



FIRE SERVICES
COMMISSIONER
VICTORIA

Operational Review

Yarra Valley Grammar School Fire January 30 2012

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Fire & Rescue NSW

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LEADERSHIP
INTEGRATION
ACCOUNTABILITY

WORKING IN CONJUNCTION WITH



Contents

1	Introduction.....	3
2	Executive Summary	4
3	Yarra Valley Grammar School fire operational review	7
	Introduction.....	7
	Terms of reference	7
	Review methodology	7
	Yarra Valley Grammar School.....	8
	Command and control arrangements.....	8
	Overview of firefighting operations	9
	Warning and advice strategy.....	14
	Community warning and advice observation and recommendation.....	15
	Interoperability between MFB and CFA	17
	Resources	17
	Greater Alarm Response System (GARS)	17
	Equipment	18
	Communications	18
	Incident management strategy	19
	Incident Action Plan (IAP)	19
	Emergency Management Team	20
	Systems to manage firefighter safety	21
	Water supplies.....	22
4	Opportunities for Improvement.....	23
	Command, control and coordination	23
	Community information and warnings	23
	Firefighter safety.....	23
	Interoperability	24
	Pre-incident planning.....	24
5	Glossary of acronyms.....	25

1 Introduction

The Fire Services Commissioner (FSC) requested the Emergency Services Commissioner to undertake an operational review of the Yarra Valley Grammar School fire that occurred on 30 January 2012. Due to pre-existing workloads within the Office of the Emergency Services Commissioner (OESC), including work to develop a sustainable and appropriate methodology for undertaking operational reviews in the future, the Emergency Services Commissioner was unable to undertake this operational review. To enable this operational review to be conducted, the Fire Services Commissioner sought the assistance of a suitably qualified and experienced officer from Fire & Rescue New South Wales to conduct this review.

This review supports the Fire Services Commissioner's fire services reform program, which is focused on improving the interoperability, resilience, capability and capacity of Victoria's Fire Services and the services they provide to the community.

The intent of review is to identify opportunities for improvement through the review of the response to an actual emergency incident. Stakeholders are encouraged to consider the observations detailed in this report to enable continuous improvement to aspects of emergency management activities relating to complex structure fires; especially on or near the Metropolitan Fire Brigade and Country Fire Authority (CFA) boundaries.

This operational review makes observations and identifies issues that the fire services should consider to support continuous improvement.

This report was written in the spirit of improving overall emergency management systems, procedures and the skills of our Incident Controllers and management teams.

The Terms of Reference for this review were:

- Command and control arrangements put in place to manage the fire
- Warnings and advice strategy developed and implemented for the fire
- Interoperability between Metropolitan Fire Brigade (MFB) and the Country Fire Authority (CFA)
- Incident management strategy
- Systems put in place to manage firefighter safety, and
- Performance and access to water supply.

2 Executive Summary

The review found that interoperability between MFB and CFA worked effectively to contain the fire to the building of origin. Unfortunately there were two reported injuries sustained by firefighters during the incident.

Further, the interventions and suppression efforts by the fire services, including the actions of the Emergency Management Team (EMT) minimised the damage to the school and enabled commencement of the school year with minimal lost time..

The fire occurred within MFB jurisdiction bordering on CFA area. Ongoing efforts by the MFB and CFA in the Yarra Valley area, supported by Mutual Aid Arrangements (MAA), enhanced the positive result.

Although the operations were effective and the school did commence the school year within a week of the fire there is room for improvement in the areas of:

- incident management and resource deployment
- firefighter safety
- communications and community information, and
- water supply availability and utilisation.

Incident management and resource deployment

An Incident Control Point, or Local Control Point (LCP) as referred to in the MFB Field Operations Guide, should have been established in a timely fashion and in a suitable position by the second arriving Incident Controller. Once this is achieved the incident needs to be controlled and coordinated from that location by the Incident Controller developing an Incident Action Plan, establishing staging areas, identifying the required functions to manage the incident, and developing a safety management system and communications plan for the incident. In essence, the incident is managed from this location.

The Incident Management Team (IMT) and LCP at the Yarra Valley Grammar School fire took considerable time to establish resulting in:

- Confusion regarding which individual was exercising control and from where during the first two hours of the incident.
- Staging and deployment of resources in the first two hours was complicated, as this function did not properly transfer from the first arriving Incident Controller until the establishment of a suitable Incident Management Team (IMT) and LCP.
- A manageable span of control¹ for the initial Incident Controller did not occur until this time.
- Delayed establishment of a multi-agency IMT resulted in CFA resources being coordinated through the Sector 3 Command location and not through the Incident Controller. Effectively the Sector 3 Leader² was commanding both operations in Sector 3 and deployment of CFA resources to other sectors through the Sector 1 Leader.

¹ "Span of Control" is a concept that relates to the number of groups or individuals that can be successfully supervised by one person. Up to five groups or individuals is considered desirable, with a maximum of no more than seven, depending on the scale of the incident

² To aid understanding and avoid confusion with the MFB rank of Commander, personnel in charge of sectors have been referred to as Sector "Leader" rather than the actual title of Sector Commander.

These issues were resolved once incident control was established in a suitable location with an appropriate IMT. It is also believed that better control and coordination of resources could be achieved if a staging area and Staging Officer were identified early in the incident and all responding agencies/services utilised a common appropriate resource escalation process, similar to the Greater Alarm Response System³ (GARS) to deploy resources to multi agency incidents such as this structure fire.

Firefighter safety

A number of specific observations made in relation to firefighter safety include:

- A single crew management system for all responding agencies which facilitates identification of who is on site and where they are located was not up and functioning. Fire service officers were not confident they could account for all personnel on-scene during the initial 120 minutes of the incident.
- While utilities such as gas and electricity were initially dealt with by the Sector 1 Leader, there were problems in reporting the status of these services during the incident.
- Information regarding unaccounted for persons was managed by the Sector 1 Leader and the School Principal. It is felt since this issue was not resolved for some time into the incident and the information on the issue should have been conveyed to all relevant sectors, this element of the operation should have been managed by the incident management team.
- Notification of the presence of asbestos and activation of Level 1 asbestos procedure by all sector leaders did not occur until the fourth hour of the incident.
- Treatment and removal from the fireground of an injured officer was not dealt with in a timely fashion and it is believed this was due to competing priorities and recommended span of control being exceeded by the injured person in the first 120 minutes of the incident.

Communications and community information

There was no evidence of a communications plan being developed in the first two hours of the fire. Strategic and tactical communications was in the main facilitated through the Sector 1 Leader. It is believed that there was ineffective transfer of command, control and coordination to successive Incident Controllers at a functioning LCP. This resulted in:

- the Sector 1 Leader operating with an excessive span of control, which may have delayed him seeking treatment for his injury until the span of control was more manageable
- communication and coordination of safety issues specific to this incident (utilities, asbestos and unaccounted for persons) would have been managed more effectively, and
- identification of staging areas and management of resource deployment to sectors would have been enhanced.

The first community information regarding this fire was requested by the third Incident Controller and a warning was posted on MFB web page almost two hours after the incident commenced. Social media indicates the community was aware and concerned about the fire before the web warnings were activated and it is not known whether the MFB web page warning is an effective method for delivering the

³ Metropolitan Fire and Emergency Services Board, Greater Alarm Response Matrix. P387 – 03/08.

message. Ongoing monitoring and review of community information and warning methods are recommended.

Water supplies

The management of the water supply issues at the incident was a credit to CFA and MFB working on planning and improving interoperability. Both agencies worked well together at the incident in resolving the water supply issues and in developing interoperability in the Yarra Valley area. Recently CFA have changed their hose couplings to be the same as MFB's in this area and this made possible the resolution of the water supply issues at this incident, along with suitable CFA resources being identified to relay water from alternative water mains with support of Yarra Valley Water.

Overall the incident was confined to the building of origin and exposures, which were at great risk, were protected and saved by both fire services. The Principal and Deputy Principal were very impressed and appreciative of the performance of both fire services and the support they were given in the post fire event.

3 Yarra Valley Grammar School fire operational review

Introduction

The Fire Services Commissioner requested Fire & Rescue NSW to conduct a review of a fire that occurred on 30 January 2012 at the Yarra Valley Grammar School, located at Kalinda Road in Ringwood, Victoria.

This review supports the Fire Services Commissioner's fire services reform program, which is focused on improving the interoperability, resilience, capability and capacity of Victoria's Fire Services and the services they provide to the community.

The utilisation of an independent State fire service to undertake the review is an opportunity to develop a national incident review process to improve fire services' interoperability, resilience and capabilities.

Terms of reference

- Command and control arrangements put in place to manage the fire.
- Warnings and advice strategy developed and implemented for the fire.
- Interoperability between the Melbourne Metropolitan Fire Brigade (MFB) and the Country Fire Authority of Victoria (CFA).
- Incident management strategy.
- Systems put in place to manage firefighter safety.
- Performance and access to water supply.

Review methodology

The review examined the response to the Yarra Valley Grammar School in accordance with the stated terms of reference and with the intention of identifying opportunities for improvement.

The opportunities for improvement are intended to reduce risk, enhance multi agency prevention, preparedness, response and recovery arrangements, as well as enhance procedures for the provision of information and warnings to the community.

The review was conducted by a senior officer from Fire & Rescue NSW. The review methodology incorporated:

- identification of fire service operating procedures and guidelines relevant to this incident
- evaluation of community information and warnings, and
- analysis of response, through interviews with stakeholders, review of radio communications tapes and other information pertaining to the incident.

The review needs to be read with the appreciation that the reviewer was not present at the incident and is relying on interpretation of radio communication recordings made available, incident logs and interviews.

The review was conducted in accordance with the following principles:

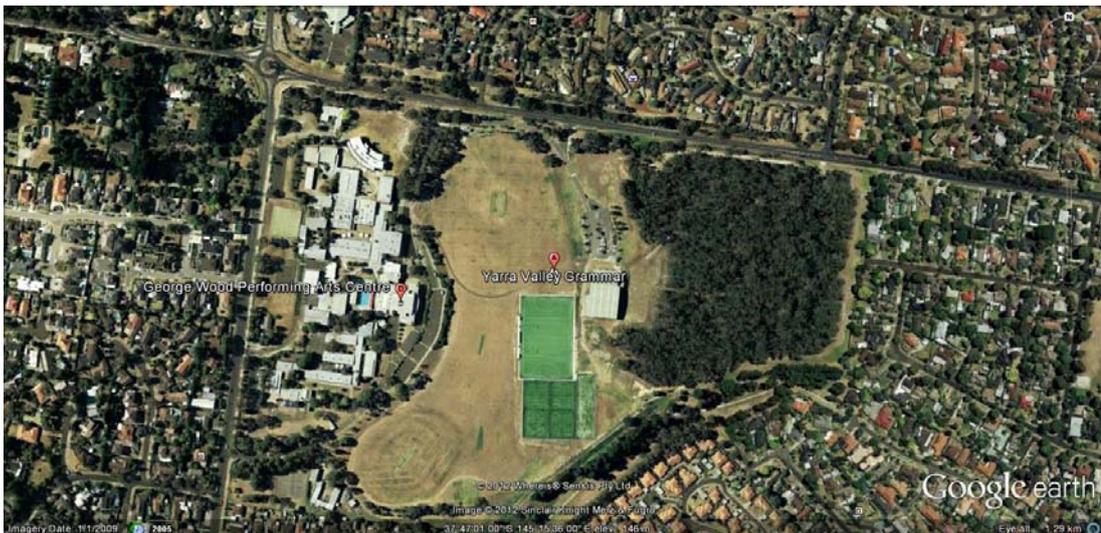
- acknowledgement that decisions are made in time critical situations with information and observations available at the time
- the purpose of the review was to assist learning and improvement by both agencies
- an evidence-based consultative approach, and
- identification of opportunities for community engagement.

The review gathered information via interviews with key officers from CFA and MFB and key staff from Yarra Valley Grammar School, and an examination of incident logs and Emergency Services Telecommunication Authority (ESTA) radio communication recordings and records.

Yarra Valley Grammar School

Yarra Valley Grammar School is located at Kalinda Road, Ringwood in Victoria. It is a private school offering education programs for early childhood from 3 years of age to year 12 students. The school is co-educational and has approximately 1,300 students. The school also has international students.

The school is located on 29 hectares, which is a tiered block of land stepping down from the west towards the east in three distinct tiers. There are numerous entrances to the school.



Yarra Valley Grammar School site (Google Earth)

Command and control arrangements

Yarra Valley Grammar School is in the MFB fire district, which is the determining factor on which fire agency is in control of a fire unless the fire agencies or Fire Services Commissioner decide to initiate alternative control arrangements^{4,5} Further to and in support of this, the *Joint Operation Activities Memorandum of Understanding (MOU), 2010* between the MFB and CFA states in Section 5.1 Unilateral Operational Activities, that:

5.1 CFA attending incidents in the Metropolitan Fire District

5.1.1 The MFB pursuant to section 93B of the CFA Act, request the CFA to attend Fires and Non-fire incidents in the Metropolitan Fire District

⁴ Joint Operational Activities Memorandum of Understanding, December 2010.

⁵ Emergency Management Act 1986 No. 30. Part 3 – Emergency Response Plan Section 16 A.

either as dispatched by ESTA, in accordance with SOP JP001, as a Move Up under SOP JP005, or in response to a Pre-Incident Response Plan under JP010.

- 5.1.2 *The Chief Officers of the Agencies agree that, pursuant to section 16 (5) of the EM Act and subject to clause 6.2 of this MOU, the Chief Officer of the MFB directs and controls CFA Members attending such Incidents under clause 5.1.1 of this MOU that they are to comply with the Joint SOPs and to comply with all directions given by the CFA Commanding Officer' (Joint Operational Activities MOU, 2010, pg 6).*

The control agency for the Yarra Valley Grammar School fire was MFB and during the course of the incident control remained with the MFB and was not transferred to any other agency.

There are a range of policies and procedures available that provide the requirements for command and control of emergency situations. The Australasian Inter-service Incident Management System (AIIMS) is the most widely used and accepted incident management system in Australia, being used since the mid-1980s and is adapted to meet local jurisdictions.

MFB utilises AIIMS as the foundation for their Incident Management System (IMS), outlined in their Emergency Response Guide Book (Version 2.0, 2010) and Incident Management System Advice Card (Version 2.1, Feb 2011).

The CFA also uses AIIMS as their incident management system.

AIIMS assumes there is a single control agency and is based on the principles of functional management, span of control, and management by objectives.

The following eight basic functions of command and control were used as a benchmark to evaluate command and control of the Yarra Valley Grammar School Fire:

1. Assume, confirm and position control
2. Situation evaluation
3. Communications plan
4. Resource deployment management
5. Strategy and Incident Action Plan development
6. Organisation of the fireground and functions to manage the incident
7. Continual review, evaluation and revision of strategy and IAP, and
8. Continuance, transfer and termination of command.

Overview of firefighting operations

The first Incident controller (IC1), an MFB Senior Station Officer, arriving on Teleboom (TB) 22, assumed control of the incident at 1915 hours, requested a Second Alarm response and established Yarra Valley Control. Following this IC1 created Sector 1 and commenced allocating resources to the other sectors and increased the alarm response to a Third Alarm.

An MFB Commander was the next arriving and most senior MFB Officer on scene at 1937 hours and took over incident control (IC2). IC2 received an update from the outgoing initial incident controller (IC1) and provided an update on the incident to ESTA at 1952 hours.

An MFB Assistant Chief Fire Officer (IC3) arrived shortly after IC2 at 1945 hours and was now the most Senior Officer on scene and, after his assessment of the incident, provided a further update to ESTA at 1956 hours. IC3 increased the alarm response to a Fourth Alarm as extra personnel were required due to the difficult nature of the site and the need for large and numerous hose lines to contain the fire. IC3 withdrew firefighters from offensive positions inside the building to defensive positions. This was done due to concerns for firefighter safety because of the advanced stage of the fire and the risk of roof collapse in Sectors 1, 2 and 3 (refer to map on p12).

MFB Command Unit 1 (CU1) arrived at approximately 2000 hours but was not able to be positioned for some time after that. It is believed that the difficulty in setting up CU1 was a result of the Local Control Point (LCP) not being repositioned to a location that could manage oncoming resources. Once CU1 was positioned control was re-located to Kalinda Road, officially identified as Yarra Valley Control, at 2038 hours. A well-located functioning control point was evident when IC3 called the sector commanders to the Command Unit at 2106 hours for an official briefing.

Initially, control of the incident was established and positioned in Sector 1. However, the initial location of the control point was not in an ideal location due to no access to arriving crews and the location was not easily identified. Hence the transfer of incident control from the first arriving senior MFB Officer to subsequently arriving more senior officers was not effectively achieved as the arriving senior officers had to navigate the site to find and meet the substantive incident controller and this appeared to draw arriving senior officers into operations and the fire fight.

Through assuming control the first arriving officer undertakes the role of Incident Controller and is responsible for the control of the incident. This is not an ideal situation as the first arriving incident controller's span of control rapidly becomes too great to manage the competing priorities of such a dynamic incident. The handover to the next arriving incident controller is critical to ensure a suitable span of control is maintained as tasks and resource requirements increase. If the location of the control point is not in a location that affords easy identification and access to oncoming resources, then there is a risk that control will not be efficiently and effectively transferred to the next arriving incident controller and maintaining the span of control and management of activities is at risk.

After the second incident controller arrived a more suitable LCP was still not established.

As the incident progressed it was not clear who was in control of the incident. Control appeared to stay with the Sector 1 Leader as the first incident controller, until the LCP was established in Kalinda Road at 2038 hours and IC3 requested a briefing of IMT members at 2106 hours.

This view is based on listening to the strategic and tactical communications of the radio communication recordings (see Event Description Appendix). IC2 provided a situation report at 1951 hours stating the fire was in check but not under control. IC 3 subsequently provided a further situation report at 1956 hours, stating the fire was contained. At 2051 hrs the sector 1 Leader (the initial incident controller) requested an update from Sector 1 and from each of the other four sectors (Sectors 2, 3, 4 and 4a). At this stage CU1 was set up in Kalinda Road, ie in Sector 3.

These messages came from three different officers and were communicated on the only functioning fireground channel (channel 22). A standard communications plan would have the Incident Controller communicating at a strategic level with ESTA, the EMT and IMT, and the IMT members communicating at a tactical and task level with

each of the sectors on a separate channel. This was not the case with the Yarra Valley Grammar School fire.

Strategic messages were continually sent by the Sector 1 Leader (the initial incident Controller) until he left the fireground injured at 2116 hrs. Considering all the senior officers were on-scene by 2000 hours, there seems to have been a delay in establishing an easily identified structured control system. It is considered this was primarily due to the delay in the arrival of CU1, which facilitates the control facility or LCP.

Central, unified Incident Control and a suitable LCP did not commence to be established until the Command Unit was operating as Yarra Valley Control at 2038 hours in Kalinda Road and the third Incident Controller called for all IMT members to the Command Unit for the initial briefing.



Image of Yarra Valley Grammar School and image/diagram of post-fire building with sectors identified.

(The images highlight Sector 3 was a better suited site from which to command, control and coordinate the incident.)

Therefore in referencing the eight key functions of command and control relating to structure fires the following observations have been made regarding this incident:

Function	Action	Improvement
Assume, Confirm and Position control	Control was assumed when MFB SSO established YVC. Transfer to arriving IMT members was not clear and evident by actions until 2106 hours. Suitable LCP was established 2038 hours.	LCP be clearly identified (green light). Statement of taking control be introduced into SOPs. Tabards be allocated to IMT members from the LCP.
Situation Evaluation	Assessment of the situation and identified strategy to contain fire was effective and value added by subsequently arriving senior officers.	
Communications	One fireground channel was identified initially (channel 22), with one attempt by ESTA to have a second channel utilised. Channel 22 remained the main fireground Channel. IMT did not identify a strategic and tactical channel. IMT members referred to each other by name and not position/function. Two different radios are utilised for CFA and MFB to communicate. This was a contributing factor to CFA resources being managed through Sector 3.	Incident Controller to establish communications plan including nominating strategic and tactical fireground channels. That radio communications between functions be announced by position and not name, ie IC to Operations Officer. Consideration be given to a more effective means of communication between CFA and MFB
Deployment Management	Resources were responded to the fire in a timely manner as a result of appropriate GARS requests from the Incident Controller. Sectors were identified and resourced. CFA resources were deployed through Sector 3 and not the LCP/staging area which is not conducive for a unified, controlled and coordinated command system.	Consider responding all fire service resources under GARS to structure fires and hazmat incidents. Functions be clearly identified by tabards and radio call signs. Mud maps, IAP, incident management documentation be reviewed to ensure they are easily utilised by Incident Controllers Systems need to be explored to ensure all resources are deployed through the LCP via a nominated staging area.
Strategy/Incident Action Plan	Reviewed in Section 10.	
Organisation	The incident was broken down into sectors and each sector resourced. Organisation and recording of location of resources from functional LCP was not set up for the first 90 minutes of the incident.	Review systems and methods for establishing and recording organising and managing resources such as tactical work sheets. Ensure hard copies are available for when electronic mediums don't work.

Function	Action	Improvement
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Review, Evaluate and Revise	Informally this occurred and resulted in a defensive strategy for personnel safety. Crews from Sectors 1, 2 and 3 were re-positioned into defensive as opposed to offensive mode. Continual Review and Evaluation of water supply was undertaken.	Reaffirm the need to review, evaluate and revise incident management functions other than Operations. This may have led to the earlier establishment of a LCP and a more structured IMT.
Continue Transfer and Terminate Control	Control was transferred to arriving senior officers but this was not clearly articulated or obvious through fireground activities. Control was terminated at 1700 hours on 31 January 2012, with a formal hand over letter from MFB to the School Principal.	Introduce a statement of taking control/command in radio procedures. Establishment of an easily identified LCP and staging area, including tabards for IMT members. Properly resourced LCP, white boards, radios and operational management system. IMT members referred to as position and not name.

Warning and advice strategy

Three community warning/advice messages were delivered through the MFB web warning page on the internet. The MFB web warning page automatically forwards the information to selected media outlets to enable the information to be broadcast.

The first warning was requested at 2028 hours from IC3 and it was posted on the web page at 2050 hours. The warning informed the public of the structure fire and advised that people located in the area of Yarra Valley Grammar School to shelter indoors, avoid travelling in the area and that the duration of the incident was expected to be all night. It also advised that people who suffered health effects after being exposed to the smoke should call Triple Zero (000).

The second warning was provided at 2315 hours and stated the fire was under control, for people to avoid the area, and that work on the fire would continue through the night. Again, the advice was given that if people suffered health effects from the smoke they should call Triple Zero (000). This message was also posted by IC3.

The third warning was delivered at 0045 hours and restated the fire was under control and no longer a threat to the community. The community was informed the response and recovery effort would continue through the night. People were advised that they could resume normal activities and windows and doors could be reopened.

A search of social media indicated two tweets on the incident, with the first being at 1940 hours noting that Yarra Valley Grammar School was on fire and fire trucks were in the area. At 2103 hours the same person tweeted and stated the residents of that home were moving to a relatives house as the smoke was “too stinky” as they lived too close to the fire⁶.

⁶ <http://pic.twitter.com/agpBlqHW>



Photo posted on Twitter at 2104 hrs

Community warning and advice observation and recommendation

Community information and warnings were requested by the Incident Controller one hour and 18 minutes after the incident started and disseminated 22 minutes later.

At 1938 hours the incident was upgraded to a Third Alarm structure fire, which suggests a significant fire incident was underway. To assist in providing timely, efficient and effective community information, messaging regarding an incident could be triggered at the Third Alarm point of a structure fire, hazmat event or rescue incident, either through ESTA, MFB, CFA or written into incident management procedures.

Also it was noted that currently MFB and CFA use different community information and warning systems. MFB utilise their web page, which simultaneously alerts numerous media outlets. CFA use One Source One Message (OSOM)⁷ which is also used by the Department of Sustainability and Environment and the Victoria State Emergency Service. A common approach to community information and

⁷ MFB are presently in the process of transferring to OSOM, which should be completed by the end of 2012.

warnings activated at identified trigger points may ensure more timely advice and information availability to potentially affected community members. Trigger points for all hazard incidents would have to be identified. Further to this, over messaging – which can be as detrimental as no messaging – would have to be managed.

Poor mobile communication coverage was also a factor in delaying sending messages electronically from the CU1.

The delay in establishing a suitable LCP complicated management of the span of control and coordination of resources, which may have contributed to a delay in community messaging.

Interoperability between MFB and CFA

The previous section of this report, *Command and control arrangements* outlines the *Joint Operation Activities Memorandum of Understanding 2010* between MFB and CFA for responses by CFA resources to fires in the MFB area. This MOU was developed to enhance interoperability between the two services when responding to the same incident and ensure good emergency incident management.

The objective of such plans is to ensure that a single unified command is established which can develop an effective single IAP which is actioned and resourced by the IMT.

The delay in establishing a functioning LCP did not facilitate a CFA Liaison Officer to assist in managing CFA resources that responded to the incident. This eventuated in CFA resources being managed through Sector 3. In addition to this a suitable Staging Area for all resources was not established until the LCP was functioning.

This resulted in the following observations.

Resources

MFB resources were responded to the incident by ESTA under the GARS protocol⁸. CFA response was facilitated by ESTA and it was assumed that this response was dictated by the GARS level called by MFB. However, there were a considerable number of resources from CFA that independently responded to the incident in private vehicles and could not be accounted for by the Incident Controller.

The Incident Controller is responsible for all personnel on site, albeit there are mechanisms to support this, including agency commanders and liaison officers. If the Incident Controller is not aware of who is on site and as result of this may not be able to manage those personnel, then it is difficult to ensure the safety of all personnel on site and compliance with the *Victorian Occupational Health and Safety Act 2004* would not be possible.

The resources were utilised but the control and coordination of CFA resources were in the main managed through Sector 3, which was initially commanded by a CFA Brigade Lieutenant and later the South Warrandyte Brigade Captain. Best practice would be to have all resources deployed through the LCP and tasked by the Incident Controller, with the assistance of a Liaison Officer from CFA. A CFA Operations Manager arrived at approximately 2108 hours and undertook the role of CFA Liaison Officer.

Greater Alarm Response System (GARS)

GARS is a means of allocating resources to meet the needs of the operation and maintain span of control. As the Incident Controller requires more resources, GARS automatically increases the amount of pre defined resources. The system also increases the specialist resources required to support mainstream operations within the emergency response to structure fires, rescues and hazardous material incidents. Support resources such as rehabilitation facilities, staging resources, Rapid Intervention Teams, Breathing Apparatus Control, Hazardous Material units and Incident Crew Management can be and are built into the GARS.

It would be advantageous for responses to emergencies involving more than one fire agency to use a single resource allocation system. This assists in managing under and over response to incidents and improves coordination of those resources

⁸ Metropolitan Fire and Emergency Services Board, Greater Alarm Response Matrix, P387 – 03/08.

to facilitate a safe, efficient and effective resolution of the emergency. If this is not able to be undertaken through an automatic process, it should be done via an appropriate resourcing model on site.

Equipment

The overall interoperability for firefighting operations between MFB and CFA went well. The coordination of resources to overcome poor water supply was achieved between the two fire agencies and Yarra Valley Water. The deployment of strategic hose lines, both in offensive and defensive positions, was achieved through multi-agency efforts. The fire was brought under control relatively quickly and it was contained to the building of origin.

Two separate BA control systems were established: in Sector 1 by the MFB and in Sector 3 by the CFA. This led to confusion in providing resources to the two separate BA controls. A link to the Operations Officer or a Main BA Control Officer would have more effectively resourced the BA Operations, instead of having the BA sectors being resourced through Sector 3.

An issue arose surrounding the replenishment of air cylinders for breathing apparatus due to differing methods of replenishing air cylinders between the CFA and MFB on the fireground. This required BA appliances from both services to be responded to the incident to replenish air supplies.

When two fire services regularly respond within the same area standardised procedures and equipment greatly assists in safe, seamless operational deployment.

Communications

Common practice for communications plans at structural fires is to use three levels of communications, being strategic, tactical and task. Initial fireground communications usually operate on one channel, facilitating all levels of communications. As the incident develops the IMT develops a communications plan allocating specific channels for each level of communication. This is done to reduce communications clutter on the relative channels, and results in more effective communications.

At the Yarra Valley fire initial fireground communications were on ESTA Channel 22 and responding appliances were advised to switch to Channel 22 on receipt of the fire call. As per MFB Standard Operating Procedures, a fireground channel is usually nominated for major incidents and some arriving appliances were instructed to switch to a nominated fire channel (Channel 1), but this was not conveyed to all appliances.

Along with this issue, there was no use of separate communication channels for strategic, tactical and task communications. As previously identified, Yarra Valley Grammar School is on a large site, uneven in nature and difficult to navigate around and through. Communications was essential by radio due to the nature of the site and an effective communications plan would have improved overall operations.

MFB and CFA use different radio systems. This required Incident management personnel to use two separate radios to allow access to each system. This communication issue could create safety issues in delivery of urgent safety messages and does not lead to efficient and effective communication at the strategic, tactical and task level.

Through interviews conducted, it became apparent that there was some confusion regarding what channel was to be used. At 1942 hours ESTA directed MFB Appliance Pumper 31 to Channel 1 as part of the MFB Communication SOP for a Third Alarm fire – but this message was not conveyed to the other resources on the fireground.

The lag time in setting up a well-resourced LCP also resulted in the majority of strategic and tactical communications coming from the Sector Leader (the first Incident Controller) located in Sector 1.

Communications at the strategic and tactical level at this incident identified individuals and not positions when communicating. This can lead to confusion and inefficient communications.

Review of the communications Joint SOP should be considered to enable all agencies responding to structure fires to refer to key positions on the fireground when communicating and rather than individual personnel names.

A more formal and agreed process for transferring control from one officer to another or appointment of incident controllers should be developed, including the requirement to advise all personnel at the incident of who is the incident controller and that transfer has occurred.

Incident management strategy

Incident Action Plan (IAP)

The IAP⁹ was based on the structure fire strategy of:

- R = Rescue
- E = Exposure
- C = Contain
- E = Extinguish
- F = Fire Duty

The strategy was to protect the exposures and contain the fire to the enclosed walkway, separating the science lab and computer resources rooms. The timely implementation of this strategy resulted in the fire being contained to the science lab. During the interview with the Deputy Principal of Yarra Valley Grammar School, he stated that both fire services did the job in a professional, competent and coordinated manner and containing the fire to the science lab allowed the school to commence the 2012 school year with minimum delay. The school opened on the following Monday, 6 February 2012.

All Sector Leaders indicated they were aware that the strategy was to contain the fire to the science lab and that the exposures to protect were in Sectors 1, 2, 3, 4 and 4A. Due to the difficult nature and terrain of the site Sector 4 was divided into two parts: Sector 4 specifically for the Aerial Ladder Platform, and 4A for firefighting operations protecting the computer rooms.

Under AIIMS, the incident classification fell within the Level 2 incident¹⁰ and the first written IAP identified the Incident Controller, the Safety Officer, the Operations Officer and the Sector 4 and 4a Leaders.

⁹ Australian Inter-service Incident Management System, Revised Edition 2011, page 83 Appendix 2.

¹⁰ Australian Inter-service Incident Management System, Revised Edition 2011, page 18.

It is not known at what time the written IAP was formulated, but anecdotal evidence suggests it took some time to develop as mobile network coverage was poor, preventing the CU1 to access templates for the IAP.

The IAP strategy of cutting the fire off at the covered walkway separating the science lab and computer libraries was understood by all Sector Leaders. Senior fire officers from MFB and CFA interviewed highlighted they understood the plan, even though it was not documented in a written IAP.

It is considered difficult to actually document IAPs in the early stages of structure fires. The process of determining the risks associated with an incident and identifying what actions to take to mitigate those risks, while calling in and allocating the appropriate resources required, is usually undertaken on white boards and mud maps. Only later is this information transferred to IAP templates, with these being constantly reviewed until the incident is under control. Indications that this incident was becoming controlled were seen within the hour of it starting; hence the RECEP IAP strategy was appropriate for the initial stages of the fire.

Incident management functions supporting the IAP, such as:

- Incident Control – establishing effective agency liaison, establishing a control facility and overseeing a functional communications plan
- Planning – developing mud maps of the area and central management of resources, and
- Logistics, including breathing apparatus support, identification of a staging area and rehabilitation facilities

were delayed until the CU1 was set up, approximately 90 - 120 minutes into the incident.

Coordination of resources, safety, planning and logistics functions would have been enhanced if a more functional LCP was established earlier to facilitate the overall incident action planning.

It is suggested that consideration is given to investigating the usefulness of an electronic Operational Management System as a future resource for Incident Controllers.

Emergency Management Team

The Emergency Management Team (EMT), consisting of CFA, Police, Ambulance, School representatives, Yarra Valley Water, Energy Authority and Chemical Disposal provider were all in place by or shortly after 2100 hours, with the exception of the Chemical Disposal company, which removed the fire damaged chemicals from the science laboratory the following day. The activities undertaken by the EMT included:

- CFA provided a Liaison Officer for the IMT
- Police shut off roads and assisted in fire investigation
- Ambulance Victoria provided medical support for firefighters
- A team of representatives from Yarra Valley Grammar School, including Principal, Deputy Principal and Maintenance Manager, worked with the EMT to determine location of the missing Science Teacher, set up the process to notify school community of the incident and made arrangements for the commencement of school; and
- Energy Authority isolated power as required by the IMT.

The CFA Senior Liaison Officer was delayed in arrival at the scene and this is believed to have been an influencing factor in CFA resources being managed through Sector 3 by the Sector 3 Leader.

Systems to manage firefighter safety

The *Occupational Health and Safety Act 2004*, *Occupational Health, Safety Regulations 2007* and *Compliance Codes* in Victoria place legal requirements on people in control of work places and this includes emergency incidents. The upcoming implementation of the National Work Health and Safety legislation will place the duty of care for safety on the Person Conducting Business or Undertaking and this duty of care includes volunteers and the general public.

It is suggested that the suggested improvements relating to safety be considered in relation to new Work Health and Safety legislation due to be adopted in Victoria in September 2012.

A Safety Officer was allocated early in the incident by the first Incident Controller and numerous critical safety issues were addressed, such as:

- Isolation of utilities was undertaken early in the incident and continuous monitoring of the status of the utilities was evident but not well communicated across the whole incident, emphasising the importance of the “Safety Officer” role. The impact of this was later in the incident when Sectors 1 and 2 were concerned power and gas was still being supplied to the building on fire. This diverted resources from operations to confirm the status of the utilities.
- Two breathing apparatus control points were set up in Sectors 1 and 3 (MFB and CFA respectively) at 2035 hours. These appeared to function effectively during the incident.
- Air monitoring in sectors commenced at a later stage of the incident to determine the level of respiratory protection required.
- IC3 identified the risk of roof collapse and ensured crews did not operate in the roof collapse zone.
- At 2253 hours asbestos was identified on site and the MFB implemented Level 1 asbestos management procedures. During the interview with the Sector 3 Leader (CFA), he advised that they were also informed of the asbestos issue on-site and that fire personnel had their PPC/PPE treated as per CFA asbestos procedures.

Safety

The recommended span of control of personnel is believed to have been exceeded during the first two hours of the incident. This is often unavoidable due to the tyranny of distance and other incidents fire services have to respond to simultaneously. However in this case evidence suggests that the span of control was not established due to the delay in establishing a functioning IMT and LCP.

MFB and CFA operate independent firefighter accountability systems that determine which personnel are on the fireground, where they are, and what activities they are doing. During interviews with various officers who had been at the fireground, both CFA and MFB could not confidently state they could quickly conduct an accurate roll call of all personnel on-site. The development of a uniform firefighter accountability system that has the capacity to readily account for all personnel on-site is suggested to enhance safety.

Breathing apparatus control systems and BA communications worked without incident, despite the requirement for separate MFB and CFA BA replenishment

systems. A longer term enhancement should be a single BA system, including sets, cylinders, procedures, etc.

Water supplies

During set up of operations it became clear that hydrants within the school grounds were dry and, at 1935 hours, IC1 requested hose lines be laid by CFA resources from the 300mm main in Kalinda Road . This task was facilitated in a timely manner. Additional water was being sourced during the incident to feed the Aerial Ladder Platform (ALP) as a contingency exposure protection tactic in the event of the fire breaking through the exposure protection handlines being used from Sectors 1 and 3.

These tactics for additional water supply managed to support the handlines in Sectors 1, 2 and 3, but the ALP never achieved enough reach to be effective. It was the opinion of the Yarra Valley Water representative that there was not enough water in Plymouth Road and Kalinda Road to supply the ALP and all the other water pumping operations taking place at that time.

In regards to the dry hydrants within the school grounds, Yarra Valley Grammar School is a significant community asset in the Yarra Valley area. Interviews with senior MFB personnel and Yarra Valley Grammar School management indicate that comprehensive Pre-Incident Planning for the site had not taken place despite MFB having responded to fire calls at the school on previous occasions and holding keys to enable access to the site.

It would be beneficial, as an emergency management preparedness activity, for such valuable sites to be identified and preparedness activities (such as pre-incident plans) are organised between these sites and fire services. This should be seen as a dual responsibility between both fire services and the sites and notification of changes to the status of fire protection systems or risk of occupancy should be reported to the local fire station and the responsible response authority by the site management.

4 Opportunities for Improvement

Command, control and coordination

The MFB and CFA, investigate the opportunities to review operational capability in the areas of:

- The policy and procedures for assuming command and control of an incident.
- Procedures and resources required for establishing an effective incident control point.
- Joint SOPs for communication systems and plans at emergency incidents including multi-agency incidents. Further to this consideration needs to be given to evaluate the benefits of referring to position and not persons when communicating between incident management functions during an emergency incident.
- Joint SOPs for staging and deploying resources, with consideration being given to the strengths and weakness of having all response agencies utilising a response matrix (similar to GARS) for response to emergencies such as structure fires, hazardous materials incidents and other type emergencies.

Community information and warnings

- The Victorian Fire Services Commissioner considers developing and implementing common procedures and processes for timely and accessible information to the community to be utilised by all fire agencies.
- Consider incorporating an automated messaging procedure triggered by a specified alarm response level.

Firefighter safety

The Victorian Fire Services Commissioner, CFA Chief Officer and MFB Chief Fire Officer consider the information in this report in respect to the requirements of the *Victorian Occupational Health and Safety Act 2004* and the *Work Health and Safety Act 2011*, to improve firefighter safety, in particular:

- the responsibility of the Incident Controller at emergency incidents, including incidents attended by more than one agency;
- developing a single crew management system for emergency incidents;
- SOPs for incident communications plans to ensure strategic, tactical, task and safety information can be communicated on the incident ground by the most effective and timely means, and
- joint SOPs for management of injured personnel at emergency incidents.

Interoperability

The Victorian Fire Services Commissioner, CFA Chief Officer and MFB Chief Fire Officer consider:

- A single system for responding resources to emergency incidents. The system needs to meet the requirements outlined in AIMS ensuring a controlled and coordinated response maintaining a suitable span of control and support for the resources at the incident.
- A review of fire service districts where a joint response to emergency incidents occur to ensure interoperability of procedures and equipment. This incident highlighted a positive outcome achieved by fire services in this area regarding common hose couplings, but improvements can be made in communications, radios, breathing apparatus and alarm response systems.

Pre-incident planning

Consideration be given to establishing, in each fire district, a register of significant community infrastructure that fire services and management of that infrastructure, work together to ensure resilience of that community resource in the event of a fire or emergency incident.

5 Glossary of acronyms

ACFO	Assistant Chief Fire Officer
AIIMS	Australasian Inter-service Incident Management System
BA	Breathing Apparatus
CFA	Country Fire Authority of Victoria
CO	Carbon Monoxide
CU1	Command Unit 1
EMT	Emergency Management Team
ESTA	Emergency Service Telecommunication Authority
GARS	Greater Alarm Response System
IAP	Incident Action Plan
ICMS	Incident Crew Management System
ICS	Incident Control System
IMS	Incident Management System
IMT	Incident Management Team
LCP	Local Control Point
LFF	Leading Firefighter
LP	Ladder Platform
MAA	Mutual Aid Agreement
MFB	Melbourne Metropolitan Fire Brigade
PT	Pumper Tanker
R	Rescue
RECEF	Rescue, Exposures, Contain, Extinguish, Fire Duty
RIT	Rapid Intervention Team
SitRep	Situation Report
SSO	Senior Station Officer
SO	Station Officer
TB	Teleboom
WT	Water Tanker
YVC	Yarra Valley Control