

EARLY DETECTION AND SUPPRESSION OF BUSHFIRES IN WA'S FORESTS



To prevent intense fires and biodiversity loss, DBCA must shift to a program that focuses on rapid detection and suppression strategies alongside First Nations-led cultural burning and targeted, low-intensity burns.

EARLIER DETECTION

Ultra early fire detection systems

Advanced ultra early bushfire detection systems can now identify smouldering before flames appear. Air sensors, connected via mobile networks, monitor gas changes and provide real-time data to forest managers. These systems offer ultra early warnings to firefighters, especially in discrete areas close to towns, improving response times and reducing fire risks.

Fire camera detection systems

Fire cameras are widely used worldwide and have been embraced in Queensland since 2002. These cameras operate 24/7, detecting fires far more consistently than human observers. With a 30 km range, they provide real-time data every three seconds, analysed by AI for immediate alerts. AI integration improves situational awareness, optimising response times by calculating the best routes and available resources. High-zoom cameras offer detailed fire imagery and can assist in arson detection. Mounted on towers, they ensure 360-degree coverage. Cost-effective yet powerful, fire cameras enhance firefighting efficiency without compromising privacy.

The Department of Biodiversity, Conservation and Attractions (DBCA) manages bushfires in WA's southwest forests and woodland, relying on prescribed burns. Burns are often lit in remote forests, are too hot and large, and sometimes even escape, having a profound impact on the environment. In some ecosystems, the flammability is actually increased and changing climate conditions are also making it harder to manage fire. Current detection methods — fire towers, resident reports via 000, aircraft patrols, and satellite data — are limited and can lead to time lags.





Photo: JESHOOTS.com

Fire detection drones

Drones are transforming bushfire detection and response by providing real-time intelligence on fire behavior. Equipped with infrared, visual, and gas sensors, they detect heat, smoke, and flames with high accuracy. Drones can operate day and night, even in dangerous weather, confirming new ignitions and pinpointing fire locations. Drones can track thunderstorms, identifying fires caused by lightning strikes immediately. Along with fire cameras and satellites, drones provide critical data to analysis systems which provide live fire maps, predictions and assist firefighters in the field. They can also serve as temporary communication platforms in remote areas or when fire damages infrastructure, improving overall firefighting effectiveness.

Satellite detection technology

Satellites detect fire hotspots using thermal infrared sensors, but Australia relies on international satellite data with limited resolution and time lags not suitable for rapid fire detection. South Australia's own satellite, launched in 2024, uses AI for faster detection. Governments must invest in new satellite technology to improve real-time monitoring of bushfire-prone areas.

Fire weather forecasting

AI systems that forecast bad fire weather have been developed in QLD. These analyse historic weather records and real-time data to provide fire crews and residents with the accurate weather forecasts they need to prepare for fire. In WA we would need more Remote Automated Weather Stations to ensure enough information is fed into any future AI system.

FASTER SUPPRESSION

Water gliders & autonomous drones

High-speed water gliders for fire suppression are being trialled in the ACT. Dropped from aircraft, they can travel at 400 kph, releasing half a tonne of water each. Combined with scout drones, they can rapidly target lightning-induced fires, improving response times and preventing small fires from spreading. Autonomous fire suppression drones target and extinguish small fires with inbuilt sonic cannons.

Aerial firefighting

Australia has over 500 firefighting aircraft, but, despite covering almost a third of the landmass, WA has limited resources, with some helicopters and planes based in Busselton, Albany, Serpentine, Gingin and Jandakot. Unlike NSW, which invests in sovereign aircraft, WA urgently needs more firefighting aircraft and pilots in key locations for rapid fire suppression.

On-ground firefighting

On-ground bushfire suppression in the Southwest forest currently relies on fire trucks, 4WD units, and limited heavy machinery, but access issues and Phytophthora dieback (a plant-based disease) complicate efforts. To improve response capacity, WA needs more bulldozers and loaders, better water management, high-volume pumps, upgraded airport infrastructure, specialised non-burn suppression equipment, and more fire trails and strategic burns to protect communities.

The WA Government can enhance bushfire management with better funding and proven methods, including First Nations-led cultural burning and targeted, low-intensity burns to reduce destruction while protecting lives, infrastructure, and biodiversity.

Find out more at wafa.org.au/better-fire-management



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Photo: Keith Lightbody