

Case study: urban aircraft deployment in Victoria

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This case study explores the management and the deployment of aircraft in Victoria to examine the overall awareness of command staff in responding to and managing aviation assets within the Melbourne metropolitan area.

While the efficacy of aircraft in bushfire fighting has long been recognised, their utility in urban and peri-urban environments is less understood by urban fire agencies. This was highlighted during a multi-agency fire attended by the Melbourne Metropolitan Fire Brigade and the Country Fire Authority (CFA) in late December 2017, which provided an opportunity to examine aerial firefighting in an urban parkland environment.

Through interviews with key incident management staff and individuals associated with the management of the aviation assets, five common themes were identified for further examination. While the use of aircraft was generally recognised as being successful, several opportunities for improvement arose. It is on the back of these lessons that future training and capability may be developed.

The scenario

A fire in parklands on Park Road, Cheltenham started on 27 December 2017. From the initial attack, it was immediately apparent that the operational position was dangerous and unpredictable. The local parkland consisted primarily of native scrub and tea tree vegetation. This is known to be volatile during periods of high fire risk. The Office in charge of the first fire appliances requested more resources due to limited access to the rapidly spreading fire. Several properties were under threat including houses, a primary school and a golf club.

Subsequent situation reports prompted the Operations Commander to request an aircraft to attend. The request, via radio to the communications centre, was interpreted as a request for a Helitack water bombing aircraft. A Firebird Air Attack Supervisor platform also responded for support and coordination roles. This was followed with a Skycrane aerial once more intelligence from media helicopters was assessed. All aircraft were based locally.

Theme 1: Knowledge voids

The requesting Commander was familiar with the availability of the aircraft and their potential efficacy

in countering risk to the community. He was, however, largely unfamiliar with the agreed processes involved in arranging and managing an aviation response.

Theme 2: Communications

Incident management staff found communications with the aircraft crew difficult. Incompatible radio networks meant aviation coordination was carried out using unfamiliar systems. In addition, a lack of procedural knowledge meant there was some confusion about which fire ground radio channel to use for ground-to-air communication. Ground crews were not monitoring the aviation channel on the fire line. If they did, it might have enhanced their situational awareness of the aircraft's movements. Ground crews were also not familiar with how to respond when their fire appliances were identified by the vehicle numbers painted on the roof.

When incident management personnel were hosted aboard the aircraft for a reconnaissance flight, they reported the significant difficulties associated with using a handheld radio while wearing a helmet in a deafening helicopter cockpit.

Theme 3: Safety of ground crews

The ground crew's lack of familiarity with working around aircraft caused delays on the fire ground and potentially unsafe conditions. Some firefighters were slow to retreat from the firefront and others remained in the aircraft drop zone while the helicopter approached. This caused delays as helicopter pilots will not drop water until the verbal 'all clear' has been given from the sector commander and the drop zone is visually free of fire appliances and personnel.

Theme 4: Operational planning

While the incident management team generally agreed that the presence of the aircraft was required, there was little integrated planning for their use, which hampered their utility. This was particularly evident by the restricted use of the Skycrane. The close proximity of the airfield and their rapid deployment time (within five minutes) contributed to some operational confusion.

Theme 5: Urban complexities

The nature of urban and peri-urban environments and the tactics adopted by their responsible fire agencies may be intrinsically at odds with the requirements of aviation firefighting. A rapid, aggressive first response by local ground resources using reticulated water supply, puts crews and fire appliances in close proximity to the firefront. This can be an issue for aviation firefighting as aircraft need this area to be clear in order to commence their water bombing attack. Aircraft pilots are, understandably, reluctant to hold water over built-up areas due to the possibility of unintentional water release and the risks that poses to people and structures on the ground.

These issues are of lesser concern in remote area firefighting where ground crews are more dispersed and cognisant of the activities of the aircraft. Pre-determined dispatch (where aircraft are included in the primary response) ensures aircraft arrive and commence a first attack before a coordinated ground campaign is mounted, allowing them to operate free from the concern of protecting ground crews.

Key lessons

The fire in Cheltenham allowed a review of the effective use of aircraft by fire agencies in urban environments. As with any process that is seldom used, there will be problems that arise and opportunities to improve future activations when they occur. Some key learning opportunities were derived when issues under the identified themes were analysed.

Increase awareness

The efficacy of aviation firefighting is well recognised. In order to effectively use aircraft as an urban firefighting asset, increased awareness of command staff related to process and practice for requesting aircraft is recommended.

In Victoria, the responsibility of coordinating the aircraft fleet lies with the State Air Desk (SAD), a functional area within the State Control Centre. Agreed process involve contacting the SAD duty officer by phone and providing the details of the request, including the number and type of aircraft required, the location and name of the 'location control point' and a nominated fire ground communications channel.

Reinforce communications

Greater knowledge of the communications and support arrangements for the use of aircraft once they've been deployed would include understanding the agreed communications systems. The use of CFA fire ground channel 107 for all aviation purposes in the greater metropolitan area and staffing a dedicated aircraft communications officer position within the incident management team are both good examples.

In addition, there are a number of specialist incident management team and support roles that support

aviation resources. These are air attack supervisors, aircraft officers and regional aircraft coordinators. These specialists should be called on to provide the technical advice required to effectively manage aviation resources and are available from external partner agencies via state arrangements.

Use Air Observers

Air Observers are airborne crew who provide detailed intelligence to the incident management team on the ground. The near real-time observation data provided by these operators are uploaded to pre-existing (and familiar) systems like EM-COP, which is accessible via laptops or mobile devices. Air Observers are routinely deployed with aircraft on days of high fire danger and can provide maps, video and still photography directly to an incident controller.

Improve planning

In the event that aircraft have been or are likely to be deployed to a fire, command staff should develop a structured plan for their use. This should be done in the context of the overarching operational plan. Such structured inclusion of aircraft should be subject to review and developed early, allowing for the potential rapid response of aircraft to fire grounds.

Use aerial reconnaissance

In the absence of Air Observers during the fire in Cheltenham, the opportunity to undertake aerial reconnaissance flights was afforded to the operations officer. While his ability to communicate with the ground crew was limited, it was an invaluable intelligence-gathering exercise and is recommended for future incidents.

Enhance training

Training is recommended to increase the awareness of operational crew responsibilities related to working around aircraft. Emergency Management Victoria produces a multi-agency training package that is suitable. Knowledge gaps identified in this case study included the lack of situational awareness around aircraft activities, the need to evacuate the drop site, correct fire appliance positioning and monitoring aviation radio traffic.

Summary

Increasing community expectations mean fire agencies must move on from traditional approaches and identify and embrace improved delivery models that enhance outcomes. This is especially relevant for densely populated urban environments.