The causes and prevention of wildfire on heathlands and peatlands in England (NEER014)

Appendix 11: Glossary of wildfire and other relevant terms

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Appendix 11. Glossary of wildfire and other relevant terms

Introduction

This glossary is derived from the three main sources that are set out below. Additional information on habitats and terminology has been supplied by Natural England and the Forestry Commission.

- *Fire and Rescue Service wildfire operational guidance*: https://www2.gov.scot/Publications/2013/10/6118.
- *European glossary for wildfires and forest fires*: http://gfmc.online/literature/EUFOFINET-Fire-Glossary.pdf.
- Forestry Commission. 2014. *Building wildfire resilience into forest management planning.* Forestry Commission Practice Guide. Edinburgh: Forestry Commission: https://www.forestresearch.gov.uk/research/building-wildfire-resilience-into-forest-management-planning/

Glossary

Absolute humidity (AH): the mass of water contained in a unit volume of moist air.

Access: a point of entry and exit and/or route to an incident location.

Accelerant: material used to initiate or increase the spread of a fire. This will often be a flammable liquid.

Accident investigation: the process of determining the circumstances and cause(s) of an accident or near miss incident. The seriousness of the accident or near miss incident will usually dictate the level of investigation required.

Accident report: a document that records the circumstances and causes of an accident or near miss incident. The primary purpose of accident reporting is to identify measures that can be taken to reduce the likelihood of recurrence. In some circumstances, an organisation may have a legal obligation to complete and submit an accident report to a relevant authority.

Accountability: the obligation of an individual or organization to justify its actions and to accept responsibility concerning the decisions that were made which determined the actions taken. Accountability cannot be delegated.

Acid grassland: grassland occurring on soils that have a pH below 5, often-unenclosed hillsides.

Adaptive management: a systematic process for continually improving management policies and practices by learning from the outcomes of operational programmes.

Advancing fire: fire progression associated with the head (front) of the fire. Fire behaviour in this area is usually characterized by more intense burning, increased flame height and length and more rapid rates of spread. It will usually occur when a fire burns with the support of one or more forces of alignment (for instance, wind, slope or aspect).

Advection: the transfer of atmospheric properties by the horizontal movement of air. Advection will usually involve the transfer of warmer or cooler air, but it may also involve the transfer of moisture.

Aerial attack: a fire suppression operation involving the use of aircraft to release water or retardant on or near a wildfire. An aerial attack can be: head, tail, indirect, flank or parallel aerial attacks.

Aerial coordination: the management of aerial operations at a wildfire incident. This role always has two key aims: to protect the safety of all aircraft and suppression personnel on the ground; and to optimise the efficiency of all aerial resources.

Aerial coordinator: the pilot or officer appointed to carry out the task of air coordination. The Aerial Coordinator will usually have authority over all aerial resources involved in aerial operations at the incident.

Aerial detection: the act or process of discovering, locating and reporting wildfire incidents from aircraft. Aerial detection can be:

> ***Planned*** – where an agency mobilizes aircraft with aerial observers for the specific purpose of detecting wildfires.
>
> ***Unplanned*** – where an aircraft not specifically hired or mobilised to detect wildfires reports a wildfire to a responsible agency. For example, unplanned aerial detection may come from passenger airplanes or other aircraft.

Aerial fuel: any fuel found at a height of more than 3.5 metres above the ground surface.

Aerial ignition: ignition of fuels from the air. Aerial ignition is usually achieved by using an aerial ignition device.

Aerial ignition device: inclusive term applied to equipment designed to ignite fuels from an aircraft. Examples of aerial ignition devices include:

> ***Delayed aerial ignition device*** **(DAID)** – an incendiary device dropped from an aircraft that will ignite after a predetermined amount of time. The delayed ignition is usually achieved through the production of a chemical reaction which is initiated prior to or during the drop.
>
> ***Helitorch*** – an aerial ignition device hung from a helicopter that disperses ignited gelled gasoline.

Aerial observer: a person flying in an aircraft who is tasked with discovering, locating, and reporting wildfires and forest fires from an aircraft; and/or aerial reconnaissance.

Aerial operations: any manoeuvre completed by an aircraft in support of wildfire suppression activities, inclusive of:

- direct attack through drops of water or retardant
- indirect attack through retardant drops
- cargo drops of supplies
- aerial observation and reconnaissance
- aerial reconnaissance
- aerial coordination
- aerial detection
- rescue missions.

Aerial reconnaissance: use of aircraft for conducting preliminary surveys of a wildfire to gather information on:

- fire behaviour

- topography and fuel types
- potential hazards and high risk areas
- potential windows of opportunity
- safety of ground personnel.

The information gathered from aerial reconnaissance will be communicated to the Incident Commander to assist in the decision-making process.

Aerial resources: aircraft including helicopters, aeroplanes and drones that can be used to attack the fire or observe its development. It also includes supporting personnel and equipment.

Air mass: an extensive body of air with relatively uniform horizontal levels of temperature, humidity, and pressure.

Alidade: a sighting device used to determine the horizontal bearing of a fire from an observation point.

All-Terrain Vehicle (ATV): any motorised vehicle designed to travel on four low-pressure tires on unpaved surfaces, having a seat designed to be straddled by the operator and handlebars for steering control.[1] ATVs can be classified into two categories:

- Type I – designed for transporting one operator
- Type II – designed for transporting one operator and one passenger.

Altitude: vertical distance between sea level and an aircraft in flight.

Anabatic wind: upslope winds. Anabatic winds occur when daytime solar radiation heats air at lower elevations causing it to flow upslope.

Anchor Point: a location on the landscape that is strong enough to act as barrier to fire spread. The commencement of suppression operations from an anchor point ensures that a wildfire cannot escape from an area of containment, which could threaten the success of the operation and/or the safety of suppression personnel. It may be necessary for anchor points to be strengthened before use or even created by hand or machine. The creation of an anchor point is sometimes a key element included within the LACES safety protocol.

Ancient woodland: any area that has been wooded continuously since at least 1600 AD. It includes: ancient semi-natural woodland (ASNW) mainly made up of trees and shrubs native to the site, usually arising from natural regeneration; and plantations on ancient woodland sites (PAWS) replanted with conifer or broadleaved trees that retain ancient woodland features, such as undisturbed soil, ground flora and fungi.

Anemometer: an instrument that measures wind speed.

Arable crops: cultivated grassland. Arable crops can have a much higher fuel loading than natural grassland and are commonly characterised by uniformity in both vertical and horizontal fuel arrangement.

[1] Definition from the “All-Terrain Vehicle Industry European Association” (ATVEA) at: http://www.atvea.org/9431E/What_is_an ATV.aspx

Area ignition: ignition of several individual fires throughout an area, either simultaneously or in rapid succession, and so spaced that they add to and influence the main body of the fire to produce a hot, fast-spreading fire condition.[2]

Area of Outstanding Natural Beauty: an Area of Outstanding Natural Beauty (AONB) is an area of high scenic quality that has statutory protection in order to conserve and enhance the natural beauty of its landscape. AONB landscapes range from rugged coastline to water meadows to gentle lowland and upland moors: https://webarchive.nationalarchives.gov.uk/20140605093815/http://www.naturalengland.org.uk/ourwork/conservation/designations/aonb/default.aspx

Area of Special Scientific Interest: a statutory designation in Northern Ireland relating to areas of land that have been identified as being of the highest degree of conservation value (c.f. SSSI in GB).

Area of origin: general geographical location within a fire scene where the point of ignition is believed to be located.

Arson: the wilful or malicious burning of a fuel with criminal intent to cause damage.

Aspect: the direction a slope faces in relation to the sun.[3] Aspect is a force of alignment.

Assigned resources: resources that have been allocated work tasks at a wildfire incident.

Assignment: a task allocated to an individual or team to complete.

Atmosphere: the air surrounding the earth. The atmosphere is divided into a series of layers with different characteristics.

Atmospheric inversion: an atmospheric condition that occurs when temperature within a vertical layer of air increases with altitude, resulting in a very stable atmosphere. The inhibition of vertical motion in the atmosphere can allow the build-up of fire generated smoke pollution.

Atmospheric pressure: the force exerted by the weight of the atmosphere per unit area.

Atmospheric saturation: an atmospheric condition that is reached when air at a specific temperature contains all the water vapour it can potentially hold. When saturation occurs, the process of evaporation ceases. Saturated air can also be referred to as 100% relative humidity.

Atmospheric stability: the degree to which the vertical movement of air within the atmosphere is enhanced or suppressed. The stability of the atmosphere can be classified in one of three ways:

> ***Stable atmosphere*** – an atmospheric condition that occurs when the potential temperature within a vertical layer of air increases with altitude. A stable atmosphere will suppress the vertical movement of air (i.e. convection) and is likely to produce predictable fire behaviour. The inhibition of vertical motion in the atmosphere can also cause a build-up of fire-generated smoke pollution.
>
> ***Neutral atmosphere*** – a neutral atmosphere will neither enhance nor suppress the vertical movement of air.

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[2] Source: National Wildfire Coordinating Group (2008) *Glossary of Wildland Fire Terminology* (National Wildfire Coordinating Group, Boise), p. 29.

[3] A slope receiving direct sunlight at a particular point in time is described as being in aspect, while a slope not receiving direct sunlight at a particular point in time is described as being out of aspect.

Unstable atmosphere – an atmospheric condition that occurs when the potential temperature within a vertical layer of air decreases with altitude. An unstable atmosphere will enhance and support the vertical movement of air and is more likely to produce erratic, unpredictable and extreme fire behaviour.

Attack a fire: a generic term for the various methods that can be used to suppress a fire or parts of a fire, including:

Direct attack – an offensive fire suppression tactic that involves an attack being made at or near the fires edge. This technique normally relies on the use of hand tools and or water.
Indirect attack – any suppression methods implemented away from the fire edge.
Aerial attack – fire suppression operation involving the use of aircraft to drop water or retardant on or near a wildfire.
Flank attack – attacking the fire along the flank or both flanks simultaneously.
Parallel attack – method of fire suppression in which a control line is constructed approximately parallel to and some distance away from the fire edge.

Audible warning device: a signalling device that generates a loud siren to provide a warning. Audible warning devices are sometimes mounted to aircraft and are sounded by pilots to warn ground teams that an aircraft is approaching to make a drop.

Authority: the legal right to attend and complete actions and assignments at a wildfire incident.

Available fuels: the proportion of the total fuel that would burn under specified burning and fuel conditions.

Available resources: resources that have been allocated work tasks at a wildfire incident.

Average wind direction: the most frequent direction from which a wind blows at a particular location over a specified period of time, usually 10 minutes as specified by the World Meteorological Organisation.

Average wind speed: the mean average wind speed at a particular location over a specified period of time, usually 10 minutes as specified by the World Meteorological Organisation.

Back burn: an operational burn ignited along the inner edge of a control line to consume the fuel in the path of an advancing wildfire or to change the direction of force of the wildfire's convection column.

Backing fire: a lower intensity fire or part of a fire which burns against the wind and/or down slope.

Barometer: an instrument used for measuring atmospheric pressure.

Barrier: any natural or artificial obstruction to fire spread. This is normally an area devoid of fuel that is large enough in size to prevent a fire passing through or over it.

Baseline: the initial line of fire ignited along a control line to contain and control subsequent burn operations.

Bearing: the horizontal direction to or from any point, usually measured clockwise from true north, or some other reference point, through 360 degrees.

Beater: a hand tool consisting of a large piece of rubber attached to a long handle. Beaters are used to drag over and smother flames from burning ground fuels.

Beaufort Wind Scale: a system for estimating wind speeds based on observation of visible wind effects. A series of descriptions of visible wind effects upon land objects or sea surfaces is matched with a **corresponding series of wind speed ranges, each being allocated a Beaufort number.**

Biodiversity: a term commonly used to describe the variety of life on Earth: https://webarchive.nationalarchives.gov.uk/20140605093145/http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/default.aspx.

Black area: an area of fuel that is black in appearance because some or all of the fuel has been burnt. A black area may support a second burn if some fuel remains and this could represent a safety risk to suppression personnel.

Blanket bog: a general term to describe a wide range of ombrotrophic and rheotrophic peatlands:

> ***Ombrotrophic*** – supplied solely by water derived from the atmosphere (such as rain, snow and fog)
>
> ***Rheotrophic*** – supplied by water flowing horizontally through the mire.

Blanket mire: another term for blanket bog.

Blind area: an area in which neither the ground nor its vegetation can be seen from an observation point.

Bog: a permanently saturated area of spongy ground with poor drainage. Bogs are often found in upland areas experiencing cool temperatures and high rainfall, though raised bogs occur in lowland situations. Slow decomposition of the plants found within bogs leads to the formation of peat. See also Blanket bog and Blanket mire.

Brash: the residue of branches, leaves (or needles) and tops of trees, sometimes called 'lop and top', usually left on site after harvesting. Also residue from cut shrubs and sub-shrubs including heather.

Brashing: the removal of the lower branches of conifers (to about 2 m) to allow access for inspection and marking thinnings.

Breakout: the escape of a fire from an area of containment.

Briefing: a meeting during which relevant information is exchanged.

Broadleaves: trees that are characterised by their broad leaves, most of which are deciduous.

Build-up: a sustained increase in fire intensity *or* an accumulation of fuel available to burn.

Burn: to be on fire:

- An area of fuel consumed or partly consumed by a fire.
- An injury to flesh caused by a cauterizing agent, heat from a fire, or a heated object.
- A managed fire (i.e. an operational burn or prescribed burn)

Burn plan: a pre-determined strategic scheme or programme of activities that is formulated in order to safely and effectively accomplish the objectives of a managed burn. A burn plan will outline the selection of tactics, selection of resources, resource assignments and how performance will be monitored during a managed burn. It should be noted that a burn plan may need to be dynamic to take into account any changes in conditions or circumstances.

Burn crew/team: a group of individuals with the collective competencies to safely and effectively carry out an operational burn.

Burn over: a situation where personnel or equipment are caught in an advancing flame front.

Burn severity: a qualitative assessment of the heat pulse directed toward the ground during a fire. Burn severity relates to soil heating, large fuel and duff consumption, consumption of the litter and organic layer beneath trees and isolated shrubs, and mortality of buried plant parts.

Burn supervisor: a person who manages the actions, assignments and safety of a burn team.

Burning conditions: the state of the combined components of the fire environment that influence fire behaviour within available fuels. Burning conditions are usually specified according to the factors of aspect, weather, slope/ topography, and fuel type and load.

Burning out: the intentional burning of parcels of fuel to prevent fire spread. This is normally carried out to consume fuel between a control line and the fire edge.

Burning period/season: the dates/months of the year when land management burning is legally permitted.

Burning regulations: rules and restrictions concerning the use of operational burns as a fire suppression tactic and the use of prescribed/managed burns including for other reasons. The Heather and Grass etc. Burning Regulations (England) 2007 apply in England: http://www.legislation.gov.uk/uksi/2007/2003/contents/made.

Canopy: the upper layer of aerial fuels that will contain the crowns of the tallest vegetation present (living or dead).

Catch trench: a small ditch constructed below a fire on sloping ground to catch burning material rolling down slope.

Cause of fire: the sequence of events and actions that brings an ignition source into contact with materials first ignited which leads to sustained combustion. For statistical purposes, causes of fire are usually grouped within a standard classification.

Centre burn: an ignition technique where a fire or a number of fires are ignited in the middle of an area of fuel. The intention of a centre burn is to create a strong convection plume that allows subsequent ignitions to be lit drawing the resulting fires inwards, normally away from any existing control lines.

Chain of command: the line of authority and responsibility along which operational orders are passed. Also commonly referred to as “line of command”.

Check in: the process whereby resources first report to an incident.

Clean burn: a fire that consumes all vegetation and litter above the ground exposing the mineral soil.

Clear-felling: cutting down of an area of woodland (if it is within a larger area of woodland it is typically a felling area or coupe greater than 0.25 hectare). Sometimes scattered or small clumps of trees may be left standing within the felling area/coupe.

Cloud types: a visible body of fine water droplets or ice particles suspended in the atmosphere. There are a significant number of different types of clouds; however, there are three key cloud types that are particularly important for wildfire suppression because they can be used as a visual indicator of atmospheric stability:

> ***Stratus clouds*** – low altitude (below 6,000 feet) clouds with a flat or sheet-like appearance which develop within a stable layer of the atmosphere.

Cumulus clouds – clouds with strong vertical development (below 6,000 feet) which develop within an unstable layer of the atmosphere.

Cumulonimbus clouds – clouds with very strong vertical development which develop within an unstable layer of the atmosphere. The base of cumulonimbus clouds is near to ground level and they can extend vertically beyond 50,000 feet.

Fog – A cloud with its base on the ground surface.

Coarse fuels: fuels that are more than 6 mm in diameter. Due to their size and shape, they burn more slowly and ignite less readily than finer fuels. Examples of coarse fuels include thick stems, logs, and branches. Coarse fuels can be either living or dead.

Confluence: the location where two streams or rivers meet.

Control line: an inclusive term for all constructed or natural barriers and treated fire edges used to control a fire.

Combustibility: relative ease of fire spread within a fire environment.

Combustion: the rapid oxidation of fuel in which heat and usually flame are produced

Combustion efficiency: a measure of the efficiency with which a fire consumes fuel.

Combustion rate: measurement of heat release per unit of burning area per unit of time.

Compactness: the density of fuel particles. Compactness can influence ignition and fire behaviour.

Competency: when a person has the authority and sufficient technical knowledge, training and experience to carry out their assigned tasks safely and effectively.

Command: the authority of an agency to direct and control resources. Command is delegated to an individual.

Communications plan: a pre-determined scheme which details the methods and systems to be used by suppression personnel (within one or multiple agencies) to communicate with each other during a wildfire incident.

Condition of vegetation: stage of growth or degree of flammability of vegetation that forms part of a fuel complex. This will be dependent upon time of year, amount of curing and weather conditions. It also relates to ecological/nature conservation condition of a habitat or species as assessed by Common Standards Monitoring: https://jncc.gov.uk/our-work/common-standards-monitoring-guidance/.

Coniferous trees: trees that are characterised by their needle- or scale-like leaves. Most conifers are evergreen.

Conduction: the transfer of thermal energy by direct contact.

Containment: an area of a fire where control has been established and no breakout is anticipated.

Contingency plan: a pre-prepared alternative plan that can be implemented if circumstances change.

Controlled fire: an inclusive term for all constructed or natural barriers and treated fire edges used to control a fire.

Control line: a constructed or natural barrier that can be used to limit or stop the spread of a fire.

Control room: an emergency centre which receives emergency telephone calls and which coordinates the mobilization and demobilization of appropriate available resources to/from incidents.

Contour line: a line on a map connecting points of equal elevation.

Convection: the transfer of heat by the movement of a gas or liquid. In meteorology, convection is the predominantly vertical movement of warmed air.

Convection column: a rising column of pre-heated smoke, ash, particles and other debris that is produced by a fire.

Convection driven fire: a fire that is spread predominately by the intensity of the convection plume.

Cool fire/burn: a low intensity fire or part of a fire.

Cooperating agency: any organisation supplying resources to assist with the implementation of a fire suppression plan. A cooperating agency differs from a partner agency in the sense that it only comes to the assistance of a suppression agency when a wildfire occurs.

Coordinates: alphanumeric characters that are used to describe the precise geographic location of a point on the earth's surface.

Coupling: an accessory used for connecting multiple hoses and pipes together. Some couplings are designed to specifically connect hoses and pipes that are incompatible with one another due to different diameters, threads or genders. Names of common types of coupling include: reducer, increaser, female, male, double female, storz, wye, siamese, and distributor.

Counter burn: a planned operational burn that is ignited to burn into a wildfire and to take advantage of in-drafts towards the fire front.

Creeping fire: a slow burning fire with low flame activity. This type of fire may occur due to the condition of vegetation, fuel type or because a fire is burning out of alignment.

Crew: term for a fire service unit consisting of a number of personnel.

Critical point: a point in time or space when/where there will be a significant influence on fire spread, rate of spread and/or fire intensity.

Crown: the upper foliage of trees and shrubs, normally containing large amounts of fine fuels.

Crown fire/Crowning: when a fire burns freely in the upper foliage of trees and shrubs. There are three different types of crown fires:

> ***Active crown fire*** – A fire that advances as a wall of flame engulfing all surface and aerial fuels.
>
> ***Independent crown fire*** – A fire that advances through aerial fuels only.
>
> ***Intermittent crown fire*** – A surface fire involving torching behaviour but without sustained crowning activity. Rate of spread is controlled by the surface fire.

Crown kill: the proportion of limbs, buds, and foliage within the canopy vegetation that has been killed and consumed by a wildfire.

Crown scorch: browning of needles or leaves in the crown of a tree or shrub due to burning which has killed but not consumed the vegetation. Crown scorch may not be visible immediately and it may take several days or weeks after the fire for it to become apparent.

Curing: a process that leads to the reduction in moisture content of dead vegetation (including dead parts of living vegetation). This usually causes the vegetation to turn brown in appearance.

Dead fuels: fuels with no living tissue. The moisture content of dead fuels is mostly controlled by external weather conditions, for instance, relative humidity, precipitation, temperature, and solar radiation.

Debris fuels: dead and dying fuel, consisting of both fine and coarse fuels, and inclusive of twigs and any vegetation. Debris is usually found lying on the ground but can also be found at various levels within the vertical arrangement of fuels.

Deciduous trees: trees with broad, flat leaves that are shed annually during the autumn. These trees will usually remain bare during the winter months, with leaf growth restarting in the spring.

Deep-seated fire: an established ground fire burning 0.5 metres or more below the surface. This type of ground fire is particularly challenging to extinguish.

Dehydration: a medical condition resulting from the loss of excessive amounts of water/fluid from a person's body. This excessive loss of fluid can upset the delicate fluid salt balance that is required to maintain healthy cells and tissue. Strenuous activity, excessive sweating and prolonged exposure to heat are common causes of dehydration at wildfire incidents.

Delegation: to give responsibility to competent persons to complete assignments and/or to make decisions.

Demobilise: to direct resources to return to their normal base.

Depth of burn: the vertical reduction in surface and ground fuels due to consumption by fire.

Desorption: the process by which dead plant material loses moisture to the atmosphere.

Dew: the moisture that collects in small droplets on the surface of vegetation through the process of condensation. Dew predominantly forms at night.

Dew point: the temperature at which air must be cooled in order for atmospheric saturation to occur and, subsequently, for dew to form. Dew point can therefore be used as a measure of the moisture content of the air

Direct attack: an offensive fire suppression tactic that involves an attack being made at or near the fires edge. This technique normally relies on the use of hand tools and or water.

Drainage system: a naturally occurring or human-made network of channels that moves water across an area of land using the force of gravity.

Drip torch: a hand tool used to drop flaming fuel onto the ground to intentionally ignite a fire as part of an operational or prescribed burn

Drought: a prolonged period of abnormally low precipitation within a particular area.

Dry heath: usually dwarf-shrub-dominated heath vegetation communities that occur on thin, mineral soils (see also wet heath).

Duff: a surface fuel consisting of partly or fully decomposed organic material lying on the mineral soil.

Dynamic risk assessment: the continuous process of identifying hazards, assessing risk, taking action to eliminate or reduce risk, monitoring and reviewing, in the rapidly changing circumstances of an operational incident.

Elevated fuels: any fuel found at a height of 1.5–3.5 metres. The presence of elevated fuels will increase the risk of vertical fire spread into aerial fuels and the canopy.

Elevation: height above sea level.

Escape plan: a predetermined list of actions to be enacted in the event of unforeseen hazardous circumstances (for instance, an unexpected change in fire behaviour). An escape plan must include an escape route. The development of an escape plan is a key element of the LACES Safety Protocol.

Escape route: a pre-planned route to be taken in the event of unforeseen hazardous circumstances (for instance, an unexpected change in fire behaviour). An escape route is an important part of an escape plan and is a key element of the LACES Safety Protocol.

Estimated time of arrival (ETA): the predicted time that a resource will reach a specified destination.

Evacuation: the removal of people from dangerous or potentially dangerous areas and their relocation to safe areas.

Evaporation: the process by which a liquid or solid is transformed to a gas/vapour.

Extinction: the ceasing of the combustion process, either naturally or as a result of suppression activities.

Extreme fire behaviour: fire behaviour that becomes erratic or difficult to predict due to its rate of spread and/or flame length. This type of fire behaviour often influences its environment and can represent a significant risk to suppression personnel.

Fine fuels: fast-drying dead fuels which are less than 6mm in diameter. Fine fuels ignite readily and are rapidly consumed by fire when dry. Examples of fine fuels include grass, leaves, ferns, mosses, pine needles and small twigs. When dried, fine fuels are referred to as flash fuels.

Fine fuel moisture: the moisture content of fast-drying fuels. Measurement of moisture content will indicate the relative ease of ignition and flammability of a fine fuel.

Fingers of fire: an elongated burned area projecting from the main body of the fire resulting in an irregular fire perimeter. The pattern on the ground may resemble fingers on a hand, hence the name.

Fingers of fire ignition: an ignition pattern that involves igniting lines of fire at right angles to a control line and parallel to the wind.

Fire: the product of the chemical reaction of combustion. The three factors of fuel, oxygen and heat must all be present in the correct proportions for combustion to occur. When the combustion process is initiated, heat and light are emitted and a fire occurs.

Fire activity: description of a fire based on an assessment of visible evidence, including the rate of spread, flame length, fire severity, and fire behaviour.

Fire analysis: process of reviewing the behaviour and effects of a specific fire or group of fires and/or the actions taken to suppress it/them.

Fire behaviour: the reaction of a fire to the influences of fuel, weather, and topography. Different types of fire behaviour include:

Smouldering fire - A fire burning without flame and with minimal rate of spread.

Creeping fire - A fire with a low rate of spread and generally with a low flame length.

Running fire - A fire with a high rate of spread.

Torching - A single tree or small parcel of trees that burn from the base through the surface and aerial fuels and into the canopy of the vegetation.

Spotting - fire behaviour where sparks and hot burning embers are transported by the wind or convection column to land beyond the fire perimeter resulting in spot fires.

Crowning - when a fire burns freely in the upper foliage of trees and shrubs.

Fire behaviour forecast: a prediction of probable fire behaviour to be used to inform fire suppression operations.

Fire concentration: the number of fires per unit area for a given period.

Fire damage: the loss that is caused by the fire. This loss will normally include financial costs, but will also include other direct and indirect costs to the environment and society.

Fire danger: a general term used to express an assessment of both fixed and variable factors of the fire environment that determine the ease of ignition, rate of spread, difficulty of control, and impact. Fire danger is often expressed as an index.

Fire danger index: a quantitative indicator of fire danger, expressed either in a relative sense or as an absolute measure. Fire danger indexes are often used to guide fire management activities.

Fire dynamics: the detailed study of how chemistry, fire science, and the engineering disciplines of fluid mechanics and heat transfer interact to influence fire behaviour.

Fire ecology: the study of the relationships and interactions between fire, living organisms and the environment.

Fire edge: any section of the fire perimeter.

Fire effects: the physical, biological, and ecological impacts of fire on the environment.

Fire environment: the surrounding conditions, influences, and modifying forces of topography, fuel, and weather that determine fire behaviour, fire effects and impact.

Fire extinguisher: a portable piece of equipment containing water or chemicals that can be sprayed in order to extinguish a very small fire. Fire extinguishers are not widely used at wildfire incidents because they contain a very limited supply of water/chemicals.

Fire fighter: any competent person deployed at a wildfire incident to undertake assignments that contribute to fire suppression operations.

Fire footprint: outer shape of the fire perimeter at a given point in time.

Fire front: any part of the fire perimeter that displays continuous flaming combustion.

Fire growth: the evolution of a fire from ignition to self-sustaining propagation and its movement through available fuels.

Fire hazard: any situation, process, material or condition that can cause a wildfire or that can provide a ready fuel supply to augment the spread or intensity of a wildfire, all of which pose a threat to life, property or the environment.

Fire history: the reconstruction and interpretation of the chronology of wildfire occurrence and the causes and impacts of wildfires within a specified area.

Fire intensity: the rate at which a fire releases energy in the form of heat at a given location and at a specific point in time, expressed as kilowatts per metre (kW/m) or kilojoules per meter per second (kJ).

Fire investigation: the process of determining the origin, cause, and development of a fire.

Fire management plan: a plan detailing predetermined fire suppression strategies and tactics to be implemented following the occurrence of a wildfire within a particular area.

Fire model: a computer program that will predict or reconstruct fire behaviour and rate of spread of a fire from a point of ignition or area of origin.

Fire perimeter: the entire outer boundary of a fire.

Fire prediction system: a method or tool used to forecast future behaviour of a fire.

Fire prevention: a collective term for all proactive activities that are implemented with the aim of reducing the occurrence, severity and spread of wildfires.

Fire regime: the pattern of fire occurrence, fire frequency, fire seasons, fire size, fire intensity, and fire type that is characteristic of a particular geographical area and/or vegetation type.

Fire restrictions: measures taken to limit or prevent particular activities to reduce the likelihood of a wildfire or forest fire occurring within a particular area. These measures can include:

> ***Permanent restrictions*** – measures that are applied all year round within a particular area.
>
> ***Fire season restrictions*** – measures that are applied only during the normal fire season within a particular area.
>
> ***Temporary restrictions*** – measures that are only applied when the fire risk/danger index passes a pre-determined threshold within a particular area. Temporary restrictions are usually removed once the fire risk/ danger index falls below a predetermined threshold.

Fire risk: the calculation of the probability of a wildfire occurring and its potential impact on a particular location at a particular time. Wildfire risk is calculated using the following equation:

> Fire risk = probability of occurrence x potential impact.

Fire scar: the overall shape of the area burned by a wildfire *or* a healing or healed injury or wound to woody vegetation that has been caused or accentuated by fire.

Fire season: the period or periods within a year when wildfires are most likely to occur.

Fire severity: fire Severity can be defined in two ways: the degree to which a site has been altered or disrupted by fire, and the capacity of a fire to cause damage. Fire intensity and the amount of time a fire burns within a particular area, among other possible factors, will influence fire severity.

Fire severity Index: The Met Office Fire Severity Index is an assessment of likely fire severity for the current day and a forecast of fire severity for the coming five days in England and Wales, should a wildfire occur.

Fire shelter: a small single person aluminized cover that can provide an individual with some protection from the effects of fire in a fire entrapment situation.

Fire spread: the movement of a fire through available fuels arranged across the landscape.

Fire storm: violent convection caused by a large continuous area of intense fire.

Fire suppression: the activities undertaken to extinguish a fire.

Fire suppression plan: a pre-determined scheme or programme of activities that is formulated in order to safely and effectively accomplish fire suppression objectives. A fire suppression plan will outline the selection of tactics, selection of resources, resource assignments and how performance and safety will be monitored and maintained at a particular incident. Fire suppression plans need to be dynamic to take into account any changes in conditions or circumstances.

Fire triangle: diagram which presents the three factors that are necessary for combustion and flame production: FUEL-HEAT-OXYGEN.

Fire types: there are three different schemes for classifying fire type:

- Classification of a fire or section of fire according to the fuel level within which it occurs. For example, aerial, crown, understory, surface and ground fires.
- Classification of a section of fire according to its position along the fire perimeter. For example, head, tail and flank fires.
- Classification of a fire or section of fire according to the visual characteristics it displays. For example, smouldering, creeping, backing, running, torching, spotting, crowning, fire whirl, convection driven fire etc.

Fire whirl: spinning vortex column of ascending hot air and gases rising from a fire and carrying aloft smoke, debris, and flame.

Fire wind: the inflow of air close to a fire caused by the action of convection. Fire winds influence fire spread.

Firebrand: particles of ignited fuels that are carried by the wind or the air currents of a convection plume.

Firebreak: an area on the landscape where there is a discontinuity in fuel that will reduce the likelihood of combustion or reduce the likely rate of fire spread.

Firefighting chemicals: substances that have the ability to prevent, reduce or inhibit combustion. They can be applied from the air or from the ground and may be applied directly onto a fire or an area of unburned fuel. Common types of firefighting chemicals include:

- Foam – a mass of bubbles formed by mixing specific proportions of air with water and a foam concentrate. It is can be applied in order to smother and cool parts of a fire and/or to prevent ignition within a fuel.
- Gels – A chemical that is added to water to make it thicken. When used as an extinguishing agent the mixture is able to absorb more heat than water and sticks to the surface of the fuel.
- Wetting agents – which act to decrease the surface tension of water and therefore enable greater penetration into fuels.
- Retardants – a group of chemicals that are usually mixed with water which have the ability to reduce or inhibit combustion either in the long or short term:
- Long term retardants – have the ability to reduce or inhibit combustion even after the water that they contain has evaporated.
- Short term retardants - are primarily used to inhibit combustion through the more immediate cooling and/or smothering of a fire.

First responders: the first person/people to arrive at the scene of a wildfire. It is often used as a generic term for all emergency service personnel who are expected to respond to emergency incidents.

Flame angle: the angle of a flame measured in relation to the ground surface. Flame angle is expressed in degrees.

Flame depth: the distance from the rearmost to the foremost parts of the fire front, usually expressed in metres.

Flame height: the vertical extension of a flame. Measurement of flame height is calculated perpendicular from ground level to the tip of the flame. Flame height will be less than flame length if flames are tilted due to wind or slope.

Flame length: the total length of a flame measured from its base at ground level to the flame tip. Flame length will be greater than flame height if flames are titled due to wind or slope.

Flame risk: an assessment of risk to fire suppression personnel that is calculated using flame length.

Flaming combustion: the production of flames as part of the combustion process.

Flaming front: the area of a moving fire where combustion is primarily flaming. The flaming front normally consists of the fire front and the flaming zone.

Flaming zone: the flaming zone is located behind the fire front and is primarily characterised by flaming combustion. The flaming zone is where coarser fuels are consumed and where fire behaviour is typically less dynamic and more static. Depending on the fuels present, the fire can burn for a considerable length of time within this zone.

Flammability: relative ease with which a given fuel will ignite and burn with a flame.

Flame risk: an assessment of risk to fire suppression personnel that is calculated using flame length.

Flank attack: a method of fire suppression that involves attacking a wildfire along the flank or both flanks simultaneously.

Flank fire: a fire spreading or predicted to spread parallel (approximately at a right angle) to the prevailing wind direction or a slope.

Flanks: the parts of a fire's perimeter that are roughly parallel to the main direction of fire spread. The flanks usually have less fire intensity than the head fire because they have a weaker alignment with wind or slope.

Flare up: a short and sudden increase in fire activity.

Flash fuels: fine fuels that have been dried and which will ignite very readily and rapidly.

Flashing: rapid ignition of unburned gases released into the atmosphere as a result of heat generated by a wildfire. Normally observed during high intensity fires.

Flood plain: a relatively flat area of land found alongside a water channel that is prone to flooding.

Flush: wet area irrigated by spring or soak away.

Foam: a mass of bubbles formed by mixing specific proportions of air with water and a foam concentrate. It can be applied to smother and cool parts of a fire and/or to prevent ignition within a fuel.

Fog: low-lying parcels of air with high levels of moisture content. Fog is a cloud that has its base on the earth's surface.

Fogging system: pressurized water system which produces a fine mist or micro droplets of water to enhance the heat absorbing and steam generating capability of water.

Forces of alignment: a collective term for the forces that have a significant impact on wildfire behaviour. These forces can support or hinder fire development and can be used to predict likely fire behaviour, including fire spread and fire intensity. Wind, slope and aspect are considered to be key forces of alignment.

Forest: an area of woodland with a minimum percentage of canopy cover, as prescribed within national or international guidelines/stipulations.

Forest management plan: (Woodland management plan) A plan which states the objectives of management, together with details of forestry proposals over the next 5 years, and outlines intentions over a minimum total period of 10 years. Forest management plans allow managers to communicate proposals and demonstrate that relevant elements of sustainable forest management have been addressed, and can be used to authorise thinning, felling and other management operations.

Fragmentation: the process of transforming large continuous areas of vegetation and fuel into smaller discontinuous areas. Fragmentation leads to a change in fire regimes through the alteration and discontinuity of fuels.

Fuel: any material that can support combustion within a wildfire environment. Fuel is usually measured in tonnes per hectare.

Fuel arrangement: the horizontal and vertical distribution of all combustible materials within a particular fuel type:

> ***Horizontal fuel arrangement*** – A description of the distribution of fuels on the horizontal plane. The horizontal arrangement of fuels will influence the relative ease with which fire can spread horizontally across an area of land.
>
> ***Vertical fuel arrangement*** - A description of the distribution of fuels on the vertical plane, from the ground up to the canopy levels of vegetation. The vertical arrangement of fuels will influence the relative ease with which fire can spread vertically through the fuel layers.

Fuel assessment: the estimation or calculation of total and available fuel that is present within a specific area.

Fuel boundary: a dividing line between two distinctly different fuel types.

Fuel complex: the type, quantity, condition, arrangement and continuity of fuel available to burn.

Fuel condition: relative flammability of a fuel, as determined by fuel type and environmental conditions.

Fuel continuity: the extent to which fuel arrangement will support fire spread.

Fuel consumption: the amount of a fuel that is removed by a fire, often expressed as a percentage of the fuel load.

Fuel driven fire: a fire or part of a fire that is spread predominantly by the arrangement, condition, and/or other characteristics of the fuel within which it is burning. This situation occurs in the absence of a significant effect from the forces of alignment, such as wind, slope and aspect. Fuel-driven fires can produce erratic fire behaviour.

Fuel hazard: a fuel complex defined by type, alignment, arrangement, volume, continuity, condition etc. that forms a special risk.

Fuel layers: the classification of fuels according to their height relative to the ground surface. There are five general fuel layers: aerial fuels, elevated fuels, near surface fuels, surface fuels and ground fuels.

Fuel load: the amount of fuel present within a particular area. Fuel load is measured in weight per area measured (usually in kilograms per square metre). Fuel loading is expressed in relative terms as either “heavy fuel loading” or “light fuel loading”.

Fuel management: the process of managing fuel or fuel arrangement. The aim of fuel management is usually to create a discontinuity in fuels to achieve fragmentation.

Fuel model: a mathematical representation of fuel properties within a specified location, often used to predict and plot likely fire spread and intensity.

Fuel moisture content: water content of a fuel expressed as a percentage of fuel weight when oven dried.

Fuel profile: vertical cross-section of a fuel bed.

Fuel properties: the physical characteristics of a fuel; for example, volume, size, shape, compactness and arrangement.

Fuel separation: the distance between fuel layers or fuel particles.

Fuel treatment: the deliberate manipulation or removal of fuels using one or more of a variety of different means to:

- reduce the likelihood of ignition; and/or,
- reduce potential fire intensity; and/or,
- reduce potential damage; and/or,
- assist suppression activities.

Fuel type: a group of fuels that will respond to fires in a similar way.

Fuel type classification: the division of wildland fuels into different fire hazard classes.

Fuel type pattern: a mosaic of distinct fuel types within a particular area.

Gels: chemicals that are added to water to make it thicken. When used as an extinguishing agent the mixture is able to absorb more heat than water and sticks to the surface of the fuel.

Geographic Information System (GIS): a system designed to capture, store, manipulate, analyse, and present geographically referenced data.

Global Positioning System (GPS): a global navigation system that provides very precise positioning information about the location of any point on or near the Earth’s surface.

Glowing combustion: low intensity combustion, when there is little or no flame and little or no fire spread. Glowing combustion will usually occur shortly before extinction, during the final stages of a fire.

Gorge: a deep, narrow and extremely steep-sided valley which usually has a river occupying its entire floor. Gorges are very dangerous topographical features because they can support extreme fire behaviour.

Gradient: the angle or steepness of a slope.

Ground crew(s): any crew(s) operating on the ground. Usually only required as a term of reference if an incident involves aerial operations.

Ground fire: a fire burning below the surface fuel layer.

Ground fuel: any fuel below the surface fuel layer, normally within the soil. Examples of ground fuels include: duff, tree roots, shrub roots, rotting wood, peat etc.

Ground probe: a specialized nozzle used to penetrate deep-seated combustible fuels to extinguish ground fires.

Ground water: water found beneath the land surface. Groundwater is found in fractures of rock formations and as soil moisture.

Gully: a relatively steep-sided water channel formed on a hillside. A gully might only contain water during periods of heavy rain. Gullies are dangerous topographical features because they can support extreme fire behaviour.

Hand line: a control line constructed using hand tools.

Hand team: a supervised group of individuals tasked with carrying out an assignment (s) at a wildfire incident using hand tools.

Harbour areas: areas used to provide safe refuges for fire and rescue service personnel and resources.

Hazard: anything that can cause harm, for example fire, electricity, chemicals. Hazards may be man-made or naturally occurring.

Head attack: a method of fire suppression that involves an attack being made at the head of a wildfire. This tactic is not often adopted because of the increased risk to suppression personnel.

Head attack (aerial): a method of fire suppression that involves the release of water or fire retardant from the air directly onto the head of a wildfire.

Head fire: the leading part of an advancing wildfire at a particular point in time. The head fire will usually exhibit the highest level of fire activity of any part of the fire.

Heat probe: apparatus used to detect heat.

Heat transfer: the process by which heat is imparted from one body or object to another. In wildfires and forest fires, heat energy is transmitted from burning to unburned fuels by:

> ***Convection*** – transfer of heat by the movement of masses of hot air; the natural direction is upwards in the absence of any appreciable wind speed and/or slope. Convection can include spotting behaviour.
>
> ***Radiation*** – transfer of heat in straight lines from warm surfaces to cooler surroundings.
>
> ***Conduction*** – transfer of heat through solid matter.

Heathland: an area of open uncultivated land which is dominated by dwarf shrubs and which is usually characterised by poor acidic, sandy or other mineral soils, though wet heath also occurs on shallow peat.

Helibase: the main location for parking, fuelling, repairing/maintaining, and loading of helicopters during a wildfire incident.

Helipump: a lightweight portable pump unit that has been specifically developed for transport by helicopter.

High pruning: the removal of live branches from a tree stem up to 7.5 m so that subsequent growth produces a cylinder of knot-free timber around a knotty stem core. Usually confined to timber-producing trees to improve quality.

Holding area: location established at an incident where resources can be placed while awaiting assignment.

Horticultural crops: intensively cultivated plants used by people for food, medicinal purposes or for ornamental/aesthetic purposes. Horticultural crops are usually less susceptible to wildfires than other types of vegetation, but post-harvesting residues can create fine fuels and increase the risk of wildfires (particularly during warm and dry conditions).

Horizontal fuel arrangement: a description of the distribution of fuels on the horizontal plane. The horizontal arrangement of fuels will influence the relative ease with which fire can spread horizontally across an area of land.

Hot fire: when prevailing conditions cause fuels to burn and produce a high intensity fire or part of a fire.

Hot spot: a small burning area that requires suppression action as part of the mop-up phase of suppression.

Humidity: a generic term used to describe the amount of water vapour in the air.

Hygrometer/psychrometer: an instrument used for measuring the relative humidity of the air.

Hyperthermia: a condition in which a person's core body temperature becomes elevated. It occurs when the body produces or absorbs more heat than it can dissipate. The most common cause of hyperthermia at a wildfire incident is prolonged exposure to excessive heat or heat and humidity. When a person's body temperature is elevated sufficiently high, hyperthermia becomes a medical emergency requiring immediate treatment to prevent disability or death.

Ignition: the initiation of combustion.

Ignition method: the means by which a fire is ignited.

Ignition patterns: a generic term for the three key techniques for igniting a managed burn:

> ***Line ignition*** – igniting a burn in strips along a control line and the adjacent fuel.
>
> ***Points of fire ignition*** – igniting a number of fires within an area of fuel. The aim of this technique is for the individual fires to burn into one another.
>
> ***Fingers of fire ignition*** – a low intensity back burn that is achieved by igniting lines of fire at right angles to a control line and parallel to the wind.

Ignition point: the precise physical location within the area of origin where a wildfire was first ignited.

Ignition temperature: the minimum temperature at which ignition can take place and sustained combustion can occur.

Incendiary: a device that is designed to ignite a fire.

Incident: an occurrence or event that requires action to prevent or minimise loss of life, damage to property or damage to the environment.

Incident command: the authority of an agency to direct and control resources at an event/occurrence that requires action to prevent loss of life or damage.

Incident Commander: the nominated competent officer who has overall responsibility for safety, tactics and management of resources at a wildfire incident.

Incident command point: the geographic location where the Incident Commander is based.

Incident Command System: a standardized emergency management system that is specifically designed to allow its users to adopt an integrated organisational structure equal to the complexity and demands of single or multiple wildfire incidents. An ICS provides a standard framework within which individuals and teams present at an incident can work together safely and effectively.

Incident localisation: identification of the specific location of a wildfire following its detection.

Incident objectives: the desired results to be achieved at a wildfire incident. Incident objectives must be realistic, achievable and measurable, but they must also be flexible enough to allow for strategic and tactical alternatives. They must also be established within the framework of a safe and effective Incident Command System.

Incident support: a group or organisation responsible for providing personnel, equipment and/or welfare facilities and supplies in support of suppression operations.

Indirect attack: any suppression methods implemented away from the fire edge.

Initial attack: suppression work completed by first responders arriving at a wildfire incident. The intention of any initial attack will always be to quickly gain control of a fire. If an initial attack is unsuccessful then a prolonged attack strategy might be required.

Initial response: the first suppression resources mobilised to an incident following the detection of a wildfire. These resources will be available to participate in initial attack operations.

Islands: areas of unburned fuel within a fire perimeter.

Isobar: a line on a weather map that connects points of equal atmospheric pressure.

Isotherm: a line on a weather map that connects points of equal temperature.

Junction zone: an area where two separate fires move together. The junction zone is usually characterised by increased fire activity.

Junction zone affect: term used to describe the increased fire activity that occurs when two separate fires move together.

Katabatic wind: down slope winds. Katabatic winds occur when air at higher elevations is cooled (often at night) and is subsequently pulled down slope by the force of gravity.

Knapsack sprayer: a portable hand operated water pump with a nozzle that can be carried on the back by personnel, used to apply water as a spray or a small. Often used to knock down the intensity of a fire or extinguish hot spots during the mop up phase.

Knock down: to reduce the flame or heat of burning parts of a fire.

LACES: An essential safety protocol that should be implemented at wildfire incidents to address risks and hazards. The correct implementation of LACES helps to ensure that suppression personnel are appropriately supervised, informed and warned of risks and potential hazards and that they are aware of how and where to escape should a high risk situation occur. LACES is an acronym for:

L = Lookouts

A = Awareness or Anchor Point

C = Communication

E = Escape route and plan

S = Safe area

Ladder fuel: fuels that provide vertical continuity which allow fire to move through the vertical fuel arrangement.

Land breeze: a local night time breeze which occurs when cooler, higher pressure air above the land surface moves offshore to replace warmer air rising above coastal waters.

Land management: the process of managing the use and development of an area of land for: wildfire prevention, conservation, restoration or protection of the environment; commerce, and/or for other reasons.

Land use planning: a decision-making process involving the allocation of areas of land to different uses and/or vegetation types.

Landscape: the physical appearance of the land comprising of the features of terrain (landform), vegetation (land cover) and the human impact (artefacts) reflecting variations in land use/ management.

Lateral confinement: restriction of fire spread caused by topographical features. When wildfires are confined by topographical features such as gullies, ravines, or narrow valleys, convective heating by confined gases and radiation feedback from flames and burning vegetation increases the heat release rate of the burning fuels. Rapid fire spread is also enhanced by the acceleration and channelling of wind through these topographical features. These factors may result in a more rapid combustion and spread than that of an unconfined vegetation fire.

Latitude: the angular distance north or south between a point on the earth's surface and the equator. Latitude is usually measured in degrees, minutes and seconds.

Lee slope: a slope that faces away from the direction of the wind. A lee slope is therefore sheltered from the wind. A lee slope is the opposite of a stoss slope.

Line of communication: the means by which messages are sent between suppression personnel within the chain of command.

Litter: the top layer of debris fuels consisting of twigs, sticks and branches, it can also include recently fallen leaves and needles. The structure of the material within the litter layer has not been altered significantly by the process of decomposition.

Live fuels: fuels with living tissue. The moisture content of live fuels is controlled largely by internal physiological mechanisms.

Longitude: the angular distance of a point east or west of an arbitrarily defined meridian, usually taken to be the Greenwich meridian. Longitude is usually measured in degrees, minutes and seconds.

Lookout: see Tactical lookout.

Managed burn: a planned and supervised burn carried out for the purpose of removing fuel either as part of a Fire Suppression Plan (an operational burn) or a land management exercise (a managed or prescribed burn).

Marking out: the creation of a marking on the ground to identify a target area for water bombing aircraft, either by personnel on the ground or by a helicopter.

Marsh: an area of soft, wet, low-lying land, characterised by grass, sedge or rush vegetation. Marshland may often form a transition zone between water and land.

Marshalling areas: areas where fire and rescue service personnel and resources are put on stand-by at large and complex wildfire incidents.

Massive attack: A substantial and swift attack using aerial resources that is intentionally excessive in relation to the size of the wildfire. A massive attack will be performed in order to suppress a relatively small wildfire as quickly as possible so that aerial resources can be quickly released to perform other assignments.

Medical emergency: an injury or illness that poses an immediate risk to a person's life or long-term health.

Mega fire: a wildfire demonstrating abnormally extreme fire behaviour. Mega fires will usually represent a significant challenge to suppression agencies because they are very resource intensive to suppress and can pose a significant risk to the safety of suppression personnel.

Meteorological winds: meteorological winds are caused by differences in atmospheric pressure within upper level air masses that generate regional weather patterns.

Military training area: a section of land used by a military organisation to experiment, test and/or train with weapons and other military technology. The unexploded ordnance found within some military training areas may pose a significant risk to suppression personnel responding to wildfire incidents.

Mineral earth: a soil layer that does not contain organic material that could support combustion.

Mire: a general term applied to peat producing ecosystems that develop in sites of abundant water supply. See also Blanket bog, Blanket mire and Bog.

Mitigation: a collective term used for those activities implemented prior to, during, or after a wildfire which are designed to reduce the actual or potential consequences of the wildfire. Mitigation measures can include efforts to educate governments, businesses and the general public on appropriate actions to take to reduce loss of life and property during wildfire incidents. The development of mitigation measures is often informed by lessons learned from prior incidents.

Mixed woodland: a mixture of deciduous and coniferous tree species.

Mobilise: to direct resources to attend an incident.

***Molinia* grassland**: grassland dominated by Purple Moor-grass (*Molinia caerulea*). This can often be on degraded blanket or raised bog, fen or wet heath habitat.

Mop-up: the act of extinguishing a fire after it has been brought under control. Mop up involves carrying out all necessary actions to prevent re-ignition

Moorland: a generic term for the unenclosed land of the uplands typically supporting upland heath (wet and dry), blanket and other upland mires and fens, and upland grassland. Mapped in England by the Defra Moorland Line.

Mountain breeze: a localised down slope wind which occurs at night when cool mountain air sinks down slope to replace warmer air found at lower elevations. A reversal of this process may occur during the day leading to a valley breeze

Multi-agency incident: an incident involving more than one agency.

Multiple ignition points: more than one point of ignition. Multiple ignitions may be lit simultaneously or successively and could be indicative of spot fires or fires set deliberately by humans.

National Park (NP): extensive tracts of country that are protected by law for future generations because of their natural beauty and for the opportunities they offer for open air recreation: https://webarchive.nationalarchives.gov.uk/20140605100331/http://www.naturalengland.org.uk/ourwork/conservation/designations/nationalparks/default.aspx.

National Nature Reserve (NNR): one of the finest sites in England for wildlife and/or geology. Almost all NNRs are accessible and provide great opportunities for people to experience nature: https://webarchive.nationalarchives.gov.uk/20140605094723/http://www.naturalengland.org.uk/ourwork/conservation/designations/nnr/default.aspx.

Natural fuels: fuels created and developed through natural processes and which have not been directly generated or altered by land management practices.

Natural woodland: trees that have germinated and grown in their natural state without the influence of human actions. Natural woodland is likely to contain multiple species of trees that leads to less continuity of fuels than is found in planted woodland.

Near miss incident: an unexpected and undesirable event where injuries or illness and/or damage to property or the environment are narrowly avoided. Under slightly different circumstances, the same event could have caused an accident.

Near surface fuels: any fuels found at a height of 0.5–1.5 metres above the ground surface. Near surface fuels are found above surface fuels and have a vertical component to their structure.

Observation point: a specific location with a view of a surrounding area that is used for wildfire detection.

Observation tower/watchtower: a structure with a view of a surrounding area that is used for wildfire detection.

Operational burn: a controlled supervised burn that is carried out by a burn team as part of a fire suppression plan. An operational burn can be classified as either offensive or defensive, depending upon its purpose:

> ***Offensive operational burn*** – ignited along a control line to burn into an advancing flame front.
>
> ***Defensive operational burn*** – ignited along a control line to strengthen/ expand the control line, but will be extinguished prior to the arrival of an advancing wildfire.

Operational plan: the operational details of how planned work will be implemented at site level within the framework of a forest management plan or wildfire management plan.

Parallel attack: a method of fire suppression involving the construction of a control line approximately parallel to and some distance away from the fire edge. The intervening strip of unburned fuel may or may not be burned out as the control line proceeds. This decision will be influenced by an assessment of whether the unburned fuel is considered to pose a threat to the control line.

Partner agency: any organisations that work together to prevent, investigate and/or suppress wildfires. Partner agencies will work together on preparedness activities and plans and are likely to have formulated pre-agreed partnership agreements.

Patrol: the act of supervising a specified area in order to prevent, detect and/or suppress wildfire.

Peat: an organic fuel layer consisting of a light, spongy material formed in temperate humid environments through the accumulation and partial decomposition of vegetation debris. Peat is formed by decomposition in the absence of oxygen (anaerobic decomposition). Peat forms in areas that are seasonally or permanently inundated with water. Fires in peat burn by smouldering combustion and generate high levels of heat energy per unit area.

Personal protection equipment (PPE): any equipment or clothing required to maintain the safety of suppression personnel at a particular wildfire incident. While some PPE will most likely be required at all wildfire incidents, the need for some types of PPE will vary according to the particular conditions experienced at an incident. To provide an example, suppression personnel operating at a wildfire incident at night will require lighting.

Pinching: attacking a fire by working along the flanks either simultaneously or successively from a less active or anchor point and endeavouring to connect the two lines at the head.

Plantation: an area of trees created through artificial regeneration.

Planted woodland: an area of managed woodland (often artificially established) where trees are grown for sale as timber and/or for the commercial production of other forest products.

Plateau: an elevated area of land that has an extensive and relatively level surface.

Plough: a large implement with one or more blades fixed within a frame which is drawn over the ground to turn the soil and cut furrows, usually in preparation for planting seeds but sometimes also during the construction of control lines.

Points of fire ignition: a fire ignition pattern that involves igniting a number of fires within an area of fuel. The aim of this technique is for the individual fires to burn into one another.

Pond: a small body of still water that is not fed by a stream or river. Ponds may be constructed or form naturally within undulations of the land surface.

Potential temperature: the temperature a parcel of air would have if moved vertically to some other reference height.

Precipitation: all forms of water, whether liquid (e.g. rain) or solid (e.g. snow or hail), that fall from the atmosphere and reach the ground.

Preheating: preliminary phase of combustion where fuels ahead of an advancing fire are heated and dried. During pre-heating, fuel temperatures are raised either by the advancing fire and/or by weather (i.e. solar radiation, aspect).

Preparedness plan: a pre-determined strategic scheme or programme of activities that is formulated in order to satisfactorily prepare an organisation or a geographic area to respond effectively to wildfire incidents.

Pre-treat: the application of water, foam or retardant along a control line.

Prescribed burn: a planned and supervised burn carried out under specified environmental conditions to remove fuel from a predetermined area of land and at the time, intensity and rate of spread required to meet land management objectives.

Prevailing wind: the predominant wind direction.

Prevention measure: a planned forest management technique used to increase the resilience of the forest to fire and reduce the severity and spread of a wildfire event.

Prolonged attack: an extended and sustained method of attack requiring additional resources that is implemented if a wildfire is beyond the control of an initial attack.

Protected area: an area that has special status and which has been given specific legal protection.

Public access: land open to the public for recreational or educational use.

Radiometer: an instrument that measures electromagnetic radiation. Radiometers mounted on satellites measure the characteristics of fires, vegetation and clouds and are used to detect and monitor wildfires and their impact.

Ramsar site: a wetland of international importance, designated under the Ramsar Convention: https://webarchive.nationalarchives.gov.uk/20140605100444/http://www.naturalengland.org.uk/ourwork/conservation/designations/ramsars/default.aspx.

Rate of spread: a measurement of the speed at which a fire moves across a landscape. Rate of spread is usually expressed in metres per hour.

Re-burn: subsequent burning of an area that has already been burnt.

Reconnaissance: the act of gathering information about a wildfire incident in order to monitor fire behaviour and suppression activities. The primary reasons for completing reconnaissance should be to maintain safety and to assess the effectiveness of a fire suppression plan.

Relative humidity: the amount of water vapour present in the air expressed as a percentage of the amount of vapour needed for saturation to occur at the same temperature. Saturated air is referred to as 100% relative humidity.

Rendezvous point: a pre-arranged location where resources arriving at a wildfire incident will report.

Report: the process whereby resources first register their arrival at a wildfire incident *or* a formal statement of the results of an activity or investigation. Reports may analyse situations, provide progress updates on current assignments, draw conclusions and/or make recommendations. A report can be either verbal or written.

Reserve resources: resources not assigned to a specific task, but available for deployment.

Reservoir: a large constructed body of water that is usually fed and drained by a stream or river.

Resilience: the ability of an ecosystem or species to return to its original state after being affected by a wildfire.

Resources: personnel, equipment, services and supplies that are either available or potentially available for assignment to a wildfire incident.

Response: response encompasses the actions taken to deal with the immediate effects of a wildfire emergency. In many scenarios, it is likely to be relatively short and to last for a matter of hours or days – rapid implementation of arrangements for collaboration, co-ordination and communication are, therefore, vital. Response encompasses the effort to deal not only with the direct effects of the emergency itself but also the indirect effects.

Responsibility: the duty or obligation to satisfactorily perform or complete an assignment.

Restricted area: an area in which specified activities or entry are temporarily or permanently restricted in order to mitigate risk to human health or safety by potential or on-going wildfires. A restricted area may also be temporarily or permanently established in order to reduce the risk of a wildfire igniting within a specified location.

Retardants: a group of chemicals that are usually mixed with water, which have the ability to reduce or inhibit combustion in the long or short term:

> ***Long-term retardants*** - have the ability to reduce or inhibit combustion even after the water that they contain has evaporated.
>
> ***Short-term retardants*** – are primarily used to inhibit combustion through the more immediate cooling and/or smothering of a fire.

Ring burn: a fire started by igniting the full perimeter of the intended burn area so that the ensuing fire fronts converge toward the centre of the burn.

Risk: several meanings depending upon context:

- The chance, high or low, that somebody could be harmed by a particular hazard, together with an indication of how serious the harm could be.
- The chance, high or low of an ignition taking place.
- The chance, high or low of an ignition leading to a wildfire.
- The chance, high or low, of a wildfire event leading to severe damage of vegetation, soil or property.

Risk assessment: a process involving the identification of risk, an assessment of probability and an assessment of potential impact. The process will establish information regarding acceptable levels of risk and actual levels of risk posed to an individual, group, society or the environment.

Risk management: a process involving the systematic application of policies, procedures and practices to identify, analyse, evaluate, manage, control, communicate and monitor risks.

Role regression: when an individual reverts back to behaviour and actions that are characteristic of a past role they once held. For instance, this could be a team leader reverting back to the behaviour and actions required of a fire fighter.

Role rotation: the act or process of periodically changing the assignments provided to individuals working at a wildfire incident to ensure adequate rest breaks and appropriate variety in the physical and mental intensity of tasks completed by all team members.

Rural urban interface (RUI) environment: the zone of transition between rural land and human settlements.

Running fire: a fire that is rapidly spreading with a well-defined head.

Saddle: a depression between two hills or mountains, so-called because of its similarity to the shape of a horse riding saddle. Wind is often funnelled and intensified between the two hills of a saddle. Saddles are therefore dangerous topographical features because they can support extreme fire behaviour.

Safe area: an identified area of safety where people will find refuge. The identification of a safe area is a key element of the LACES safety protocol.

Safe systems of work: a formal procedure that results from systematic examination of a task in order to identify potential hazards and risks. The resulting document produced will describe the safest way(s) of completing a task to ensure hazards are eliminated or that risks are controlled as far as possible.

Safety: when exposure to hazards has been controlled to an acceptable level.

Safety Officer: an officer that is appointed to manage risk.

Safety release: a release of water or retardant over a vehicle or group of individuals in difficulty on the ground for the purpose of reducing the intensity of the fire to enable the personnel to escape.

Safety Zones: part of LACES Safety Protocol. Areas used to provide safe refuges for fire and rescue service personnel and resources during a Blow Up or Flare Up. Ideally connected by a minimum of two Escape Routes.

Satellite detection system: a wildfire detection system that operates via a satellite.

Sea breeze: a daytime breeze in which cooler, higher pressure air from over coastal waters moves on shore to replace heated air rising off the warmer land mass.

Scratch line: a preliminary control line that has been hastily constructed as an emergency measure to prevent fire spread.

Scree: an unstable mound of angular pieces of rock found at or near the base of a cliff or steep slope.

Scrubland/scrub: an area of mixed vegetation predominantly consisting of shrubs, bushes and grasses. Scrubland may be found on the fringes of other fuel types, but it may also be found in isolated pockets within other fuel types.

Sector: a specific area of an incident that is under the control of a Sector Commander.

Spider excavator: an excavator with articulated legs that can work on and travel over steep slopes that are inaccessible to excavators with wheels or tracks.

Shock: a life threatening condition that occurs when the body's vital organs, such as the brain and heart, are deprived of oxygen due to a problem affecting the circulatory system. The most common cause of shock is blood loss but it can also be caused by other fluid loss such as vomiting or severe burns.

Shrub: a woody perennial plant characterised by its low stature (less than 3 m high) and habit of branching from the base. Shrubs normally contain a high quantity of fine fuels.

Situational awareness: the perception of the surrounding environment within the context of both time and space. It includes the comprehension of meaning of observed phenomena and patterns and the provision of information relevant to a team or individual's situation. It also includes the projection and prediction of what will happen within the surrounding environment in the future.

Site of Special Scientific Interest (SSSI): a statutory designation in Great Britain that offers protection to habitats, species and geological features: https://webarchive.nationalarchives.gov.uk/20140605100500/http://www.naturalengland.org.uk/ourwork/conservation/designations/sssi/default.aspx.

Slash: debris left lying on the ground after logging, pruning or thinning operations within woodland. Slash may consist of both course and fine fuels and sometimes forms a significant surface fuel (It is often referred to as brash or hagg in Scotland).

Sleeper fire: a fire that remains dormant for a period of time.

Slope effect: variations in fire behaviour induced by slope. Slope can both support and hinder fire spread and development and the angle of the slope will have an important influence on the degree of effect. The following descriptions explain the general slope effect that would be expected from a fire spreading upslope and a fire spreading down slope:

Fires spreading upslope –The flames of a fire spreading upslope will be angled towards the unburned fuel above it which will pre-heat the fuel in front of the advancing fire. This pre-heating increases combustibility and rate of spread for fires travelling upslope.

Fires spreading down slope – The flames of fires burning down slope will be angled away from the fuel and will, therefore, lead to less preheating of the fuel in front of the fire. Consequently, the effect of slope on a fire burning down slope is a reduction in combustibility and rate of spread.

Slope driven fire: a fire or part of a fire that is spread predominantly by the direction and angle of a slope.

Slope wind: highly localised convective winds that occur due to heating and cooling of a natural incline of the ground. They can be classified in two ways:

Anabatic winds – Upslope winds. Anabatic winds occur when daytime solar radiation heats air at lower elevations causing it to flow upslope.

Katabatic winds – Down slope winds. Katabatic winds occur when air at higher elevations is cooled (often at night) and is subsequently pulled down slope by the force of gravity.

Smoke: the atmospheric suspension of small particles of solids and liquids produced by combustion

Smouldering combustion: low intensity combustion, when there is no flame and little or no fire spread.

Smouldering fire: a fire burning without flame and barely spreading.

Snag: a standing dead tree or part of a dead tree. Unstable snags can pose serious safety hazards to suppression personnel.

Solar radiation: energy emitted by the sun which indirectly heats the earth's surface. Solar radiation has a significant influence on weather.

Spark: an ignited particle thrown from burning material.

Special Area of Conservation (SAC): an area that has been given special protection under the European Union's Habitats Directive. SACs provide increased protection to a variety of wild animals, plants and habitats: https://webarchive.nationalarchives.gov.uk/20140605100547/http://www.naturalengland.org.uk/ourwork/conservation/designations/sac/default.aspx.

Special Protection Area (SPA): an area of land, water or sea which has been identified as being of international importance for the breeding, feeding, wintering or the migration of rare and vulnerable species of birds found within the European Union. SPAs are European designated sites, classified under the European Wild Birds Directive which affords them enhanced protection: https://webarchive.nationalarchives.gov.uk/20140605100658/http://www.naturalengland.org.uk/ourwork/conservation/designations/spa/default.aspx.

Spot fire: a fire outside the main fire perimeter which is caused by flying embers transported by the wind or convection column.

Spring: a point at which water emerges from the ground. Springs often lead to the formation of water channels.

Spotting: fire behaviour characterised by sparks and embers that are transported through the air by the wind or convection column. Spotting can be classified as short range or long range.

Staging Area: areas used by the fire and rescue services for the temporary location of personnel while they await operational assignment. The minimum dimensions for staging areas should be 10 m x 16 m with 3.5 m height clearance.

Stand: an area of vegetation made up of the same species or family e.g. trees of one species grouped together within a woodland *or* more generally an area of vegetation with homogenous composition of multiple species.

Standard Operating Procedures (SOP): written instructions that detail the necessary steps that must be taken when completing a particular process or activity. The purpose of a SOP is to ensure that a particular process or activity is always carried out safely, effectively and in the same manner.

Standing fuel: part of vegetation, living or dead, that is supported by a stem, branch or trunk.

Statutory responsibility: a legal obligation to satisfactorily perform or complete a particular task related to wildfire suppression or prevention.

Stoss slope: a slope that faces the direction of the general wind. A stoss slope is the opposite of a lee slope.

Supplies: minor items of equipment and all expendable items assigned to an incident.

Supply area: the location, at which the primary logistics functions and supplies required for a wildfire incident are temporarily stored, coordinated and administered.

Suppression: all work involved in controlling and extinguishing a wildfire.

Surface fire: a fire that burns within the surface fuel layer.

Surface fuel: any fuels found at a height of 0–0.5 metres above the ground surface.

Swipe: used to cut small shrubs such as heather down to ground level. Depending on local conditions, the resulting break in the vegetation can either act as a barrier to fire spread, or reduce fire behaviour significantly.

Tactics: the deployment of resources at a wildfire incident to achieve the aims of a strategic plan.

Tactical lookout: a person with an advanced understanding of wildfire behaviour who acts as a safety officer at a wildfire incident. He/she will observe the fire and the action of teams involved in fire suppression. He/she will maintain close communication with suppression teams and supervisors and will be responsible for ensuring the safety of all individuals present at the incident. Lookouts are a key element of the LACES safety protocol.

Tail attack: a method of fire suppression that involves an attack being made at the tail of a wildfire.

Tail attack (aerial): a method of fire suppression involving the release of water or fire retardant from the air directly onto the tail part of a wildfire.

Tail fire: the rear most part of a wildfire/forest fire, it is normally out of alignment with wind and slope, and consequently will usually demonstrate less fire activity than the head fire because it usually has less support from wind or slope. Sometimes referred to as the heel part of the fire.

Team supervisor: a person who manages the actions, assignments and safety of a team.

Temperature: the degree or intensity of heat present in a substance or object. Temperature is expressed using a comparative scale (usually degrees Celsius or degrees Fahrenheit).

Terrace: an area of flat ground that is set into or onto a steep slope.

Test burn: a small burn that is ignited to observe and evaluate fire behaviour prior to igniting a larger operational or managed burn.

Thermal sensors: a sensor that detects variations in temperature.

Thermograph: a thermometer that automatically and continuously records air temperature on a chart.

Thermometer: an instrument used to measure air temperature.

Thicket: a stage of forest growth after canopy closure when lower branches of the trees meet and interlace to form a dense, often impenetrable, growth. Especially applied to conifer forests around 10–20 years of age.

Time lag: the time it takes for fuel of various sizes to gain or lose moisture due to changes to the environment.

Thinning: the removal of a proportion of trees in a forest after canopy closure, usually to promote growth and greater value in the remaining trees.

Topographical wind: when the direction and/or speed of a meteorological wind is altered by the shape of the landscape. Importantly, topographical winds are a general wind adaptation and they occur on a larger scale than more localised slope winds.

Topographically-driven fire: a fire that is spread predominantly by the shape of the landscape, such as the steepness of slopes and gullies.

Topography: the description and study of the shape and features of the land surface.

Transition Zone: an area where the spread of a fire changes direction. Transition zones can be identified by changes in the appearance of indicators.

Tree: a perennial woody plant with a single main stem or trunk that supports branches above the ground. Trees usually have a distinctive crown.

Trigger point: a pre-designated point in time or place whereby a predicted change in fire behaviour will influence tactical decision-making. For instance, if a wildfire reaches a particular trigger point on the landscape, the Incident Commander may decide it is necessary to adopt alternative tactics in order to maintain safety and effectiveness.

Torching: a fire that burns from the ground through the surface and aerial fuels and into the crown of a single tree or small parcel of trees.

Understorey: vegetation found beneath the canopy, but which is normally found growing or lying on the ground.

Understorey fire: a fire that burns beneath a canopy of trees. It can occur during the course of a wildfire or may be a tactic for a prescribed burn.

Uniform fuels: identical or consistent fuels distributed continuously across an area or landscape. It is usually easier to predict fire behaviour for fires burning in uniform fuels than it is for fire in mixed vegetation types.

Valley breeze: a localised upslope wind that occurs when the sun rapidly heats the air within a valley causing it to rise upslope. A reversal of this process may occur at night leading to a mountain breeze.

Vegetation: a term used to describe all forms of plant life.

Vertical fuel arrangement: see fuel arrangement

Water bombing aircraft: an aircraft capable of carrying and releasing a volume of water or fire retardant. Water bombing aircraft can be fixed wing aircraft (such as Canadair, Tracker and Bombardier) or helicopters (with internal or external tanks or those able to carry buckets).

Water safety plan: a plan that is created to assure the safety of water bombing aircraft and other users of a body of water used for water filling. A water safety plan will commonly document the following types of arrangements:

- Measures to be implemented to inform users of a body of water about its use by water bombing aircraft.
- Systems and protocols for towing and salvage of water bombing aircraft that breaks down on the water.
- Systems and protocols for providing aid and assistance to the crew of a water bombing aircraft that has broken down on the water.

Water source: any natural or artificial body of water that can provide water to support of fire suppression operations. Common examples of water sources include lakes, reservoirs, ponds, rivers and streams.

Water table: the upper level of groundwater. Soil below the water table will be saturated. The level of the water table will vary due to changing conditions.

Weather: the state of the atmosphere at a given time and place with respect to atmospheric stability, temperature, relative humidity, wind speed, cloud cover and precipitation.

Weather history: a description of the state of the atmosphere during the hours, days or weeks preceding a wildfire.

Weather station: a collection of sensors and monitors which gathers, records and reports meteorological data. Weather stations may be permanent structures or hand-held/semi-portable/portable units.

Wet heath: heath plant community on peat soils less than 0.5 m deep (0.4 m in England).

Wet line: a line of water, or water mixed with fire-fighting chemicals, which is sprayed along the ground to serve as a temporary control line from which to ignite an operational burn or to stop a low-intensity fire.

Wetland: an area of land that is permanently saturated up to or very near to the land surface.

Wetting agents: chemicals which, when added to water, decrease the surface tension of the water and enable greater penetration into fuels.

Wilderness: a wild, uncultivated, and largely uninhabited region, which may be vegetated or non-vegetated *and/or* an area of remarkable natural beauty and ecological diversity.

Wildfire: any uncontrolled vegetation fire that requires a decision or action regarding suppression. Wildfires are commonly classified according to size and/or impact upon suppression resources.

Wildfire management plan: a strategic scheme or programme of activities formulated in order to prevent or mitigate wildfire incidents, and the evidence upon which it is based.

Wildfire Prediction System: a method used to analyse a fires potential alignment with wind, slope and aspect as it moves across the landscape and predict its likely fire behaviour within the available fuel.

Wildfire suppression plan: a plan prepared by the fire and rescue services to outline the likely selection of tactics and resources needed for a particular wildfire incident.

Wildland: an area in which development is essentially non-existent, except for the presence of basic infrastructure such as roads, railroads and power lines. Any buildings and structures will be widely scattered.

Wildland-Urban Interface (WUI) environment: the zone of transition between wildland and human settlements and/or development.

Wind: the horizontal movement of air within the atmosphere. Wind has a strong influence on fire behaviour and is one of the key forces of alignment

Wind direction: the direction from which the wind is blowing. A change in average wind direction is termed a “wind shift”.

Wind drift: the effect of the wind on water and retardant drops. For precise drops, pilots need to make a correction for wind drift. Generally speaking, the higher the drop the greater the potential drift.

Wind driven fire: a fire or part of a fire that is spread predominantly by the speed and direction of the wind.

Wind shift: a change in average wind direction.

Wind speed: the rate at which air moves horizontally past a particular location at a particular point in time.

Window of opportunity: a period of time or location on the landscape when/where it will be particularly advantageous to adopt particular suppression tactics or actions.

Wind-throw (or wind-blow): the uprooting of trees by wind.

Windrow: woody debris that has been piled into a long continuous row.

Woodland: a generic term for any area of land that is predominantly characterised by trees, whether in large tracts or smaller units. Woodland can be categorized according to the types of species it contains, for instance:

Coniferous woodland – containing predominantly coniferous tree species.

Deciduous woodland – containing predominantly deciduous tree species.

Mixed woodland – Woodland containing a mixture of coniferous and deciduous tree species.

Woodland can also be categorized according to the degree to which humans manage the area, which has an influence on the type of fire behaviour that may be observed:

Planted woodland – An area of managed woodland (often artificially established) where trees are grown for sale as timber and/or for the commercial production of other forest products. Planted woodland is often characterised by a single species and continuity in both the horizontal and vertical fuel arrangements.

Natural woodland – Trees that have germinated and grown in their natural state without the influence of human actions. Natural woodland is likely to contain multiple species of trees which leads to less continuity of fuels than is found in planted woodland.

Natural England is here to secure a healthy natural environment for people to enjoy, where wildlife is protected and England's traditional landscapes are safeguarded for future generations.

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