous anthrax and inhalation (pulmonary) anthrax.

A cutaneous anthrax infection enters your body through a cut or other sore on your skin. It's by far the most common route the disease takes. It's also the mildest. With appropriate treatment, cutaneous anthrax is rarely fatal. Signs and symptoms of cutaneous anthrax include a raised, itchy bump resembling an insect bite that quickly develops into a painless sore with a black centre, and swelling in the sore and nearby lymph gland.

Inhalation anthrax develops when you breathe in anthrax spores. It's the most deadly way to contract the disease and, even with treatment, is often fatal. Initial signs and symptoms of inhalation anthrax include flu-like symptoms such as sore throat, mild fever, fatigue and muscle aches which may last a few hours or days, mild chest discomfort, shortness of breath, nausea, coughing up blood and painful swallowing.

When to see a doctor

For CFA members attending an anthrax-infected property, the risk of infection is very low unless you are handling or in close proximity to carcasses. However, if you have any concerns or you have other medical issues that may make you more susceptible to infections, see a doctor immediately for evaluation and care. Early diagnosis and treatment are crucial.

Lessons identified

Other recent livestock burns around the state have not been as successful. To ensure the safety of our members, the following should be considered.

- The RDO should notify VicFire/ Emergency Services Telecommunication Authority (ESTA) if DEDJTR contacts CFA directly.
- The RDO should liaise with the DEDJTR and Agriculture Victoria representatives to ensure CFA member interests are taken into account when determining CFA's commitment.
- The RDO should contact the scientific officer for advice.
- The RDO should discuss the burn plan with the Agriculture Victoria infected premises site supervisor.
- The RDO should also advise the State Duty Officer (SDO).
- Communication between the RDO and brigade is vital, especially if plans change. This will allow the RDO to review the situation and help the brigade.
- A risk assessment must be carried out before entering the property. It's important to understand the risks and have a well-developed plan.
- Monitor the operation and adjust your strategy and tactics if required.
- CFA is a support agency at these incidents. Our role is to support the control agency by providing fire protection. CFA members must never come into contact with infected carcasses.

When working on anthrax-infected properties (and not coming into contact with carcasses) the following hygiene practices must be followed:

- All people should, as a minimum requirement, wear firefighting boots and bushfire personal protective clothing. When supervising the burning of anthrax-infected carcasses, a P2 mask should also be worn.
- All people should practise good hygiene, ensuring they thoroughly wash and disinfect hands and boots at the entry/exit points of the property.
- All vehicles that enter the infected property must be washed down before leaving the property.
- All the above must be undertaken in accordance with instructions from the Agriculture Victoria infected premises site supervisor.

Conclusion

Anthrax burns occur from time to time and it's imperative that all brigade members (supported by the SDO, RDO and scientific officer) are aware of their role and responsibility, and that the agency conducting the burn understands CFA's level of commitment. The safety and welfare of CFA members is paramount.

Source

Adapted from CFA Brigade Magazine Learning from Experience – Winter 2017

(EM-COP Library > Reviews-Lessons > Learning Products > Case Studies and Lesson Sharing)

Case study

VALENTINE'S DAY SOCIAL MEDIA CAMPAIGN

Overview

The use of social media is more prevalent than ever before, with organisations and institutions (including the media) increasingly favouring online communications channels for information gathering and stakeholder engagement over the more traditional forms of media. In many cases it provides greater reach to targeted audiences.

In an emergency, it is crucial that people can easily access the information they need for preparation, response, relief and/or recovery. The speed of the 24/7 social media cycle means online networks often have more information about a disaster than our response teams do. Everyone is a possible source of information to both gather and distribute intelligence with this information flowing rapidly on social media.

Harnessing this information provides unparalleled insights into incidents as they unfold. Importantly, it also allows our emergency management sector to detect issues, engage communities and react accordingly in a timely manner.

The VicEmergency social media channels were piloted in 2015, providing a 'one stop shop' for emergency messaging and information. Since then, the VicEmergency Facebook page, Twitter and YouTube accounts have grown significantly in engagement and follower growth.

The Valentine's Day social media campaign case study demonstrates the diverse way in which the VicEmergency social media channels are engaging communities to provide not only warnings and community information before, during and after emergencies, but are harnessing the power of social media to strengthen VicEmergency brand awareness, drive audience growth and bolster online engagement through the use of non-traditional content.

What happened?

Valentine's Day – the annual day where love is celebrated all around the world!

On Valentine's Day 14 February 2017, the VicEmergency social media channels engaged online communities through a series of humorous Valentine's Day-themed posts.

This was the first campaign of its kind for the VicEmergency social media channels, which has traditionally focused on communicating community and hazard warnings information relevant to before, during and after emergencies.

The aim of the campaign was to extend the reach and drive engagement and brand recognition of the VicEmergency social media channels through targeting and engaging new online audiences with unconventional, light-hearted content.

On the day, VicEmergency launched its Valentine's Day campaign by sharing a post at 9:00hrs warning of numerous reports of lonely hearts across the state. The post was accompanied by a map of Victoria in the style of the VicEmergency website, detailing the various locations of the reported incidents of lonely hearts across the state (see figure 30).

Figure 30: VicEmergency's first social media post displaying incidents of lonely hearts across the State, and its related statistics

VicEmergency's First Social Media Post for its Valentine's Day Campaign, Displaying Incidents of Lonely Hearts across the State

76,723
Reach

1,200 likes
(including 94 "loves")

177 shares

84 comments

10,921
Impressions

80

29

3

Figure 31: VicEmergency's second social media post displaying the operational response to lonely hearts across the State, and its related statistics

VicEmergency's Second Social Media Post in its Valentine's Day Campaign showed the Operational Response to the Reported Incidents of Lonely Hearts across the State

41,780
Reach

845
(including 76 "loves")

94 shares

34 comments

15,966
Impressions

115

58

3

Soon after, the VicEmergency social media channels shared a follow up post at 09:30hrs, reporting the timely operational response from the state's aircraft capability, containing the incidents of lonely hearts around the state through the air-drop of love-related emoji's. The post was accompanied by an image (see figure 31) featuring a Large Aircraft Tanker (LAT) dropping a range of Valentine's Day related emoji's including hearts, chocolates and flowers to the affected areas.

What worked well?

This was the first campaign of its kind for the VicEmergency social media channels, and post-campaign analysis has shown it drove significant engagement with online audiences and boosted VicEmergency's online followers (see figure 31).

Both posts generated high levels of engagement through likes, shares and comments from members of the public, the media and other emergency service agencies.

The nature of Facebook allowed for large amounts of comments and friend-tagging, with people having a lot of fun with the concept of a state-wide love emergency. VicEmergency responded to comments where necessary or appropriate.

The second post was not only great for brand awareness and reflective of the operational side of VicEmergency, but also retained audience engagement and sparked online interaction between the other agencies. For example, Victoria Police (VicPol) issued a warrant for Cupid in the comment section of the VicEmergency post, which sparked great community engagement and attracted numerous positive responses from the public who enjoyed seeing the agencies engaging in light-hearted banter.

The Valentine's Day social media campaign resulted in 259 new Facebook page likes and 35 new Twitter followers across the VicEmergency social media channels (during the period of 14 February 2017 – 15 February 2017). The campaign enabled a new way to engage with community members and online audiences using non-traditional, light-hearted content, sparking interest from community members who had previously not engaged with VicEmergency social media channels.

What should we do next time

Based on the positive feedback received from community members who enjoyed the light-hearted banter between agencies, VicEmergency could look to coordinate more light-hearted social media campaigns involving other agencies in the future to further drive audience engagement and brand recognition.

Conclusion

In conclusion, the VicEmergency Valentine's Day social media campaign was innovative and the first of its kind across the VicEmergency social media channels.

Post campaign analysis demonstrates the campaign was a success (generating 259 new Facebook page likes and 35 new Twitter followers across the VicEmergency social media channels) and resonated with online audiences who enjoyed the light-hearted, humorous nature of the campaign. Positive comments from the community indicate they enjoy seeing the agencies engage in light-hearted banter.

The campaign was successful in achieving its objectives of increasing brand awareness, driving audience engagement and boosting the VicEmergency's follower base.

Source

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

Further Information

VicEmergency Website (https://emergency.vic.gov.au/respond/)

Case study

ESSENDON FIELDS AIRCRAFT CRASH

Incident Overview

At 08:58hrs on 21 February 2017, Metropolitan Fire Brigade (MFB) appliances were responded to a Fire Indicator Panel (FIP) at the Direct Factory Outlets (DFO) shopping centre at 100 Bulla Road, Essendon Fields. Moments later, Emergency Services Telecommunication Authority (ESTA) operators were inundated with calls to Triple Zero (000) with reports of a light plane crashing into the side of the Essendon Fields DFO building with subsequent explosions. On responding to the incident from Sunshine Fire Station, the Western District Operations Commander immediately observed a large smoke plume and enhanced the MFB response to a structure fire, third alarm.

The aircraft involved was a Beechcraft King Air 200 - which had just taken off from Essendon Airport bound for King Island - with a pilot and four passengers on board. The pilot reportedly transmitted a mayday call immediately after take-off, shortly before the aircraft crashed into a loading dock area at the rear of the Essendon Fields DFO building, with the burning fuselage coming to rest adjacent to the inbound lanes of the Tullamarine freeway. The Tullamarine freeway was busy with traffic in the morning peak, and oncoming appliances and command staff had some issues accessing the scene due to the traffic gridlock.

Initial responding crews focused firefighting efforts on containing a structure fire to the loading dock area of the building, which was caused when the significant amount of aviation fuel on board the aircraft exploded on impact. The impact of the collision damaged several sections of tilt-slab concrete wall, compromising the structural integrity of the loading dock area, making firefighting operations more complex; the installed fire protection sprinkler system was also damaged by the impact.

On arrival, crews reported the aircraft fuselage was fully involved in fire from the explosion, but was not directly impacting any other buildings. A passenger vehicle was also on fire in the adjacent parking area. The Tullamarine freeway was subsequently closed to traffic due to debris on the road and proximity to the incident.

Due to the time of day, the Essendon Fields DFO complex was closed to the public at the time of the incident with no injuries reported and only several staff members in the building – all of whom safely evacuated. The MFB response culminated in a structure fire, fourth alarm with approximately 20 appliances on scene - including aerials, Hazardous Materials, and Breathing Apparatus (BA) units, and multiple command staff. MFB's Remote Piloted Aircraft System (RPAS) drones were utilised to gather on scene intelligence relating to building integrity and fire spread.

What worked well?

MFB utilised resources from a range of other Emergency Services Organisations (ESOs) and support agencies including: Aviation Rescue Fire Fighting (ARFF), Ambulance Victoria (AV), the Salvation Army, State Emergency Service (VICSES) and Victoria Police (VicPol). The response from these agencies assisted in bringing the fire under control, prior to transferring incident control arrangements to VicPol to coordinate investigations into the crash.

ARFF resources were requested to attend in order to provide expertise on the aircraft fire, specifically relating to the potential presence of composite fibres – which present a significant health risk to responders and the surrounding community. Although it was later determined that composite fibres were unlikely to be present in this particular aircraft, rigorous decontamination procedures were implemented to ensure firefighter safety.

The MFB Incident Controller (IC) appointed a Deputy IC to focus on consequence management. The IC also appointed a liaison to feed information to Regional and State representatives - allowing the IC greater focus on resolving the incident. The Public Information function was also a priority, with a Public Information Officer (PIO) appointed early in the incident with a representative from MFB Media and Communications attending both the incident scene and District Command Centre (DCC). This was a key learning from the Broadmeadows Tyre Fire in January 2016, and an area in which MFB have sought to mature.

Agencies responding to the Essendon DFO Aviation Crash. Courtesy of Metropolitan Fire Brigade (MFB).

MFB's DCC was stood-up and functional roles established to mirror the on-scene Incident Management Team.

A post-fire investigation by the MFB Building Inspection and Compliance department identified that the installed fire protection system in the warehouse initially worked well to limit the internal spread of the fire from penetrating into the tilt slab building – which housed a furniture showroom and Spotlight store. Should the sprinkler have been rendered ineffective after the initial impact, the high fire load in the premises could have resulted in a substantially larger fire.

What we could improve on

An MFB Assistant Chief Fire Officer (ACFO) arrived on scene at 09:18am to assume the role of IC. He identified at least 30 police officers on scene, however initially had some trouble forming an Emergency Management Team (EMT) with VicPol because they appeared to be establishing control in isolation to other agencies.

Initial conversations between the MFB IC and Senior VicPol Command at the incident scene highlighted some misconceptions about which agency was to assume the role of control agency, as per the Emergency Management Manual, Victoria (EMMV). Although MFB's position as the control agency was clarified and confirmed by the Senior Police Officer and MFB State Agency Commander (SAC) at the State Control Centre (SCC), there was still some confusion around control arrangements particularly in initial EMT meetings. This issue was compounded somewhat by mechanical issues with the MFB Control Unit, preventing early establishment of a physical MFB control presence to provide a recognisable contact point for external agency representatives.

The MFB Operations Officer reported VicPol Critical Incident Response Team (CIRT) attendance at the forward control point, requesting to remove any deceased persons. This occurred whilst firefighting operations were still underway and was discouraged.

Agencies responding to the Essendon DFO Aviation Crash. Courtesy of Metropolitan Fire Brigade (MFB).

The Operations Officer had implemented measures to restrict access and preserve the incident scene, and all persons from the building had been accounted for. This highlights a lack of communication between agencies about role clarity.

In the debrief process, some internal issues surrounding communications and allocation of radio channels were exposed, which resulted in communication issues between operational firefighters at the incident.

What we should do next time

A debrief was conducted involving operational personnel, command staff and ARFF representatives. ARFF praised MFB in their response to a complex and challenging incident. Some discussion centred on the potential use of foam in the firefighting operations, with positives and negatives discussed.

A focus on firefighter safety is a key aspect of the response to any major incident, and the implementation of strategies to ensure this should be sustained. Key safety strategies employed in this incident included: atmospheric monitoring - to ensure flammable atmospheres were not reached; firefighter decontamination - to prevent potential exposure to composite fibres; and the response of ARFF personnel as subject matter experts in aircraft construction.

The issues surrounding control arrangements highlight the importance of agency's understanding of their obligations and responsibilities under Part 7 of the EMMV. In this instance, lack of a distinct MFB command and control point (mobile) facility compounded the issue.

The division of multiple fireground communication channels being allocated incorrectly, was captured during MFB's internal debrief process and has been investigated and rectified through the appropriate department.

Conclusion

This incident highlighted the complex nature of response to a high consequence incident involving multiple agencies. It emphasized the need for continued communication and collaboration between agencies, and a thorough understanding of each agencies obligations and responsibilities under the EMMV.

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Case study

USE OF SOCIAL MEDIA IN DARGO FIRES

Incident Overview

Two bushfires were ignited by remote lightning strikes in state forest north-west and south-west of Dargo in Gippsland on 12 March 2017. The fires ran for almost three weeks, reaching 3066 and 240 hectares in size before being contained at the end of March.

A Public Information Section was established, with a Public Information Officer (PIO), a Media Officer/ Social Media Officer (MO/SMO) and a Community Liaison Officer, supported by other personnel working in the affected communities.

The MO/SMO's responsibilities included providing information to the local and broader community about the fire situation using the Department of Environment, Land, Water and Planning (DELWP) Gippsland regional Facebook page.

This was the first time a DELWP regional Facebook page had been used to provide proactive and continuous incident information about a fire, managed from the Incident Control Centre (ICC).

Information posted on the Facebook page complemented incident information provided to the public through the Information and Warnings system, through media releases distributed to local media outlets, and through Community Liaison Officers engaging directly with affected community members.

What worked well?

The local affected community received timely, tailored and relevant information via social media throughout the incident, complementing traditional media activities and direct community engagement. The same information reached a much broader audience, providing updates for family and friends away from the incident and creating interest in the management of the fires on public land and the crews and resources involved.

Crews on the ground and in incident management roles readily provided photos and videos through the recently developed private Facebook group set up for Forest Fire Management Victoria (FFMVic) firefighters to share information and lessons. The MO/SMO was also sent images directly.

The community received rich, visually engaging content to show what was happening behind the scenes as a result of FFMVic staff providing this content so readily.

The mapping team also provided excellent up-to-date maps for posting on the Facebook page which were well received by public.

The MO/SMO in the Public Information Section for the first seven days of the incident was well trained and confident to use social media – this was part of her day to day role as Regional Media and Communications Adviser for DELWP.

The MO/SMO had quick and easy access to operate a local social media page, given she ran the page on a day to day basis in her normal role.

What could we improve on

The Social Media Officer needs to have local knowledge, fire knowledge, organisational awareness, communications skills and experience and efficiency in managing and editing words, photos and videos for social media.

They also need to be 'savvy' about social media when deciding what to post and when/who to tag, along with being aware and respectful of local issues and communities.

Consistency is needed for approval by the Incident Controller (IC) to release information externally and more robust sign off processes, particularly for images and videos being provided from the ground. There was so much content coming in, which was a positive thing, but it comes with challenges.

Fire on Billy Goat Bluff Track. This photo reached over 172,000 people on Facebook and sparked numerous comments and questions.

More streamlined processes for which information goes on a state-based page and which goes on local page – e.g. VicEmergency vs FFMVic Facebook vs DELWP Gippsland.

Greater clarity on social media support role provided from a state level, the relationships and responsibilities involved and how they work together.

There is a need for more refined protocols for managing a regional Facebook page for an incident, looking at the differences in how it is run for 'business as usual'. It also raises community expectations about the ability of an organisation to provide incident information, and could potentially lead to confusion about the main central source of emergency information – which state wide is promoted to be the VicEmergency channels.

More social media training is needed for regional public information staff, in particular Media Officers.

Existence of an ICC Social Media Manual would have been hugely beneficial to be clear on what to do and when.

What would we do next time

- Ensure the Social Media Officer has readily available ICC social media resources – such as an ICC social media manual – to manage social media effectively.
- Ensure timely, adequate and effective social media resourcing of the ICC Public Information Section.
- Provide greater clarify of roles, responsibilities and relationships within and between the ICC and State Control Centre (SCC) Public Information Section.

Conclusion

Social media is fast becoming the main channel to provide our communities with timely, tailored, relevant and useful information about emergency incidents.

It is a huge and hungry beast and needs knowledgeable and experienced officers to manage it, while promoting and maintaining the credibility and reputations of the agencies involved.

This case study highlights the huge benefits of locally managing social media from an ICC, along with the need for more resources and more training for ICC Public Information Sections.

If we do not resource incidents appropriately for social media, the public and media will fill the information vacuum, and we will have to work harder to correct misinformation.

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Case study

DEPLOYMENT OF VICTORIAN RESPONSE AND RECOVERY PERSONNEL TO TROPICAL CYCLONE DEBBIE

Incident Overview

Tropical Cyclone Debbie, a category four cyclone, made landfall on the central Queensland coast, near Airlie Beach, around midday on 28 March 2017. From 29 to 31 March 2017, the weather system generated significant heavy rain and major flooding causing impacts to the heavily populated areas of South East Queensland and Northern New South Wales.

As at 1 April 2017, Queensland State Emergency Service (QLDSES) had received more than 25,659 calls for help. The Queensland Government had completed 4,660 Rapid Damage Assessments, predominantly in the Proserpine, Airlie Beach and Bowen regions.

Based on a request from Queensland authorities, response personnel were deployed to Queensland on 28 March 2017. Two deployments of recovery personnel were deployed to Queensland from 9 April and 22 April 2017 respectively to support recovery activity. This was the largest mobilisation of recovery personnel from multiple jurisdictions in our history and the first time a Victorian recovery deployment had been managed through the Interstate and International Liaison Unit (IILU) in the State Control Centre (SCC).

What worked well?

Feedback collected through the online deployment survey and operational debriefs indicated that the deployment was a very worthwhile experience for both response and recovery personnel. The Victorian arrangements were reported to be well managed, executed in a timely manner and fulfilled the service requirements of the initial request from Queensland.

The survey of response and recovery personnel deployed also indicated:

- Over 80% of all survey respondents were satisfied or very satisfied with the expression of interest process prior to the deployment.
- 79% of survey respondents from the recovery deployment were satisfied with the level of information received prior to the deployment, with 11% neutral and 11% dissatisfied. However, 50% of survey respondents from the response deployment were satisfied with the level of information received prior to the deployment, with 40% neutral and 10% dissatisfied.
- Over 80% of all survey respondents were satisfied or very satisfied with the transport and/or accommodation provided to the incident (response and recovery personnel).
- Approximately 70% of all survey respondents were satisfied or very satisfied with the level of local knowledge and experience available.
- Over 80% of all survey respondents were satisfied or very satisfied with the transport and accommodation supplied during the deployment.
- Over 85% of all survey respondents were satisfied or very satisfied with the management of safety and fatigue during the deployment.

- Over 60% of all survey respondents were satisfied or very satisfied with level of support from the Victorian Liaison Officers, with 20% dissatisfied and 20% neutral or not applicable.
- Approximately 90% of all survey respondents were satisfied or very satisfied with the information received regarding transport back to their home location.

What could we improve on?

There were a number of areas for improvement identified, particularly in relation to the level of information provided prior and during the deployment.

The survey of response and recovery personnel deployed indicated:

- 40% of survey respondents from the response deployment were satisfied or very satisfied with the level of information and equipment provided to undertake their role, with 50% dissatisfied or very dissatisfied. 64% of survey respondents from the recovery deployment were satisfied or very satisfied with the level of information and equipment provided to undertake their role, with 11% dissatisfied or very dissatisfied.
- 40% of survey respondents from the response deployment were satisfied or very satisfied with information flow, with 50% dissatisfied or very dissatisfied. 68% of survey respondents from the recovery deployment were satisfied or very satisfied with information flow.

Analysis of survey responses for the response and recovery deployment also identified the following areas for improvement:

- There was some inconsistency in the Expression of Interest processes, particularly in relation the timing of requests and notifications of deployment details through some agencies or department areas.
- Prior to deployment, personnel would have liked more information about emergency management arrangements in the host jurisdiction, including role of local government, the interface between agencies, terminology, processes and host agency procedures.
- Personnel would have also liked more information on what to expect at location, deployment timelines, tasks to be undertaken, logistics arrangements, type of accommodation and process upon arrival in receiving destination, although there was acknowledgement that this information is often not available prior to deployment.
- Some personnel reported that initial briefings by the host state did not provide enough information about the required tasks, logistics arrangements, contact details, connection into local organisations and services or intelligence from previous crews (e.g. location access, road blockages).
- There was a reliance on contact methods that were only accessible at work locations (e.g. work email addressed) rather than using contact details that were accessible after hours.
- The appointment of ‘team leaders’ or ‘field liaisons’ could have been more consistent and briefed with clearer expectations about their role.
- Some personnel found the shared sleeping arrangements during the recovery deployment challenging and disruptive.

What did personnel learn on deployment?

Personnel identified a number of personal learnings from the deployment, including:

- Value of being open to any opportunities and having individual resilience by being aware of personal limits.
- Importance of flexibility, adaptability and 'going with the flow', particularly when things are not going to plan.
- Insight into the structure of Queensland's emergency management arrangements and the relationship between the various organisations.
- Benefit of seeing how other agencies work under pressure and greater understanding of processes of emergency management in other jurisdictions.
- Great opportunities to learn and identify processes that could be applied in Victoria.

Strike Teams deployed to South Australia.
Courtesy of Emergency Management Victoria.

Conclusion

The comprehensive support provided to deployed personnel resulted in the majority of respondents to the deployment survey stating that they were either satisfied or very satisfied with their deployment experience. The processes developed to support response deployment through the SCC were appropriately and successfully adapted for the recovery deployment.

Nevertheless, the survey responses indicated that it is important to clarify expectations for the deployment as early as possible (taking into consideration the usual time pressures), provide as much information as possible about the host state's arrangements and minimise confusion about the equivalence of roles between jurisdictions.

In preparedness for further deployments, there is opportunity to have a national discussion to mature interstate resource sharing and to further improve Victoria's interstate liaison unit processes and arrangements to support all response and recovery interstate deployments.

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Case study

GREAT OCEAN ROAD BUS FATALITY

Incident Overview

The Great Ocean Road is an Australian National Heritage listed 243 kilometres stretch of road along the south-eastern coast of Australia between the Victorian cities of Torquay and Allansford. On Monday 10 April 2017 at 17:10hrs a fatal bus collision occurred 14 kilometres west from Apollo Bay, more specifically two kilometres west of Binns Track. The 28 seat tour bus from a private company in Melbourne was transporting a delegation of Taiwanese officials, including four children, from Melbourne towards the 12 Apostles, planning for a sunset viewing, after attending a World Taiwanese Chamber of Commerce conference conducted at Crown Casino. An unregistered fully enclosed box trailer was being towed. At the time of the collision the roads were wet, speed zone was 100km/h and weather conditions were poor. Due to the severe weather conditions the night before, a number of back roads were blocked with fallen trees.

After stopping at Apollo Bay for a late lunch around 15:30hrs the bus had travelled approximately 14 km west along the Great Ocean Road when the collision occurred. Whilst travelling downhill and negotiating a left curve in the roadway the bus has travelled off the road to the left and into a soft gravel shoulder. The driver has possibly overcorrected losing control which further resulted in the bus crossing the road to the right, rolling onto its passenger side and impacting trees on the side of the carriageway.

Two rear seated passengers, not wearing seatbelts were ejected under the bus. The deceased received fatal head injuries whilst the second passenger received serious non-life threatening injuries and was transported by Helicopter Emergency Medical Services (HEMS) to the Royal Melbourne Hospital.

A number of emergency service and support agencies were involved as a result of this collision including:

- Victoria Police (VicPol) - local resources and the Major Collision Investigation Group (MCIG);
- Country Fire Authority (CFA);
- Victoria State Emergency Services (VICSES);
- Vic Roads;
- Ambulance Victoria (AV);
- The Coroner;
- Colac Otway Shire (Municipal Emergency Response Officer – MERO);
- Department of Health and Human Services (DHHS);
- Otway Health;
- Barwon Health; and
- The Taipei Economic and Cultural Office in Melbourne.

A 38 year old male was removed from the scene and conveyed to the Coroners Court, whilst eight patients were transported to Otway Health Urgent Care Centre. Seven were later transferred to Barwon Health (Geelong). The driver was admitted, under police guard and then discharged the following morning. Remaining bus occupants were provided with meals, necessary assistance and overnight accommodation at Apollo Bay. The following day all uninjured passengers were taken to the State Primary School where statements were taken, personal property returned, and consulate support provided and travel back to Melbourne was arranged.

Due to the nature of the investigation, safety concerns, weather conditions and lack of natural lighting, the accident scene was secured overnight for thorough examination in the morning. Consequently the Great Ocean Road remained closed until approximately 14:00hrs the following day. This type of incident attracted a great deal of media attention because of the social, political, economic, national and international implications. At the time of writing this case study it is to be noted that police continue to investigate the circumstances surrounding the reason for the bus accident.

What worked well?

Team work amongst individual agencies and co-jointly between emergency service providers, the health sector and the community was exceptional. The community united to assist all parties involved by supplying accommodation, food, comfort and opening up the local pharmacy to supply necessities in this instance: baby formula.

VicPol as the Incident Controller (IC), under trying conditions, effectively coordinated this incident minimising any further harm to all persons involved, particularly during the response and relief and recovery phases. Consular officials involved were very complimentary in their feedback.

The decision to close the Great Ocean Road was sound and based on the safety of emergency service personnel, site conditions, slope of the road and investigation and evidence necessity. Vic Roads enacted the existing Traffic Management Plan (TMP) to close the Great Ocean Road and even though the road closure was for a 21 hour period there were no further accidents and nil complaints from those that were affected. Vic Roads undertake regular site inspections along the Great Ocean Road and the numbers of inspections are increasing. There were no remedial works required on the road at the incident site.

The MCIG, Coroner and Taiwanese Consulate staff attended the site and provided the necessary assistance including: support and assistance with the relief and recovery phase; and language translation if required. Otway Health was fortunate to have a nurse assisting that could speak Mandarin, although language did not appear to be a barrier.

Danger Zone – Scene of the bus crash at Glenaire. Photo courtesy of Channel Nine.

Danger Zone – Scene of the bus crash at Glenaire. Photo courtesy of Channel Nine.

AV is currently working towards expanding their services to cover more of this area, which is making a huge difference in responses to incidents. CFA and VicPol are collaboratively working on improving the command and control model at incidents which includes the identification and use of key facilities, relief and recovery services. Additionally the Great Ocean Road Working Party continues to work in unison with Tourism Victoria; Vic Roads; Parks Victoria and local governments to identify, assess and address regional risks and consequences to ensure effective emergency management planning. Stakeholder relationships are strong and communication is a key topic of this working party.

What could we improve on?

Initial response and attendance at the incident site was delayed somewhat by VicPol because of communications regarding the exact location of the incident site. Units were dispatched from Lavers Hill on the belief that the accident had occurred at Glenaire but the actual scene was closer to Apollo Bay and it would have been quicker and safer for units to have been assigned from Apollo Bay.

Whilst AV and CFA were on scene and either triaging patients and/or directing traffic further response units had to be directed through the crash scene. To further complicate this problem all emergency service agencies experienced a lack of reception for the use of radio's and mobile phones. Onsite communications was virtually non-existent with the accident site sitting in a black spot. CFA later confirmed that there are a number of Telstra towers, power lines and battery systems not working. Personnel had to relocate away from the scene to enable communications. This issue resulted in the following consequences:

- hindered the sharing of accurate and timely information to Otway and Geelong Health;
- the heightened significance and size of the incident was not recognised;
- there was a lack of messaging being supplied to Vic Roads, principally about the length of the road closure which hindered public messaging on the VicTraffic site;
- the Police Emergency Event Coordination (PEEC) system was not utilised; and
- additional VICSES crews were cancelled.

It was recognised that at a regional and incident level there needed to be improvement in communications through a Regional Emergency Management Team (REMT) teleconference. Incident Emergency Management Team (IEMT) meetings occurred. The use of the standing REMT teleconference arrangements would have supported information sharing and alleviated some of the communication gaps over the longer term.

Unfortunately, through miscommunications the Municipal Emergency Response Officer (MERO) whilst notified was not fully engaged until the second day. Communications had been previously relayed that passengers were being transported back to Melbourne as soon as possible the night of the accident and that they would not need accommodation. This was not to be the case as all passengers were required to be spoken to by police from the MCIG and property from the trailer and bus needed to be returned. Furthermore with incidents like this people often run on adrenaline and don't appear to be sore or injured until a later time.

There can be short and long term psychological effects and the ongoing care and wellbeing of people involved in the incident was paramount. Consequently accommodation for the night was arranged and the local primary school was used the following day, albeit a cold basketball stadium. Passengers were reluctant to travel on another bus to a warmer location so the MERO was beneficial in mitigating this issue by providing blankets and food as necessary. Clear and vital communication is a key factor in any incident and unfortunately communications hindered the full involvement of local government in this circumstance.

Conclusion

The 12 Apostles is the third most visited tourist destination site in Australia with the average number of visitors per day approximating 5,300. There has been a noticeable increase in the number of international tourists visiting this destination over the last two years and what can have significant consequences is the lack of awareness regarding the Great Ocean Road topography.

Drivers are often of the belief that a day trip to the 12 Apostles is an easy drive. Evidence is starting to present that accidents occur because of driver distraction, failure to obey road rules and / or driver fatigue. This coupled with extremely poor weather conditions heightens this risk. It is obvious that there are a number of significant challenges regarding the Great Ocean Road however stakeholders will continue to work together as one to address these issues. Emergency management exercising, training and scenario planning will continue to occur through the regional team and the Great Ocean Road Working Party.

Source

Adapted from the VicPol Case Study

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Case study

THUNDERSTORM ASTHMA

Background

A Class 2 Emergency is defined within the Emergency Management Act 2013 as a major emergency which is not a) a Class 1 emergency; or b) a warlike act or act of terrorism, whether directed at Victoria or a part of Victoria or at any other State or Territory of the Commonwealth; or c) a hi-jack, siege or riot.

During 2016-17 financial year, there were significant Class 2 emergencies including a Ross River Virus Outbreak (over 1,900 people were affected by the mosquito-borne infection across Victoria), an Anthrax Outbreak in Swan Hill which resulted in the loss of over 100 sheep, and the Norwegian Star Cruise Ship losing propulsion off the Victorian coastline in February 2017 which impacted over 3000 passengers and crew.

One of the most significant emergencies during this period was the unprecedented epidemic of Thunderstorm Asthma in November 2016.

Incident Overview

Monday 21 November 2016 was Victoria's hottest day since March, earlier that year. As the temperature in Melbourne approached its maximum of 35°C, the Bureau of Meteorology (BoM) issued a severe thunderstorm warning at 1:58hrs for damaging winds, heavy rainfall and large hailstones in Victoria's Mallee, South West, Wimmera and Northern Country forecast districts. At 4.00pm, BoM extended its warning to other parts of Victoria, including Geelong and Melbourne.

As the storm moved east across Geelong and Melbourne, the Emergency Services Telecommunications Authority (ESTA) experienced a surge in Triple Zero (000) calls. Ambulance Victoria (AV) and hospital emergency departments across Melbourne experienced an unprecedented surge in people suffering shortness of breath, with respiratory or asthma related symptoms. Initially, the cause of this surge was unknown.

The Department of Health and Human Services (DHHS) and AV worked together to manage the event on 21 November 2016. DHHS was responsible for ensuring that the health system continued to operate as effectively as possible, AV rapidly increased resources to meet its key responsibility in responding to members of the public seeking pre-hospital paramedic assistance.

At approximately 20:00hrs on 21 November 2016 the control agency, DHHS, activated elements of the State Health Emergency Response Plan (SHERP). At this time, there was minimal understanding of the number of people affected and the severity of the consequences.

The thunderstorm asthma event affected the health of thousands of Victorians and unfortunately, is thought to have contributed to the deaths of nine people. Over the two days of the event (21–22 November 2016), 3906 people sought assistance from AV, which was 955 more than the previous week. 9909 people presented at public hospital emergency departments in metropolitan Melbourne and Geelong (58 per cent more than expected, based on the three year average).

While thunderstorms have previously been linked to asthma epidemics, there are no known recorded events with the severity of consequences associated with Melbourne's thunderstorm asthma event of 21 November 2016. Of the globally-documented episodes of epidemic thunderstorm asthma, fatalities appear rare.

IGEM Review

The Minister for Emergency Services and Minister for Health and Ambulance Services requested that the Inspector-General for Emergency Management (IGEM) undertake a review into the emergency response to this event. On 27 April 2017, the Victorian Government released the IGEM's Review of response to the thunderstorm asthma event of 21-22 November 2016 Final report.

The review identified that there was no prior evidence to suggest that the storm would result in a health emergency of such scale and consequences, and that Victoria had no way of predicting the likely extent, or duration of the event.

In the review findings, the IGEM confirmed that never before had hospitals, ambulance services and emergency call takers experienced such rapid-onset demand in such a condensed time period, and across such a large geographical area. It found AV received the largest number of requests for assistance within the shortest period in Victoria's history.

The review acknowledged that all those involved in responding to the event did a remarkable job in dealing with the unexpected and unprecedented demand for assistance. The review focussed on identifying opportunities to learn from this event in order to improve future preparedness and response arrangements and performance. The report also identified a number of opportunities to strengthen arrangements to respond to health emergencies.

The Government accepted in-principle all 16 recommendations in the report, with work occurring to implement many of them prior to the start of the following pollen season (1 October 2017).

Review of response to the thunderstorm asthma event of 21-22 November 2016 Final report. Courtesy of the Inspector-General for Emergency Management.

Progress

In June 2017, an inter-agency working group was established to oversee the Government's response to the IGEM recommendations, chaired by DHHS. IGEM will monitor implementation of the recommendations and provide a report to the Minister for Emergency Services and the Minister for Health and Ambulance Services by 4 May 2018.

To minimise the harm to Victorians from future epidemic thunderstorm asthma, the following measures will be in place by 1 October 2017:

a. a new State Health Emergency Response Plan

b. early detection and monitoring of emergency department demand

c. an epidemic thunderstorm asthma forecasting and warnings system

d. public health communications, engagement and education.

The fourth edition of the State Health and Emergency Response Plan (SHERP4) represents a significant shift in the current arrangements by introducing a strategic, system-wide view of health emergencies which responds to many recommendations from the IGEM review.

The SHERP4 strengthens health emergency response communication and coordination activities between DHHS and other agencies and within the health system. It also introduces a risk assessment methodology for early escalation of emergency responses and activation of an Incident Management Team (IMT) when the health system is under pressure due to emergency events of an unknown cause.

The response to large-scale emergencies such as the Thunderstorm Asthma Event will also be strengthened through other significant activities including the development of a real-time emergency department presentation monitoring system that will provide early warnings of potential health emergencies. As of 30 June 2017, 20 metropolitan and rural public hospital emergency departments are providing live data into the system which provides improved capability to monitor health service demands. Thresholds have been built into the system to trigger an alert when the usual numbers of presentations have been exceeded over a specified period of time, enabling the DHHS to efficiently escalate its emergency response. A further 18 emergency departments are anticipated to be on the system by the end of 2017.

A robust thunderstorm asthma forecasting system will enable warnings to health services to be prepared for possible surges in people experiencing asthma symptoms.

Example of the public health communications, engagement and education. Courtesy of Better Health Channel.

It will also assist in providing the community with information about imminent potential events.

Work is also underway to improve intelligence gathering and dissemination of information across the emergency management sector before, during and after major health emergencies.

Other activities undertaken in 2016-17 to reduce the impact of health emergencies on the Victorian community included:

- The development of a (pilot) cold weather alert system and policy for responding to people who are sleeping rough in extreme weather. The pilot alert system provides an early notification to homelessness organisations and their partners when extreme cold weather conditions are forecast.
- The development of a plan for a coordinated prevention, health promotion and education campaign to raise awareness among the community and health providers about epidemic Thunderstorm Asthma. The campaign commenced roll out in the next financial year (2017-18) and will continue throughout the following pollen season.
- Continued public information campaigns around protecting health during emergencies; including Survive the Heat, Smoke and Your Health, Beat the Bite, and the development of a Thunderstorm Asthma awareness campaign.
- Enhanced surveillance techniques and control measures for early identification of mosquito borne diseases.

Conclusion

The epidemic thunderstorm asthma event that swept through parts of Victoria on 21–22 November 2016 challenged all involved and generated a collaborative response, which demonstrated what can be achieved when confronted by unexpected conditions across a geographically dispersed area with little preparation time.

A key lesson from this event was that an unexpected, rapid-onset emergency can occur and the cause may not be obvious, familiar or visible. The emergency management sector must maintain a focus on developing the capability and capacity to prepare for and respond effectively to any form of unexpected emergency.

Significant work is continuing to improve the management of Class 2 emergencies, including substantial activity relating to Thunderstorm Asthma and the fourth edition of the SHERP4.

Source

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Further Information

Emergency Management *Operational Review* 2016-17 Section 1 – *Significant Incidents / Incidents of Note* (https://www.emv.vic.gov.au/how-we-help/reviews-and-lessons-management/emergency-management-operational-reviews)

IGEM Review of response into the thunderstorm asthma event of 21-22 November 2016 (http://www.igem.vic.gov.au/home/our+work/reviews/review+of+the+thunderstorm+asthma+event+2016)

Section 3: Themes and Insights

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

- Theme Updates – Identified as part of the ongoing cycle of learning and improvement. These themes have been updated based on what has occurred during 2016-17
- Emerging Trends – Identified through the data analysis as additional areas that need to be considered during 2016-17.

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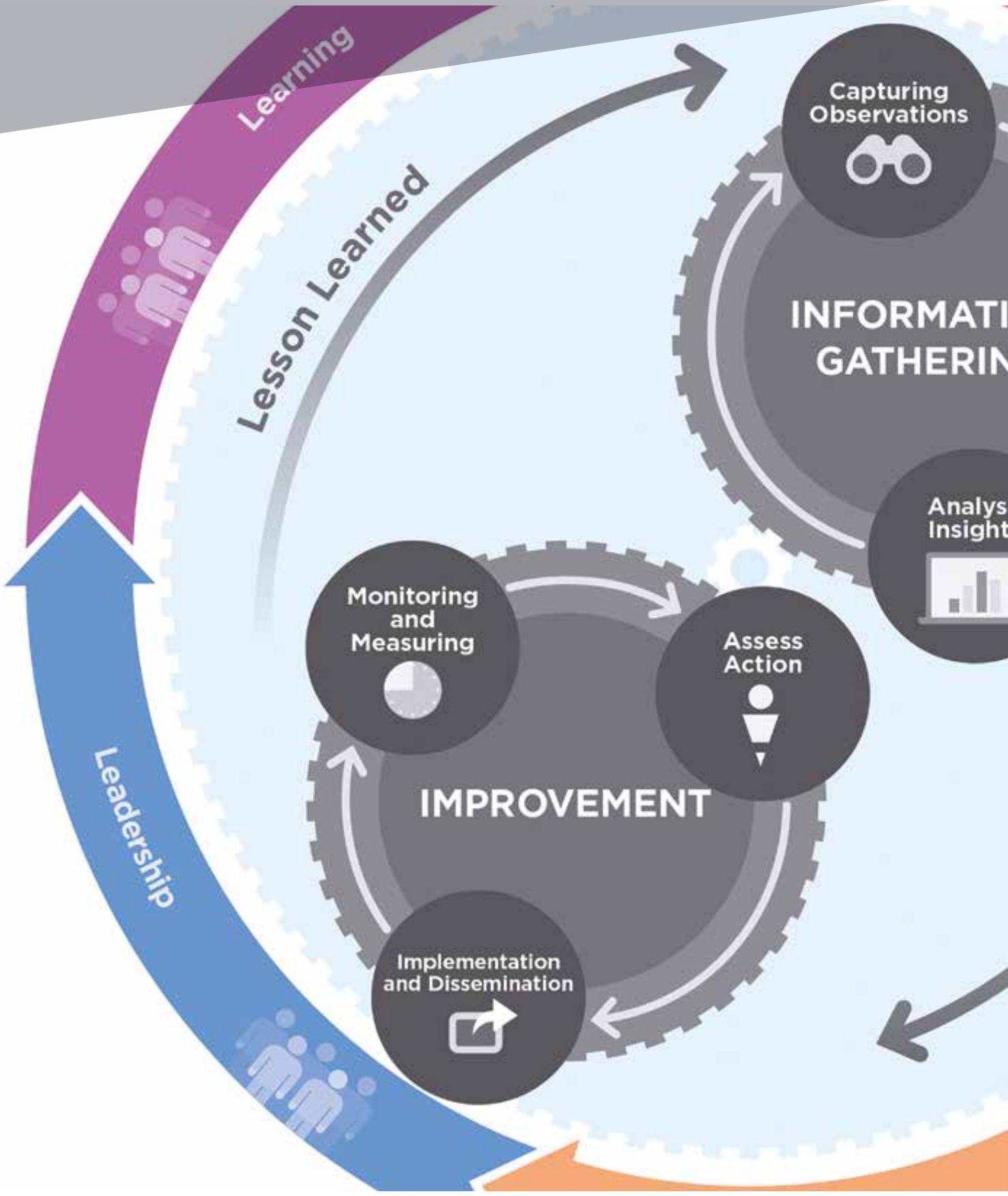
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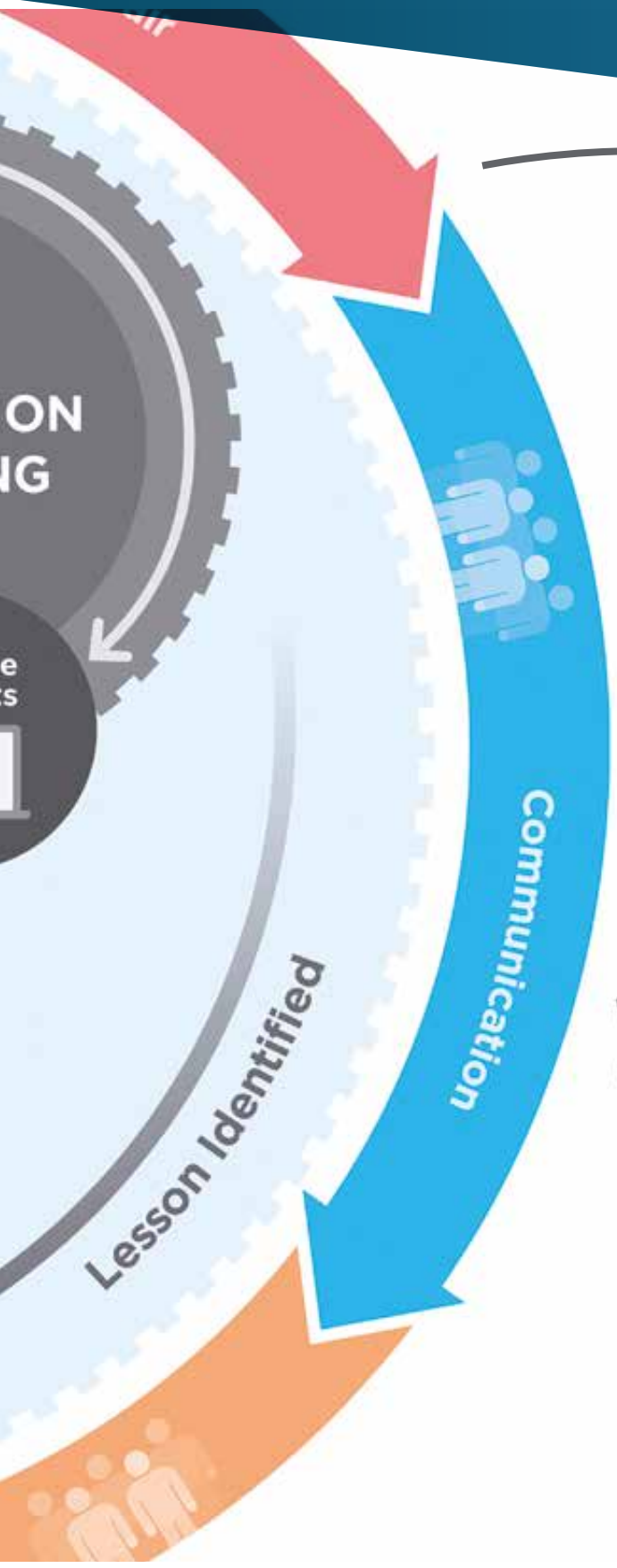
Leadership



LESSON MANAGEMENT

"the management of a continuous learning cycle where capturing, analysing and implementing lessons, occurs without barriers, and results in measurable behaviour modification"

Lessons Management Life Cycle.
Courtesy of Emergency Management Victoria.

Process

This section includes insights based on analysis of data from assurance activities (individual observations, debriefing, monitoring and reviewing) 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)).[1]
- **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 Monitoring and Evaluation (RTM&E) provided real time feedback to operational personnel and captured observations in the field.
- **Reviews** – A number of ad hoc reviews were undertaken during 2016-17, which identified insights from specific incidents that were unique or explored gaps in policy or practice.

ANALYSING FOR TRENDS

Local teams and governance groups (e.g. crews, Emergency Management Teams (EMTs), Regional Control Teams (RCTs)) 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.

In addition to local analysis and action, the State Review Team (SRT) collated the information from all tiers of emergency management, and analysed this against the insights and trends from 2015-16 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 12 themes identified during 2015-16, as well as identifying an emerging theme for 2016-17.

[1] 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.

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.

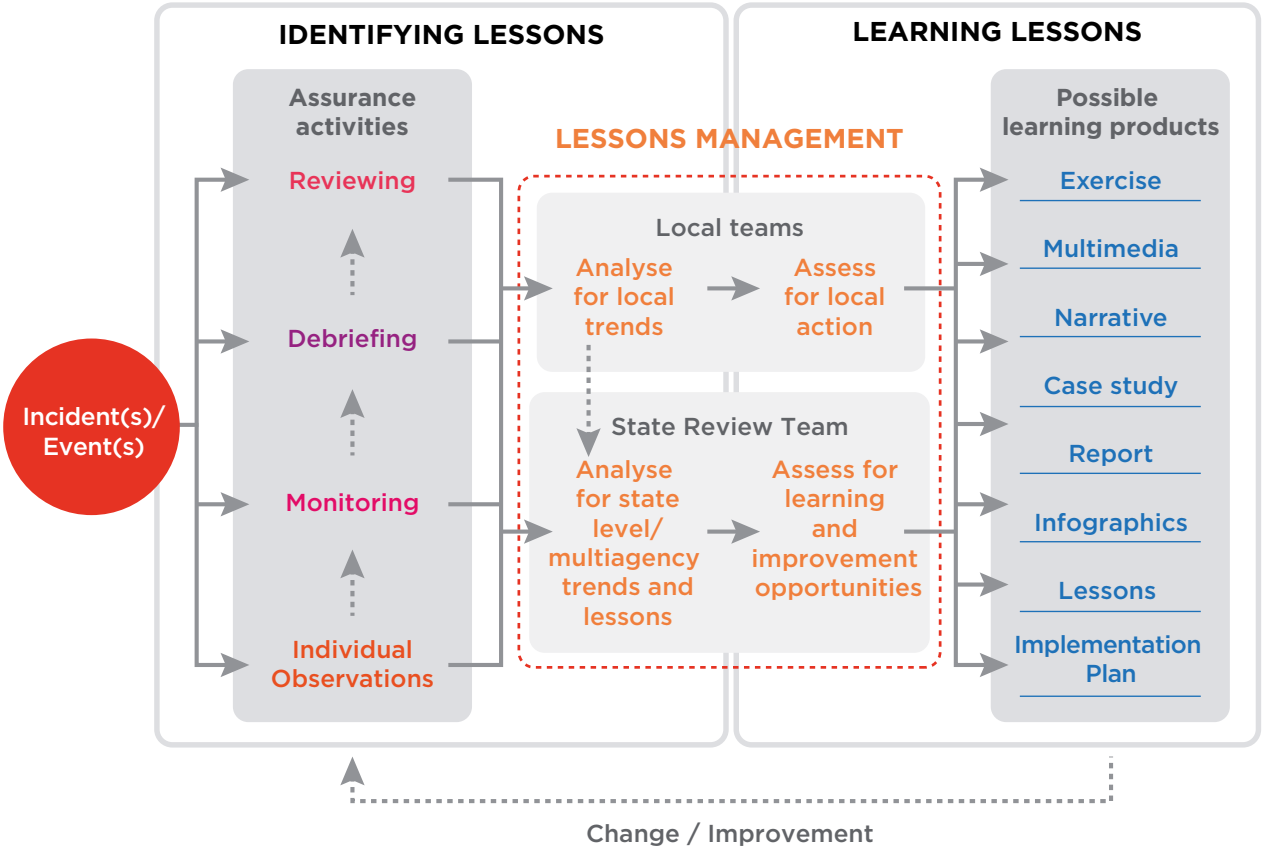
The insights identified in this report form part of an ongoing cycle of learning and improvement. This allows continuous assurance activities and improvement processes to occur throughout the year, with insights incorporated into emergency management across the sector.

IMPLEMENTING AND MONITORING

The SRT will support the implementation of change and improvement by developing and disseminating learning products within the EM-COP Library (Reviews-Lessons>Learning Products). Some learning products already produced and disseminated include the case studies included in Section 2.

Information included in this report has been shared with subject matter experts, through organisational networks, and with various committees. Where possible, these themes have been included in annual refresher briefings and doctrine updates.

Figure 32: Process for identifying and learning operational lessons



Theme Updates

AVIATION

Background

Aircraft are contracted by the State over the summer season on a standing basis or on recall. The State Aircraft Fleet for 2016-17 comprised 48 standing contracted aircraft, and as in previous years, over 100 further aircraft available on a 'call when needed' basis.

Aircraft flew in excess of 4,070 operational hours during 2016-17, responding to a variety of fire, emergency and land management operations.

The State Aircraft Fleet are prepositioned in readiness in strategic locations across Victoria 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.

Victoria has progressively implemented Pre-Determined Dispatch (PDD) protocols since 2012-2013, expanding the number of locations covered by this arrangement over successive years. PDD allows for rapid dispatch of aircraft (within predetermined parameters and triggers) through a direct notification of a fire to the Air Attack Supervisor and Aircrew, rather than the traditional process of ground crews arriving on scene to perform an assessment before requesting aircraft. For example, on an elevated fire danger day, aircraft will be immediately dispatched to a report of a Priority 1 grass and scrub fire within a PDD footprint.

Firebird 300 situated in Shepparton as part of pre-determined dispatch. Courtesy of Jodie Griffin, Victoria State Emergency Service (VICSES).

Progress

There was an expansion of PDD this year to include all Single Engine Air Tankers (SEATS) and Type 2 helicopters, and half of the Type 1 helicopter fleet (Colac and Mansfield). The Type 1 helicopter previously located at Ballarat was relocated to Moorabbin and replaced with a Type 2 helicopter operating under PDD protocols.

PDD footprints and Fire Danger Index (FDI) triggers were reviewed, amended and introduced into several locations, due to the expansion of the PDD program. The Joint Standard Operating Procedure (JSOP) *J02.06 - Readiness Arrangements - Aviation Resources (Bushfire)* was amended together with the requirements for expanded PDD locations, and these were put in place prior to the 2016-17 summer emergency season.

A total of 9 Victorian aircraft were based at Albury airport during a period of severe weather in January 2017, to provide support and response into New South Wales (NSW) (see Interstate/International Deployment Summary Section 1 page 64). The two Large Air Tankers (LATs) were dispatched for operations across NSW, and conducted operations out of Royal Australian Air Force (RAAF) Richmond, Canberra and Dubbo airports.

A joint agency project was also initiated for Night Fire Suppression Operations, to investigate the feasibility of using a Type 1 helicopter for firebombing after last light in Victoria.

For further information about activities that were conducted to support aviation readiness for operations please see Section 1 – *Readiness.*

Insights

What worked well?

- The dispatch of aircraft through the PDD process continued to be well accepted, supported across the Regions, and continues to contribute to aggressive and early initial attack.
- Generally, there continued to be good communications between ground personnel and flight crews.
- The location and dispatch protocols initiated for firebombing aircraft, specifically for the grain harvest period, were well accepted and implemented by local and regional personnel.
- Albury airbase was activated on multiple days to support LAT operations on remote fires in Gippsland, which resulted in a significant reduction in turnaround times.
- Use of the Type 3 helicopter, fitted with Airborne Information Gathering (AIG) equipment and Remote Piloted Aircraft (RPAs) was successfully trialled in conjunction with Lifesaving Victoria to detect shark activity along the Surf Coast.

Learning Opportunities

- Due to the increased coverage of the PDD program, there is a need to further expand the briefing and information sharing process prior to the commencement of the aircraft services. This will ensure all levels of control are aware of and understand the protocols and responsibilities associated with the PDD program.
- There are opportunities to reinforce and increase the knowledge of ground personnel with regards to safety during firebombing operations, due to the increased usage and exposure to aircraft created by the introduction of PDD.
- Some refinement of the PDD footprints and operating protocols could also be considered, along with other minor suggested amendments to the PDD arrangements.
- There are opportunities to enhance the joint planning of reconnaissance flights and the sharing of information between agencies, which will optimise the conduct of regional reconnaissance flights.

Conclusion

The use of aircraft in emergency management has again been demonstrated to be highly valuable. The trials that have been undertaken this year into the application of aircraft in a broader range of operations and with a greater number of agencies, will further enhance usage across the sector.

The management of the safety and effectiveness of aircraft will continue to require constant monitoring and improvement, particularly in relation to ground - air communications, and the understanding of arrangements and protocols for PDD.

Further Information

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

EM-COP Library > Doctrine > Procedures > JSOPs

***Melbourne Weather Event – Response* Case Study**

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

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

CAPABILITY AND RESOURCE MANAGEMENT

Formally Resource Management

Background

Capability is defined as our collective ability to reduce the likelihood and consequences of an emergency before, during and after. Capacity refers to the extent to which the core elements of capability can be sustained, before, during and after an emergency. Resource management is the efficient and effective development and deployment of the sector's capability when and where it is needed.

The *Victorian Emergency Management Capability Blueprint (2015-2025)* outlines the current and desired future state for Victoria's emergency management capability. The overall aim of the Blueprint is to have an effective emergency management capability across Victoria that can meet future needs. It identifies key capability foundations and provides a strategic direction for the future.

Victoria's Preparedness Goal, released in July 2016, supports the *Capability Blueprint*, and sets out the 21 core capabilities required for how we prepare and respond to emergency incidents before, during and after.

This theme has evolved and been expanded since 2015-16 to encompass both capability and resource management to better describe the outcomes of the data analysis and work being conducted across the sector.

Victorian personnel assisting members of the community affected by Tropical Cyclone Debbie during their deployment to Queensland. Courtesy of Department of Heath and Human Services (DHHS).

Progress

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

- **Emergency Management Capability Project (based on the Preparedness Goal)** – work continues towards an all-hazards emergency management capability model that captures and baselines the state's current capability and capacity, and identifies current gaps and reinvestment opportunities. Agencies are developing or adjusting internal capability frameworks to align with the outputs from the capability model and ensure there is integration into internal organisational priorities, business planning, capability strategy, resource allocation, organisational initiatives and training delivery planning.
- **State Resource Management System Project** – work is progressing to identify systems and processes that enable the emergency management sector to better manage, allocate and track resources, as recommended in the Inspector-General for Emergency Management (IGEM) *Review of the 2015 Wye River – Jamieson Track Fire*. Phase 1 of this project was completed in November 2016 and included the use the Incident Resource Information System (IRIS) for the management and reporting of deployed Incident Control Centre (ICC), Regional Control Centre (RCC) and State Control Centre (SCC) personnel at all level 2 and level 3 incidents. Phase 2 has commenced, with a focus on establishing automatic data feeds for roles, capabilities, and availability of agency personnel into a central system.

- **RCC / ICC Strategy** – Emergency Management Victoria (EMV), in consultation with agencies and emergency management organisations, is leading a strategic review of Victoria's ICCs and RCCs. The project will focus on how Victoria can better manage the network of facilities at the incident and regional level when responding to future challenges with an "all communities, all emergencies" approach. Work has commenced on developing a principle based operating model for these facilities, establishing a baseline of existing network of assets and defining the options for future strategic ICC and RCC coverage.

Insights

What worked well

- While it was reported as a fairly benign fire period, multi-agency teams managed a range of hazards, including major floods, flash floods, wind storms, dam failure, bushfire and industrial fires, extreme heat, landslides, quarry collapse, and missing persons searches.
- Flexibility was key to being able to fill shifts and swing shifts which worked well when utilised.
- Specialist resources (e.g. wildlife officers, flood analysts, industry representatives, Emergency Management Liaison Officers) provided highly valuable technical information when they were accessed and embedded in management structures. However, it was important to manage expectations of those around them to clarify what they could provide and what was not within their skill set (e.g. flood mapping versus flood predictions).
- Where mentoring occurred, it was highly valuable and allowed experienced personnel to share their knowledge in a controlled environment. Some regions reported that the mentoring culture had improved and mentoring opportunities were well utilised.

Learning Opportunities

- Resourcing was challenging in many regions, particularly given the need to maintain readiness and response to major long duration events occurring concurrently across the state (e.g. floods, storms, dam management). There was limited availability of personnel across a range of roles, which resulted in considerable fatigue issues and an inability to perform business as usual duties in some cases.
- Incident Management Team (IMT) readiness arrangements do not reflect internal agency resource readiness requirements (e.g. Country Fire Authority (CFA) district resources) and this created a resource gap that was not visible to the state level or accurately captured in resource systems. At times, this lack of visibility led to an inaccurate perception of resource availability in regions because they were already allocated to internal agency positions.
- Deployment practices and shift rotations traditionally require a commitment of four days, which limited the availability of many people because of paid work requirements, part time working arrangements, fitness levels or family commitments.
- There were a number of times that FDI forecasts were increased later than normal, which required resource levels to be "scaled up" at late notice. This made it difficult to plan ahead for resources and impacted availability of personnel.
- There was significant duplication of personnel details and availability information across the multiple resource management and tracking systems and lack of clarity about how the different systems integrate or deliver information.
- There were opportunities missed for mentoring personnel and expanding experience to other hazards at incident, region and state levels, particularly due to the challenges associated with resourcing and being able to roster enough personnel to support mentoring.
- In the SCC, supervised members are often called in on days of high activity when they have had minimal prior exposure to working within stressful operational environments.
- Personnel in a number of SCC Units reported periods where the unit was under-resourced, resulting in a large backlog of paperwork and standard processes not being followed. This may have been caused by breakdowns in communication about workload at the end of rotations and rostering challenges related to personnel availability.

Conclusion

Capability and resource management continues to be a common theme through all observations, debriefs and reviews. In general, capability and capacity was stretched by the range of hazards experienced across the state, which is consistent with previous years.

Many of the insights are currently being addressed through a range of ongoing projects, including the Emergency Management Capability Project, State Resource Management System Project and the ICC/RCC Strategy.

Work continues to support operational flexible working arrangements and mentoring of personnel. There is an opportunity to focus on utilising Tier 2 days for personnel to learn and practice their skills, ensuring there is enough meaningful work to develop skills.

Professional development and training continues to be conducted across the sector to develop skills and inform emergency management personnel about operational changes, doctrine updates and recent sector-wide initiatives.

Further Information

Inspector-General for Emergency Management (IGEM) *Review of the 2015 Wye River – Jamieson Track Fire*

https://www.igem.vic.gov.au/our-work/evaluation-and-review

Noble Park House Fire Case Study

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

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

Victorian Emergency Management Capability Blueprint (2015-2025)

https://www.emv.vic.gov.au/how-we-help/emergency-management-capability-in-victoria/emergency-management-capability-blueprint

Victoria's Preparedness Goal

https://www.emv.vic.gov.au/our-work/victorian-preparedness-goal

COMMUNITY ENGAGEMENT AND CONNECTION

Background

Community engagement and connection has now been a key theme in the *Operational Review* for the past two years and clearly identifies the importance of working together with communities to prepare, respond and recover from emergencies. This will lead to more resilient communities and better outcomes for emergency service providers and community agencies.

An increased focus on community engagement during all phases of emergency management is the way forward for advancing to a more holistic approach that facilitates shared responsibility for community safety.

The understanding that communities have an important role to play within the emergency management process has highlighted the need to ensure community engagement is a central component. Resilience is enhanced when communities play a key role in their own safety, and collaborate with agencies to prepare, respond and recover from emergencies.

Progress

Emergency management agencies and organisations have undertaken a wide range of community engagement and resilience building programs with a strong focus on building robust partnerships. The *Community Resilience Framework for Emergency Management* in Victoria, released in 2017, provides the foundation upon which the sector's strategies, programs and actions can be planned, integrated and implemented, building safer and more resilient communities.

Work has also continued on refining Victoria's Community Based Emergency Management (CBEM) approach and the *Community Based Emergency Management – Overview*, released in May 2016, describes this in more detail. This overview provides key information to describe a collaborative planning and engagement approach for communities and organisations. This approach aims to guide a range of different people to connect and build on combined strengths, while better understanding the likely impacts and consequences of emergencies that may affect them.

During 2016-17, severe weather caused a number of incidents that had significant impact on the Victorian community. The Thunderstorm Asthma event, Crooked River – Wonnangatta Road Bushfire, Spring 2016 Floods, Severe Weather Event – Windstorm and the Great Ocean Road Landslide (see *Significant Incidents / Incidents of Note* in Section 1, page 48), all had significant impact on the community and required ongoing engagement throughout the emergency management process.

Insights

What worked well?

- Community engagement has become a stronger focal point for emergency management personnel, including Incident Controllers.
- Several assurance activities identified positive examples of community engagement. These included the provision of warnings, community meetings, use of social media and the development of incident action plans with a stronger focus on community impact and engagement.
- Community meetings were critical before, during and after the impact of the emergencies and this engagement was supported through online community newsletters and, in some cases, social media as well.
- When community information units were established there was often a strong focus on community engagement. This allowed shared ownership of the actions being taken in relation to asset protection.
- Community meetings were often received positively. Feedback revealed the community felt listened to, and that meetings were timely and informative. In fact, some meetings were held well before there was any impact, allowing the community to have the time to make decisions and respond appropriately.
- Public Information Officers and Community Liaison Teams were noted as an effective way to engage the community.
- Sensitivities within communities who were still experiencing substantial impact from previous emergencies were important considerations for community engagement.

Learning Opportunities

- There were challenges in resourcing of public information units at some incidents, including capability and capacity gaps, which impacted on the ability to support effective community engagement.
- There is an opportunity for increased use of social media as it can provide a contemporary, reliable and valid means for community engagement and provision of warnings.
- Communities that are more connected, more aware and when they had taken actions to be involved locally in the emergency management process, there was evidence that they were better informed and able to respond more effectively to the event.
- There is an opportunity for greater engagement with VicRoads to improve systems, processes and methods of engagement to ensure timely and relevant information is provided to the community.

Conclusion

The analysis of major incidents identified that there is still work to do to fully embed community engagement in all incidents and in all aspects of emergency management. The effectiveness of community engagement is generally proportionate to the resources and overall commitment by the sector and the community.

Emergency management organisations have a role to support communities to build resilience though increased engagement and working together throughout the emergency management process. Therefore, 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 just some of the activities that improve a community's ability to plan for and adapt to emergencies.

Lastly, the IGEM made a number of recommendations in relation to community engagement and public information in their *Final Report of the Review of response to the thunderstorm asthma event of 21–22 November 2016*. These included actions which are currently being implemented.

Karalika Heights Cross Tenure Fuel Reduction Burn door knock. Courtesy of Alex Caughey, Country Fire Authority (CFA).

Further Information

Year in Review - *Arts House Case Study*
https://www.emv.vic.gov.au/CorporateReporting

Community Based Emergency Management - Overview
https://www.emv.vic.gov.au/publications/community-based-emergency-management-overview

Community Resilience Framework
https://www.emv.vic.gov.au/how-we-help/community/community-resilience-framework-for-emergency-management

IGEM Review of response to the thunderstorm asthma event of 21–22 November 2016
https://www.igem.vic.gov.au/our-work/evaluation-and-review

***Valentine's Day Social Media Campaign* Case Study**
https://www.emv.vic.gov.au/how-we-help/reviews-and-lessons-management/emergency-management-operational-reviews

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

EMERGENCY MANAGEMENT TEAMS

Background

Emergency Management Team (EMTs) are collaborative forums where agencies, government and service providers with a diverse range of responsibilities during emergencies meet to discuss the risks and likely consequences of the emergency. The EMT assists the Emergency Management Commissioner (EMC), controllers and coordinators in establishing the priorities and plan a 'whole of government' approach to the management of emergencies throughout a continuum from response to recovery.

EMTs at the Incident level should co-exist and maintain a cohesive link with the relevant IMT/ Control Teams. While the IMT, Regional Control Team (RCT), and State Control Team (SCT) focuses on the management of the hazard/s, the EMT should focus on identifying and managing consequences.

Progress

Since 2015-16, there has been a range of activities undertaken to strengthen the role and coordination of EMTs. The EMT governance arrangements have been reinforced through the inclusion in regional pre-season briefings and exercises. EMTs have also played a key role through readiness, response and recovery arrangements for the 2016-17 financial year. The increase in Class 2 emergencies this financial year reinforced the value and effectiveness of EMT arrangements at local, regional and state levels but there is still opportunities to see greater alignment in the Regional EMT practices across the State.

Insights

What worked well?

- Flexibility of EMT structures allowed for dynamic command and control arrangements for specific incidents.
- The effectiveness of EMTs enabled real time information and face-to-face consultation to provide effective consequence management.
- Building strong relationships within EMTs allowed the team to understand strengths and weaknesses, which supported a more effective emergency management.
- The role of the Regional Emergency Management Team (REMT) continues to be critical in maintaining oversight of multiple emergencies and the interaction of community consequences across the region.
- 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.

Learning Opportunities

- In some instances, the establishment of a Regional EMT was delayed, leading to gaps in decision making.
- In a small number of cases, there was a lack of consistency regarding location, duration and membership of EMT structures across incident, region and state levels.
- EMTs were less effective when the relevant industry partners were not actively involved and engaged (e.g. energy providers).

Conclusion

Overall, EMTs are now an established and accepted emergency management forum that agencies and departments rely on to support the management of emergencies in Victoria. It is reasonable to suggest that the State and Regional EMTs are well entrenched due to their frequency of activity. While Incident EMTs are also frequently activated, both formally and informally, there is evidence to suggest that they have varying levels of effectiveness.

Further Information

Emergency Management Manual Victoria

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

***Springvale Commonwealth Bank Fire* Case Study**

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

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

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). The JSOP *J03.12 – Evacuation for Major Emergencies*, details the responsibilities through five stages of evacuation; decision, warning, withdrawal, shelter and return.

The Incident Controller (IC), 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 are primarily responsible for managing evacuations, in terms of withdrawal, coordination of shelter and subsequent return. Effective evacuation is in line with the State Emergency Management Priority statement of "Protection and preservation of life is paramount" in Part 3 of the *State Emergency Response Plan* (SERP).

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 local knowledge and insight into likely issues that may occur. The JSOP provides clear intent in the planning stage for an evacuation.

Progress

This year saw extensive evacuation planning and 15 recommendations to evacuate issued for multiple communities affected by one or more of the severe weather events and flooding that occurred from September 2016 to January 2017 (see *Significant Incidents / Incidents of Note* Section 1 page 48). The majority (14) of the recommendation to evacuate messages occurred in October 2016 (this does not include the locally issued evacuation warnings), being issued for the potential levee failure in Wangaratta, riverine flooding in Myrtleford, a levee breach in Ulupna Island and the potential failure of a temporary levee in Hamilton.

An evacuation message was also issued during the Bulla-Diggers Road Grassfire through the Emergency Alert system, which saw the Organ Pipes National Park evacuated and closed due to its proximity to the fire (see *Significant Incidents / Incidents of Note* Section 1 page 48).

Additionally, localised evacuations were enacted during the Napier Street Fitzroy High Rise Fire and during the State-wide School Bomb Hoax Significant Incidents (see *Significant Incidents / Incidents of Note* Section 1 page 48).

The learnings from the evacuations that took place during the Wye River-Jamieson Track fire (see *Emergency Management Operational Review 2015-16*) resulted in the update for *JSOP 03.12 – Evacuation for Major Emergencies*. These have also been incorporated into the Victoria Police Emergency Management Learn Program for delivery of training to all personnel.

Additionally, as an integral part of responding to a Class 3 emergency, evacuation has been included in the recently developed Integrated Response Model (IRM) for Victoria Police and emergency services to utilise when responding to an active shooter or hostile event.

Insights

What worked well?

- Communities were very responsive to evacuation when effective command and control arrangements were in place by emergency services personnel on the ground.
- Communication of an evacuation message to at risk and affected communities via door-knocking was well received by the public.
- Using the combination of local knowledge, on site assessment and a local flood guide resulted in a more targeted area to issue a recommendation to evacuate warning.
- Considerations for communities still experiencing the effects from previous events provided the opportunity for alternative approaches to communications, including conveying potential evacuation warnings.

Learning Opportunities

- To further develop capability and understanding of evacuation, opportunities for multi-agency evacuation exercising and training need to be considered.
- The appointment of a designated deputy IC for evacuation management continues to be effective, however appointing this role early in the response phase and being based in the ICC would be beneficial.
- Evacuation planning should be supported by consideration of public messaging, traffic management and the use of Register, Find, Reunite (supported by the Australian Red Cross) because they are co-dependent.
- It is important to consider the requirements for cancelling or scaling down a recommendation to evacuate, and communicating this to the field and the public through appropriate channels. This may limit the potential for prolonged or extensive evacuation of residents once the risk has reduced.
- Communities, with lower levels of resilience or education about emergency management, should be considered during evacuation as they can be significantly impacted by stress and anxiety when required to evacuate.
- There were occasions when Public Information Unit members were not familiar with the EM-COP system or had appropriate levels of training, resulting in difficulties when recommendation to evacuate and other messages needed to be amended.
- It was identified that the importance of undertaking regular evacuation exercises and training needs to be promoted to the public to ensure effective evacuation can be undertaken. In particular, focusing on the safe use of lifts during evacuations in high rise buildings.

Conclusion

While evacuations conducted during 2016-17 were of a smaller scale compared to previous years, refinements to evacuation processes were implemented based on learnings from the Wye River-Jamieson Track fire evacuations in 2015-16. Whilst these refinements have further developed systems, doctrine and training, there remain some learning opportunities to further refine evacuation processes including community education and ensuring all emergency management personnel understand and can utilise systems and processes.

Further Information

Emergency Management Manual Victoria

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

Emergency Management Operational Review 2015-16

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

***Essendon Fields Aircraft Crash* Case Study**

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

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

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

https://www.igem.vic.gov.au/our-work/evaluation-and-review

Joint Standard Operating Procedure *J03.12 – Evacuation for Major Emergencies*

EM-COP Library > Doctrine > Procedures > JSOPs

State Emergency Response Plan

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

INTERSTATE AND INTERNATIONAL DEPLOYMENTS

Background

The EMC is responsible in Victoria for coordinating interstate or international resource movements for Class 1 and 2 emergencies, as defined in the SERP. This applies to Victorian resources assisting other jurisdictions or to the resources of other jurisdictions assisting Victoria. Deployments are primary managed though the Interstate International Liaison Unit (IILU) in the SCC. The IILU supports both outgoing and incoming deployments of resources.

Contrary to previous years, there was no requirement for either outgoing or incoming international deployments for Victoria. There was however, four outgoing interstate deployments of Victorian personnel, which was coordinated and managed by EMV and supporting agencies. Personnel from multiple agencies were deployed to assist and support the following Australian states in the aftermath of flood and storm incidents, as well as in a fire weather readiness capacity (see *Interstate/International Deployment Summary* Section 1 page 64):

- South Australia (September - October 2016)
- New South Wales (January 2017)
- New South Wales (February 2017)
- Queensland (March - April 2017)

Progress

The extensive improvements to IILU documentation, procedures, accreditation and feedback processes as a result of multiple interstate and international deployments last year have been continued or implemented for this year. The implementation of these elements into IILU were tested and amended as required throughout the deployments.

SMEACS Briefing at the staging area before the South Australian Deployment. Courtesy of Emergency Management Victoria.

In addition to this, a process to identify different types of deployments was initiated. This process will quantify risk management strategies and, for example, determine what types of documentation are required for a certain deployment against a set of predetermined criteria. This process will eventually result in a range of pre-prepared plans with associated documentation packs.

Insights

What worked well?

- The pre-positioning of aircraft for readiness to assist NSW, due to extreme Fire Danger Ratings forecasted and the declaration of Total Fire Bans for some districts that bordered Victoria, was successful due to the effective and constant communications between the two states.
- The information and briefings provided prior to departure and the logistical arrangements for personnel was generally good across the deployments and had improved on previous years.
- The South Australian Deployment, although short in duration, was a great example of a coordinated, organised and smooth deployment, and included considerations for fatigue management, facility requirements and comprehensive briefings.
- The use of EM-COP was very useful in sharing information and updates regarding deployment arrangements.
- Deploying Forward Liaisons prior to a request for assistance was valuable in establishing the link back to Victoria and ensuring the Memorandum of Understanding (MoU), potential risks and deployment expectations were considered prior to a formal request.
- The use of Team Leaders during the Queensland deployment ensured there was regular, systematic communication, particularly regarding welfare and safety, between deployed personnel and state liaisons.

Learning Opportunities

- There are limited opportunities to provide flexible taskforce deployments that would allow part-time staff and restricted duties staff to be involved, as well as Local Government Area (LGA) personnel, when applicable.
- In some deployments, some communications occurred informally and outside of the line of control, which led to uncertainty and gaps in shared understanding at the regional level and within the responding agencies. This delayed or interrupted information flow between agencies, state and liaisons then impacted the deployed personnel with travel delays and role confusion.
- During the New South Wales deployment, it was not clear which arrangements the deployment was authorised under (e.g. Arrangement For Interstate Assistance, Cross-Border Mutual Aid Agreement), which led to uncertainty about which deployment processes to use (e.g. use of Code of Conduct forms).
- The inclusion of an outline of the host state's structures, responsibilities and role equivalence was identified as a potentially beneficial resource to deployment personnel prior to deployment. This would also reduce the confusion in the difference of standards and procedures between the supporting state and the host state.
- The Expression of Interest (EOI) sent out for the recovery component of the Queensland deployment was more focussed on skills required than providing clarity in roles and tasks that were to be undertaken during the deployment. Providing that clarity around the roles and tasks would alleviate the uncertainty around necessary experience and would better support business continuity.
- Role based email accounts for deployments would assist in the transition of information and continuity when staff are transitioned through the same role.

Conclusion

EMV's robust operational doctrine and mature interstate deployment processes allowed for requests for interstate and international assistance to be actioned efficiently and appropriately, with minimal impact on the SCC normal business activities. However, clearer request details would minimise uncertainty about deployment requirements and would allow for more comprehensive briefing, logistical and support arrangements to be put in place prior to deployment.

Many of the learning opportunities related to issues that have been observed during previous deployments. Further work can refine and further embed standard processes, such as following line of control protocols for communications and ensuring that the appropriate details are in information packs, EOIs and briefings.

In preparedness for further deployments, there is opportunity to have a national discussion on interstate recovery resource sharing and further improve the IILU processes and arrangements to support all response and recovery interstate and international deployments.

Further Information

***Deployment of Victorian Response and Recovery Personnel to Tropical Cyclone Debbie* Case Study**

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

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

Emergency Management Manual Victoria

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

***Victoria Support to South Australia September – October 2016* Infographic**

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

MANAGING CONCURRENT EMERGENCIES

Formally Managing Multiple Emergencies

Background

This theme has changed to reflect the contemporary language regarding the managing of more than one emergency in the same geographic location or timeframe. This situation adds a layer of complexity for emergency management, particularly in relation to concurrent emergencies of varying class (I, 2 or 3) where different arrangements may be required.

Concurrent emergencies challenge the concept of a single agency with control responsibilities and may be best achieved through a process whereby a lead agency is appointed to take on the accountability to manage the emergency, in a partnership arrangement with other control agencies.

Progress

The implications for managing concurrent emergencies played out on many occasions over the past financial year, with multiple emergencies of different types often occurring at the same time across the state. Considerations of intelligence, community, consequences and communications were important during the planning for and responding to these emergencies. In some instances, a series of large, complex and unusual emergencies occurred over a number of months in a single region.

Victoria experienced the most severe flooding in five years across all regions in the later part of 2016, causing significant damage to residential homes, community buildings, infrastructure (such as roadway, bridges and drainage systems), and agricultural farmland, including considerable stock losses.

Other complex emergencies that have occurred over the past year include major wind and storm events, threatened main gas lines, criminal activities impacting the public, aircraft crashes, and numerous landslides (see *Significant Incidents / Incidents of Note* Section 1 page 48).

A range of activities continue to be undertaken to better understand the complexities of concurrent emergencies and provide more flexible guidance for operational personnel. This includes:

- Part 7 of the EMMV was updated to reflect changes in control agency functions and to remove references to support agencies for specific emergencies. It now recognises that any agency listed in Part 7 can be called on by the control agency to support or assist in the management of an emergency.
- The management of concurrent emergencies was a topic presented in briefings to RCTs/REMTs held prior to summer, including a proposed approach to understand and resolve concurrent emergencies from an operational level in which regional teams generally operate.

Insights

What worked well?

- The interaction, integration and cooperation between all agencies during multiple and concurrent emergencies continues to occur at a high standard, with a particular focus on consequence management and potential impacts fostering positive community outcomes.
- The role of the REMT continues to be critical in maintaining oversight of multiple emergencies and the interaction of community consequences across the region.
- The use of technology and data to support information sharing between Region and State worked well and has resulted in greater confidence and ability to make evidence based decisions when managing multiple emergencies.
- The use of a single IMT to manage multiple emergencies in a single area worked well, particularly when it was already established to manage an existing emergency, but there still needs to be early consideration for when an emergency may need to be managed separately to ensure an effective response.

Learning Opportunities

- In some cases, it was challenging to manage competing priorities at regional level during multiple emergencies, particularly for incidents that were highly publicised.
- In some non-fire related incidents, there was a lack of clarity around expectations for support agencies and triggers for multi-agency readiness, resourcing levels and prepositioning of resources.
- The impact of multiple emergencies led to high levels of fatigue at all levels.

Conclusion

Similar to last year, there were many occasions during 2016-17 where multiple and varied emergencies occurred. This high level of concurrent activity placed a significant burden on the emergency services workforce and continues to challenge the traditional view of emergency seasons.

The continued implementation of information technology systems and development of doctrine to support situational awareness and evidence based decision making is improving the sector's ability to manage multiple and complex emergencies.

Further Information

Emergency Management Manual Victoria
https://emv.vic.gov.au/policies/emmv/

***Melbourne Weather Event – Response* Case Study**
https://www.emv.vic.gov.au/how-we-help/reviews-and-lessons-management/emergency-management-operational-reviews

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REGIONAL CONTROL

Background

There are a range of regional tier teams that are put in place to support the Regional Emergency Response Coordinator (RERC) and Regional Controllers (RCs) in managing their regional coordination, control, consequence management and communication responsibilities during the readiness for and response to major emergencies including RCTs and REMTs. The team structure applies regardless of the number and class of emergencies being managed, although the chair and membership of each team may vary.

Progress

Regional Control was activated regularly during the 2016-17 financial year to support the management of many non-traditional emergencies. A number of notable progressions were made during this year. These progressions included cross agency collaboration and relationship development, a greater understanding of relief and recovery arrangements, and the support provided by RCTs in the implementation of new requirements and protocols. These areas are all working extremely well.

RCTs were provided with a number of opportunities to connect and collaborate, including during Regional Pre-Summer Briefings. The Regional Control Leadership Forum, held in June 2017, provided a great opportunity for all regional leaders to come together to share their experiences, identify common themes, recognise success and broaden the knowledge base within the group.

Department of Environment, Land, Water and Planning (DELWP) Chief Fire Officer Stephanie Rotarangi addressing Regional Controllers at the Regional Control Leadership Forum held in June 2017. Courtesy of Emergency Management Victoria.

Insights

What worked well?

- At Regional level, there has been, and continues to be, a strong focus on community engagement and connection, including actively engaging and communicating with the communities through various mediums (including face-to-face engagements).
- Local knowledge enhanced Regional Control's ability to support incident management and engage appropriately and effectively with the local community, allowing them to be part of the response and recovery process of an incident.
- Interagency operability and collaboration, and the ongoing development of strong working relationships, continues to build enabling the RCT and REMT roles to be better understood, which further enhances positive team environments.
- The use of REMTs continue to improve, strengthening the whole of government approach to all emergencies occurring within the regions.
- The focus on safety is continually filtered down to personnel from RCs to RCTs and REMTs and is continually demonstrated in briefings, discussions and plans.
- The support provided by RCTs in relation to implementation of new requirements and protocols (e.g. Smoke Management Framework, November 2015) has markedly improved.
- The understanding of regional involvement in the relief and recovery arrangements has continued to strengthen, with solid ground work taking place to ensure all members are on board and aware of their contribution.

Learning Opportunities

- While the understanding of the relief and recovery arrangements have expanded within regional control, the opportunity exists to further develop the regional contacts. This will ensure the right people are engaged at the right time and help achieve a fully integrated approach.
- The move to a 365 regional roster for RCs was reported to be challenging, with resource capacity varying across regions. Rostering of these positions year round relies on release from agencies and considerations of managing fatigue, leave, training schedules and normal agency business.
- Some regions were unclear about the standard resource model at region level, including expectations of rostering for Executive Officer, Intelligence, and Public Information, which resulted in some inconsistencies.
- There is a need to ensure agency support requests continue to be coordinated through the responsible Regional Agency Commander (RAC) in order to support regional strategic resourcing.
- At the regional level, personnel again reported discomfort and uncertainty when involved in managing hazards not within their experience base.
- There was a lack of clarity about the development pathway for roles at regional level, including recognition of the accountabilities and responsibilities of the RC role.
- There was a lack of consistency and a lack of clarity about the purpose and content of Regional planning documentation across the state.

Conclusion

Processes and structures of Regional Control continue to develop and strengthen, with current arrangements and practices reflecting enhanced integration and collaboration. Strong connection and collaboration exists across all three tiers of emergency management (state, regional and incident).

The introduction of the 365 regional roster is a recent initiative, which has tested the sustainability of capacity at Regional level. Further work is also required to more clearly define the RC development pathway and documentation/reporting requirements by regional teams.

Further Information

Emergency Management Manual Victoria

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

***Great Ocean Road Bus Fatality* Case Study**

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

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SAFETY AND FATIGUE MANAGEMENT

Background

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

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

Progress

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

- Strengthening safety messages in operational doctrine, including updating the JSOP *J08.03 Tree Hazard – Bushfire Response* and *Safety Fact Sheet*.
- Developing a program of work to address improvements to the management of hazardous trees, including doctrine and training.
- The continuation of work to integrate CFA and Metropolitan Fire Brigade (MFB) Hazmat data for transferring to Environmental Protection Authority (EPA) reporting system and EPA data to CFA Hazmat database. CFA are also developing an induction app for non-fire agencies and contractors entering an incident site.
- The provision of safety and fatigue management information during the 2016-17 Pre-season Briefing Program.
- Safety remained as a standing agenda item on meeting and teleconference agendas (e.g. State Control Team (SCT)).
- Releasing Safety Bulletins during operational periods.
- Continuing the State Occupational Health and Safety (OHS) Executive Advisor role in the SCC, which is there to provide strategic health and safety advice to the State Response Controller (SRC) and SCT.
- Deploying OHS Advisers into the field during periods of operational activity.
- Including safety as a standing theme for all RTM&E deployments.
- Work is continuing to address the interoperability of OHS reporting systems 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.
- CFA Rehabilitation Teams have been increased from nine to 14 teams and CFA districts are ensuring they are being deployed when required.
- Fatigue management plans are improving and there were occasions where leaders across all tiers were seen to be implementing fatigue guidelines within their teams.

Learning Opportunities

- Fatigue management for personnel and contractors continues to remain a challenging issue.
- There continues to be challenges with hazardous trees, particularly in relation to communicating these between agencies.
- ICC/RCC personnel are concerned about ensuring safety of those in the field when managing concurrent emergencies outside their expertise without adequate training and experience.

Conclusion

Safety and fatigue continues to be a focus throughout readiness, response and recovery operations particularly within professional development and briefings. As a result of the insights identified in the *Capability and Resource Management* theme (page 120), it is clear fatigue continues to be a major concern for many emergency management personnel with the number of roles, concurrent and complex emergencies being experienced across the state. Ongoing improvement in personnel safety and welfare requires continued assurance that safety messages are delivered, incidents are reported and fatigue is appropriately managed.

Various Emergency Management Victoria Safety Fact Sheets issued during 2016-17.

Further Information

Community Smoke Air Quality and Health Standard

Rapid Deployment of Air Monitoring for Community Health

Smoke Management - Aide-Memoire

Standard for Managing Significant Carbon Monoxide Emissions

State Smoke Framework

EM-COP Library > EM Arrangements > State Plans

Fatigue Management Safety Fact Sheet

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

Joint Standard Operating Procedure *J08.03 Tree Hazard – Bushfire Response and Safety Fact Sheet.*

EM-COP Library > Doctrine > Procedures > JSOPs

***Kallista Tree Fall* Case Study**

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

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

TRAFFIC MANAGEMENT POINTS

Background

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 and first responders, especially in terms of vehicles accessing and driving through an area experiencing emergencies.

Emergencies are not static and therefore the conditions of TMPs may change at any time over the course of an emergency. JSOP *J03.10 – Traffic Management* outlines the process for the activation and ongoing monitoring and deactivation of TMPs, including the appointment of a Traffic Management Manager, development of an Incident Traffic Management Plan (ITMP) and associated forms.

The *Guidelines for the operation of traffic management points during Class 1 emergencies* describe the agreed procedures for the operation of a TMP as part of an overall ITMP to assist in the control and management of pedestrian and vehicular road travel in the vicinity of an emergency. To facilitate entry into an area, a TMP will be assigned a particular access level. The circumstances and groups of people who may be permitted access at each access level will be determined by the IC.

A road closed in Robinvale on 16 November 2016, after the Mildura Storms. Courtesy of Robinvale Victoria State Emergency Service (VICSES) Unit

Progress

Throughout the financial year, VicPol introduced improved training packages for TMP personnel with a separate package available for the Traffic Management Manager role. Traffic Management training was also extended to be provided to VicPol members up to the rank of Superintendent, through the Victoria Police Emergency Management Learn Program.

Furthermore, VicPol utilised an opportunity to establish the Traffic Flow Working Group (TFWG) with other key emergency management agencies (including being co-chaired by VicRoads) as a result of feedback from a number of collisions on major arterial roads that caused lengthy traffic delays. The main role of the TFWG is to consider the consequences of road closures and traffic disruption resulting from emergency response activities.

The establishment of this group highlights the evolvement of this theme from concentrating on the planning, implementation and exercising aspect of TMPs, to ensuring a collaborative approach between agencies is taken to address the issue of TMPs and, in some cases, the role TMPs play in evacuations.

Insights

What worked well?

- The TFWG commenced a number of proactive measures to reduce the effect of road closures, most notably reviewing and updating existing road diversion plans.
- The early appointment of a dedicated VicPol Traffic Management Manager and a multi-agency Traffic Management Team located at an ICC led to improved collaboration, greater synergy and allowed timely support to be given.
- The use of multi-agency Traffic Management Teams supported the provision of clear and updated messaging on the VicRoads website.
- When traffic management personnel were positioned quickly and efficiently with the correct identifying tabards, responder agency personnel were able to more quickly engage with the appropriate personnel and manage the situation.

Learning Opportunities

- While a number of emergency management organisations can perform local road closures upon request, often this capability was not known or requested.
- The re-opening of roads were delayed and costs increased when resource requests for traffic management personnel were not filled.
- There continues to be a need to improve understanding and training regarding traffic management processes for all emergency management personnel.
- Collaboration between emergency management organisations (e.g. local government, VicPol and VicRoads) is important to ensure the appropriate planning is made for TMPs, and they are managed appropriately when they are in place.
- Inadvertent traffic disruption was sometimes caused by emergency services vehicles due to the placement of vehicles when attending incidents.

Conclusion

VicPol continues to identify and work towards improving TMPs. The collaboration of all emergency management partners (such as VicRoads) promotes a united approach to issue identification, consideration of a range of resolutions and finally enhanced implementation of solutions that directly assist the community.

The TFWG work is focused on reviewing and updating existing road diversion plans, which will ensure that plans are readily accessible for first responders to support timely implementation to minimise road closure impacts. The importance of the early engagement of a Traffic Management Manager and a multi-agency Traffic Management Team needs to be articulated and included in existing IC training and documentation.

Planning for the removal of TMPs needs to be a consideration almost as early as the planning for establishing them. EMTs also need to consider discussing the prevention of inadvertent traffic disruption from emergency services vehicles that are attending emergencies.

A review of the TMP card will be made prior to the 2017-18 summer emergency season to reflect the updates to JSOP *J03.10 – Traffic Management*.

Further Information

Great Ocean Road Bus Fatality Case Study

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

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

Guidelines for the operation of traffic management points during Class 1 emergencies

EM-COP Library > Doctrine > Technical > Guidelines

Joint Standard Operating Procedure *J03.10 – Traffic Management*

EM-COP Library > Doctrine > Procedures > JSOPs

TRANSFER OF CONTROL

Formally Incident Management Team (IMT) Relocation

Background

There are circumstances where an incident should be managed by an IC based in an ICC and supported by an IMT with specialist skills and equipment, rather than by a field-based IC.

These circumstances include where the incident is a major emergency or has the potential to become a major emergency, or where there is the need to do one or more of the following:

- issue warnings and advice to the community
- evacuate the community
- protect the community
- manage significant risks or consequences, for example to:
  - the community
  - community infrastructure
  - essential services such as electricity and water or
  - significant environmental or conservation assets.
- manage a large number of personnel and other resources such as aircraft
- produce incident predictions
- implement health and safety systems for response personnel
- provide direction to multiple response agencies
- manage multiple incidents within the area.

During 2015-16, the relocation of IMTs was not highly relevant and this was consistent with the analysis of the captured observations from 2016-17. It was highlighted that transfer of control generally continued to be an area requiring further analysis and consideration, hence the evolution of this theme.

Progress

In general, when transfer of control was implemented, it was managed well. However several operations in 2016-17, including the management of storm events across the state, provided opportunities to activate the arrangements and further explore their application in a non-fire related context.

Insights

What worked well?

- The continued application of transfer of control for non-major incidents generally occurred in a timely and effective manner, further embedding the arrangements across the sector.
- There were a number of good examples where an ICC was moved between locations to enable better management across a region and on the ground.

Learning Opportunities

- Reinforcing transfer of control for all hazards in pre-season briefing materials and exercising for all levels of control needs to continue. In particular, the importance of consulting and agreeing to the timing and adequate handover or transfer of information needs to be considered prior to control being transferred.
- There continues to be some instances of interchangeable use of the terms “transfer of control” and “transition to recovery” suggesting there remains a lack of clarity about the differences and linkages.
- It was identified that industry bodies require clear and well documented triggers for escalation and de-escalation from business as usual to emergency management operations, including how this escalation within industry links to escalation triggers within emergency management agencies.

Conclusion

Whilst limited observations and insights concerning this theme were collected from operational assurance activities during the year, the use of transfer of control for non-fire situations has provided an ongoing opportunity for the emergency management sector to expand the arrangements to other hazard types.

Consultation and agreement on the timing and adequate transfer of information should continue to be considered during transfer of control. Work is required with industry bodies to develop clear and well documented triggers and this work may also assist in resolving some of the impacts experienced on the transition from response to relief and recovery during the year.

Further Information

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

EM-COP Library > Doctrine > Procedures > JSOPs

Springvale Commonwealth Bank Fire Case Study

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

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

TRANSITION TO RECOVERY

Background

The formal transition of an emergency from the response phase to recovery coordination phase is important and requires consideration of planning, coordinating and implementing 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.

The SERP highlights the importance of transition to recovery through Section 3.13 - *Integration of recovery into response*, which emphasises the importance of planning for the transition as early as possible and outlining key considerations.

The assessment of impacts from emergencies is a key element of the planning for recovery as it allows for appropriate governance, decision making and priorities to be established. Effective recovery activities rely on adequate assessments of impact to community members (including vulnerable persons), buildings, infrastructure, business, industry and natural resources.

Progress

The 2016-17 financial year saw a number of significant incidents (see *Significant Incidents / Incidents of Note* Section 1 page 48) that required extensive recovery activities, including the Bourke Street Tragedy, severe weather events and extensive floods. These all required extensive and complex assessments of impact and damage.

As a result of the impacts from the Spring 2016 Floods, the State Crisis and Resilience Council Flood Recovery Subcommittee (FRSC) was established to bring together senior representatives across nine government departments and agencies. This committee was successful in supporting the coordination of recovery activities and was subsequently expanded to include oversight of the recovery of the Severe Weather Event - Mildura Storms (see *Significant Incidents / Incidents of Note* Section 1, page 53).

A number of exercises held this financial year focused on relief and recovery aspects, including transition arrangements, such as Exercise Off the Grid (see *Readiness* Section 1, page 23). Relief and recovery exercises will continue in 2017-18, including Phase 3 of Exercise Galaxy (see *Readiness* Section 1, page 23).

Insights

What worked well?

- There is evidence that the Regional level approach to impact assessment was generally successful and worked well when moving to the recovery phase of the flood impact.
- Early engagement with Agriculture Victoria and inclusion in REMTs helped gather details of impacts early in the transition period, which allowed for the establishment of priorities and focussed recovery activities.
- Effective communication between government, agencies and councils was imperative when planning and coordinating transition to recovery arrangements. This was assisted by clearly documented and communicated administrative arrangements, along with good understanding of processes and arrangements at the local level.
- The whole of government approach taken by the FRSC supported effective transition and coordination of recovery activities, timely government decision making and prioritising of recovery investment.
- Arrangements for the Vulnerable Persons Register (VPR) were clearer than in previous years.
- The deployment of Rapid Impact Assessment Teams (RIATs) into some incidents worked effectively as the primary tool for informing the recovery planning for affected communities.
- The capability and capacity of resources to manage relief and recovery activities was generally successful and well deployed.
- The deployment of a Recovery Manager to both region and incident level allowed for the utilisation of resources from state level to assist in recovery planning.
- Strong links maintained in ICCs and RCCs ensured that the majority of incoming recovery teams were well informed with good intelligence for entering the recovery phase.

- When early engagement of Department of Health and Human Services (DHHS) and local governments in transition to recovery occurred, it led to a coordinated approach to recovery planning and attendance at the ICCs by these agencies.

Learning Opportunities

- Effectiveness of recovery planning, prioritising and decision making was impacted when intelligence gathered through impact assessments was not centrally collated or efficiently shared across multiple stakeholders.
- In some instances, there were issues experienced when incidents were managed from "alternate" ICCs due to footprint variations. This delayed recovery efforts, connections to LGAs and relief funding applications.
- Where an incident impacted communities across multiple municipal boundaries, there were difficulties experienced in ensuring that the correct municipality were aware of recovery plans and activities.
- The disparate data sets of information regarding vulnerable persons resulted in time consuming examination and collation of data.
- In some areas, a lack of initial impact assessment resulted in delays and poor planning for the ongoing relief and recovery arrangements of affected permanent and transient communities.

Victoria Police and the community held a memorial for those affected by the Bourke Street Tragedy. Copyright Victoria Police. Not to be used or reproduced without permission.

Conclusion

The transition to the relief and recovery phase of an incident has continued to develop and evolve over the past year. The effectiveness of the transition to recovery varied across incidents and the importance of quality impact information remained constant in driving well planned and coordinated recovery activities into affected regions and communities. Impact assessment as a specific focus will be reviewed over the 2017-18 financial year and may need to be established as a separate theme.

Where the scale and complexity of the emergency requires it, the establishment of a committee to support whole of Victorian government recovery coordination can work exceptionally well (for example, the FRSC). This committee can ensure transition to recovery occurs in a timely manner, support effective communications, determine a coordinated investment and funding model, and clarify the purpose, functionality and practicability of recovery systems.

The experience from recovery activity across 2016-17 highlighted the importance of communicating intentions and collaborating with stakeholders, including government departments, agencies and local councils.

Further Information

***An agreement for transition of coordination arrangements from response to recovery* template**

EM-COP Library > IMT Toolbox > IMTTB-Post Incident Actions > Fire Recovery

***Metropolitan Weather Event – Recovery* Case Study**

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

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

State Emergency Response Plan

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

Emerging Trends

SMOKE MANAGEMENT

Background

Smoke from fires is a mixture of different-sized particles, water vapour and gases, including carbon monoxide, carbon dioxide and nitrogen oxides. The health effects sustained from exposure to smoke depend on the nature of the exposure, the person's age, pre-existing medical conditions (particularly cardiorespiratory disease), predispositions and other individual susceptibilities.

The importance of managing the effects of smoke to emergency responders and communities has become more and more prevalent in Victoria, as urban sprawl encroaches towards nature reserves and bushland, residential developments being established in close proximity to designated commercial areas and population growth resulting in an increase in high density living.

In previous years, insights relating to smoke management were included in the theme of Safety and Fatigue Management. However, the inclusion of smoke management as a separate theme recognises its importance with regards to community outcomes, reflects the breadth of work being undertaken across the sector and demonstrates the evolution of learning in this area.

Progress

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. The *State Smoke Framework* (the Framework) was released in 2015, along with a range of supporting documents that guide the implementation of smoke management arrangements, standards and procedures for emergency situations, see Further Information. The Framework represents the emergency sector's integrated approach to manage the short and long-term risks of smoke and other emissions.

During the 2016-17 financial year, the Framework and supporting JSOPs were reviewed and reissued, with Version 3 of the Framework released in November 2016.

Insights

What worked well?

- When the process of smoke monitoring by EPA was activated it was observed to be successfully embedded in the overall management of the incident.
- IMTs were in a position to effectively manage smoke impact by instigating monitoring (such as changes in levels of fine particles and wind direction) which allowed them to manage changes in a timely manner, and provided the IC and Planning Units evidence of smoke impacts.
- The use of JSOPs J03.18 and J03.20 were included in a working draft of a *Smoke Management Officer Work Plan* which was being used to provide the IMT with a guide on smoke management decision processes.
- Information flow between IMTs and EPA personnel who conduct monitoring and analysis worked well.

Learning Opportunities

- It was identified that on occasions, information around smoke monitoring was potentially not reaching the Public Information Unit.
- There is inconsistency in the knowledge and understanding of emergency management personnel on the content and application of JSOPs J03.18, J03.19 and J03.20.
- There were times when local involvement was not included when issuing health advice warnings relating to smoke impacts from the state level resulting in confusion and inconsistency at the local level.

Conclusion

Smoke management has major implications for responders and the community. The education and implementation of the Framework across the sector is an ongoing piece of work that will continue for a number of years.

The framework will be continually reviewed and updated to remain linked with other recommendations focussed on the State's processes for managing air quality, smoke and emissions from large-scale events. Standards, guidelines, strategies and tools developed under the Framework will also be regularly reviewed, including in response to significant or prolonged events that generate smoke or other emissions.

The continuation of smoke management themed exercises will be beneficial for emergency responders and also encourage familiarity with the newly developed and reviewed JSOPs. For example, Exercise Heyfield provided experience with smoke management processes that supported the effective implementation of these during incidents, which was recognised during the Crooked River – Wonnangatta Road Bushfire.

Consideration also needs to be given to positioning a Smoke Management Officer or establishing clearer delegation of related tasking to an Intelligence Officer (if positioned) at future Level 3 incidents. This would be similar to the approach taken in planned burning operations and ensures that smoke management is well integrated into the management of the incident.

This emerging trend will be reviewed during 2017-18.

Crooked River – Wonnangatta Road Bushfire.
Courtesy of John Schauble, Emergency Management Victoria.

Further Information

Joint Standard Operating Procedures

J03.18 – Incident Air Monitoring for Community Health

J03.19 – Managing Significant Community Exposures to Fine Particles from Smoke

J03.20 – Managing Significant Community Exposure to Carbon Monoxide from Smoke

EM-COP Library > Doctrine > Procedures > JSOPs

Community Smoke Air Quality and Health Standard

Rapid Deployment of Air Monitoring for Community Health

Smoke Management - Aide-Memoire

Standard for Managing Significant Carbon Monoxide Emissions

State Smoke Framework

EM-COP Library > EM Arrangements > State Plans

OTHER EMERGING TRENDS

In addition to the emerging trend of Smoke Management, analysis of individual observations, after action reviews and other assurance activities revealed further emerging trends including communications, facilities management, intelligence, information sharing and tourism.

A summary of this information has been provided to the relevant functional managers, as required. All observations and insights are continually monitored by the State Review Team for any potential state level/multi-agency lesson identification.

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Working in conjunction with communities, government, agencies and business