

Ref.	Hazard and control statement
1.2.0.02	<p>Activity – Firefighting operations at wildfires</p> <p>Hazard – Fire behaviour</p> <p>Hazard knowledge Fire behaviour at wildfire incidents can change rapidly both in intensity and in the rate of fire spread. The changes can be brought about by:</p> <ul style="list-style-type: none"> • Movement from one fuel type to another • Changes in the landscape • Changes in the local climate or larger scale weather patterns <p>Wildfires only burn uniformly in all directions when burning within; uniform fuel, on flat ground and in the absence of wind. The fire behaviour observed at the majority of wildfires can therefore be classified according to the following:</p> <ul style="list-style-type: none"> • Wind-driven wildfire – where the rate and direction of fire spread is predominantly influenced by the speed and direction of the wind • Topography-driven wildfire – where the rate and direction of fire spread is predominantly influenced by the topography • Fuel-driven wildfire – where the rate and direction of fire spread is influenced by; the amount, condition and arrangement of the fuel <p>Some wildfires may be significantly influenced by more than one of the above factors. Different parts of the same wildfire may be influenced by the above factors at different times. It is therefore important that environmental conditions across the whole incident ground are assessed and monitored as changes in; fire intensity, rate of spread and the presence of extreme fire behaviour can all represent significant hazards to FRS personnel</p> <p>Control measure knowledge Refer to any available operational information. Appliances should approach the incident with caution and park away from products of combustion with consideration given to the possible escalation of the incident. Identify likely changes to fire intensity and fire spread using the Wildfire Prediction System. The direction and speed of smoke travel should be estimated by identifying wind strength, direction and ambient temperature. Identify windows of opportunity, including the presence of any natural fire breaks. Identify hazard areas and establish safe access and egress routes to the scene of operations (See LACES protocol) (Appendix A). Affected areas should be identified and controlled by restricting access. Utilise appropriate firefighting media and techniques, consider the use of forced air units for suppressing fires involving fine fuels. Liaise with other agencies where transport networks are affected, for example, Network Rail or Highways England. Consider the evacuation of surrounding properties, particularly those within the expected area of fire spread. Request the attendance of the Police to assist with evacuation. Members of the public should be advised to close windows and doors if their properties are affected by smoke. Where FRS personnel are operating in affected areas, appropriate PPE/RPE should be worn, consider donning eye protection near fire front.</p> <p>Control measure tactics</p> <ul style="list-style-type: none"> • Refer to generic control measures • Refer to any available operational information • Utilise anchor point positions to commence firefighting • Use Wildfire Prediction System (WPS) • Request weather information and consider the effect • Identify safe access and egress routes • Utilise appropriate firefighting media and techniques • Consider evacuation of surrounding properties • Request attendance of Police • Don appropriate PPE/RPE, consider eye protection • Consider using aerial observation to gain situational awareness

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1.2.0.03	<p>Activity – Firefighting operations at wildfires</p> <p>Hazard - Extreme fire behaviour</p> <p>Hazard knowledge Extreme fire behaviour is fire behaviour which becomes erratic or difficult to predict. This can lead to rapid and/or unpredictable fire spread, which may be sporadic or sustained over longer periods of time. Extreme fire behaviour is a significant hazard to the safety of all FRS personnel deployed at a wildfire incident and to members of the public. Fire behaviour is highly likely when one or more conditions meet the 30-30-30 rule: Relative humidity at or below 30%, wind speed at or above 30 kilometres per hour or temperatures at or above 30 degrees centigrade</p> <p>Some of the situations where extreme fire behaviour is more likely to occur include:</p> <ul style="list-style-type: none"> • High fuel loading – particularly in fine fuels • The existence of ladder fuels – particularly if there are large quantities of fine fuels • Fire aligned with a strong wind • High temperatures • Drought conditions • Availability of combustible fuels (particularly dead fuels) • Multiple seats of fire <p>Other more common indicators of extreme fire behaviour are:</p> <ul style="list-style-type: none"> • A surge in fire intensity • Long flame lengths • Pulsating flames • Large quantities of smoke • Separate fires occurring outside the fire edge (spotting) • Ignition of aerial fuels in the canopy • An increase in surrounding air movement <p>Control measure knowledge Refer to any available operational information to identify fuel types and arrangement. Consider the likelihood of fire spread and the possibility of extreme fire behaviour. ICs should consider utilising the Wildfire Prediction System (WPS) to assist with estimating fire behaviour and spread (Appendix B). Consider direct, indirect and aerial attack depending on fire intensity and flame length. Use 'anchor point' location to protect FRS personnel from being outflanked by fire. Identify windows of opportunity, including the presence of any natural fire breaks. Consider prioritising operations close to roads, recognised paths or tracks. Identify hazard areas and consider the evacuation of the surrounding properties, particularly those within the expected area of fire spread. Request the attendance of the Police to assist with evacuation. Utilise appropriate firefighting media for the type and scale of the incident and ensure appropriate PPE/RPE is worn including the use of eye protection.</p> <p>Control measure tactics</p> <ul style="list-style-type: none"> • Refer to generic control measures • Refer to any available operational information • Identify fuel type and arrangement • Request weather information and consider the effect • Assess likelihood for extreme fire behaviour • Utilise Wildfire Prediction System (WPS) • Identify safe access and egress routes • Utilise anchor point positions to commence firefighting • Consider evacuation of surrounding properties • Request attendance of Police • Utilise appropriate firefighting media and techniques • Consider appropriate PPE/RPE, consider eye protection.

Ref.	Hazard and control statement
1.2.0.04	<p>Activity – Firefighting operations at wildfires</p> <p>Hazard – Undetected fire spread</p> <p>Hazard knowledge Undetected fire spread may pose a significant hazard due to fires forming in areas that were not anticipated. It may compromise some or all of the following:</p> <ul style="list-style-type: none"> • Access, egress and escape routes • Vehicles and equipment • FRS personnel working at the incident • Members of the public • Effective implementation of the LACES safety protocol • Other elements of the tactical plan <p>Three specific types of undetected fire spread that are particularly challenging to identify are; ground fires, spot fires and crown fires.</p> <p>Ground fires are fires that burn in the fuels present below the ground surface. Ground fires usually burn in organic matter where oxygen is available, for example, burning within the roots of vegetation, buried branches, twigs or needles. In some situations, ground fires may burn in the soil itself, such as peat fires. It can also be difficult to determine the depth and extent of fire spread beneath the ground. Ground fuel fires usually burn with low intensity through smouldering combustion. They can smoulder for a significant amount of time, and travel undetected for considerable distances.</p> <p>Spot fires occur when sparks and embers are transported by the wind or convection column and land to ignite new fires outside the main fire perimeter. During this process, burning material (sometimes referred to as flying brands or firebrands) can be carried considerable distances. Spot fires can represent a significant hazard to personnel, particularly if undetected for a period of time.</p> <p>Crown fires are fires that burn in the upper canopy of vegetation. Crown fires can occur in shrubs or trees and their intensity is usually dependent on the amount and condition of the fuel. For crown fires to occur, there usually needs to be sufficient and continuous fine fuels.</p> <p>Control measure knowledge Conduct direct observation and consider the use of a TIC, as ground fires by their very nature are concealed, which means they may be difficult to locate. Aircraft, including drones, can provide aerial observation for wildfires. In the case of undetected fire spread an aerial view can provide early warning of spot fires and an early indication of potential ground fires. Police helicopters and FRS drones are normally fitted with Thermal Image Cameras (TICs) which may assist in detecting fires. Damping down and turning over involves extinguishing a fire completely once it has been brought under control, to prevent escape or re-ignition.</p> <p>Control measure tactics</p> <ul style="list-style-type: none"> • Refer to generic control measures • Conduct direct observation • Utilise a TIC • Consider utilising aerial observation • Conduct damping down and turning over