

Dear Professor O'Kane,

Please consider the following submission, relevant in particular to Point Two in the Terms of Reference:
The preparation and planning by agencies, government, other entities and the community for bushfires in NSW, including current laws, practices and strategies, and building standards and their application and effect.

Our experience and perspective:

Carbonix is an Australian company specialising in commercial drone systems. We use advanced carbon fibre airframes to fly heavier payloads over longer distances, more safely. Our experience includes aerial surveying, ISR (Intelligence, Surveillance, Reconnaissance), and first-response/rescue missions.

Recommendations for future practices and strategies:

- Accurate and regularly updated survey data is valuable in assessing risk and deciding on preventative actions. Specifically: Information on condition of foliage, fuel loads, access roads, water reservoirs, animal populations, moisture content, hot spots.
- Drones can operate 'low and slow', in teams, with multiple sensors, giving detailed and close-in visibility.
- Aerial imagery is valuable in monitoring preventative burns and incipient fires.
- Aerial monitoring of wildfires in real-time can provide valuable data to inform management actions, evacuation decisions, and to coordinate ground assets.
- Regular aerial surveying with manned aircraft is expensive. Drones can provide better information more frequently for the same or lower cost.
- This requires drone types and operators able to deploy in the field and work under the relevant regulatory framework (larger and longer-range than what is typically in use currently).
- Different types of drone specialise in different missions. Fixed-wing types with vertical take-off and landing are best suited to operate from unprepared sites and cover large areas.
- Drones are also capable of providing economical sustained 'eye-in-the-sky' real-time visibility during preventative burning and during critical firefighting operations.
- And providing post-fire damage assessment for rescue, recovery, insurance, animals and endangered species monitoring.
- Key to deploying drones in emergency operations is the integrity of the equipment and operating procedures, particularly with respect to coordinating low-level drone flights with higher-level manned aircraft such as large tankers and rescue helicopters.
- Investment in drone capabilities will return higher value than conventional methods for the acquisition of data pertaining to the condition of the landscape, and for situational awareness during regular and emergency fire management.
- A long term commitment to working with Australian manufacturers and operators is key to adopting new technology effectively.
- As well as better value-for-money in the acquisition of critical data, drones also offer secondary benefits such as:
 - o Keeping operators out of danger when flying near fires in volatile conditions;
 - o Presenting a reduced risk of starting additional fires/adding significant fuel in case of an incident;
 - o Reducing traffic and the potential for collisions at higher altitudes where manned aircraft will continue to operate;
 - o Lower environmental impact (noise, pollution, animal trauma).

- A long-term strategy for collaboration with operators, CASA, and other stakeholders is necessary to strike the balance between regulation that enforces acceptable levels of process integrity and sufficient flexibility to accommodate new ways of operating and new technologies.
- Longer-term planning should consider making all aerial assets involved unmanned, including tankers.

Purpose of Carbonix making this submission:

To briefly outline the role and advantages of drones in the management of land, prevention of fires, and emergency response.

To give a quick overview of the value available and recommend actions.

Thank you and Best Regards,

Dario

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Dario Valenza

Founder and CTO

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W: www.carbonix.com.au