

CFS FACT SHEET

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HOW HOUSES BURN

Building fires start in the same way as bushfires – with small ignitions. These ignitions progress slowly at first, accelerate and progressively involve the whole building. During a bushfire, buildings can ignite in three ways; through **ember attack**, **direct flame contact** and **radiant heat**.

Ember Attack

The entry of windblown sparks (burning embers) through unprotected openings is the principal cause of building damage during bushfires. These sparks start small fires, often well before the main fire front or many hours after, which develop rapidly and may eventually engulf or envelope the whole building if left unattended.

Direct Flame Contact

Direct flame contact occurs when hazardous vegetation or other flammable material in close proximity to the home ignites causing flames to impinge directly on the exterior of the building.

Radiant Heat

While exposure to radiant heat is the principle cause of loss of life in bushfires, it rarely causes buildings to catch fire.

In extreme cases it may ignite timber directly but this only happens when a large quantity of fuel burns close to the building.

More importantly, radiant heat can break glass (due to different rates of expansion between the glass and window frame) allowing the entry of sparks and flames into the building. It may also heat up a building making ignition by embers easier.



Hazardous vegetation close to a building will increase the possibility of losing the building during spark and ember attack.

Research has shown that ember attack is the main cause of homes catching alight during bushfires.

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The Bushfire Attack

The attack of a bushfire on a building goes through three stages:

Stage 1: As fire front approaches

The attack begins when embers, blown ahead of the fire front, reach the building and its surroundings. This ember attack can begin up to an hour or more before the fire front itself arrives.

Stage 2: When fire front arrives

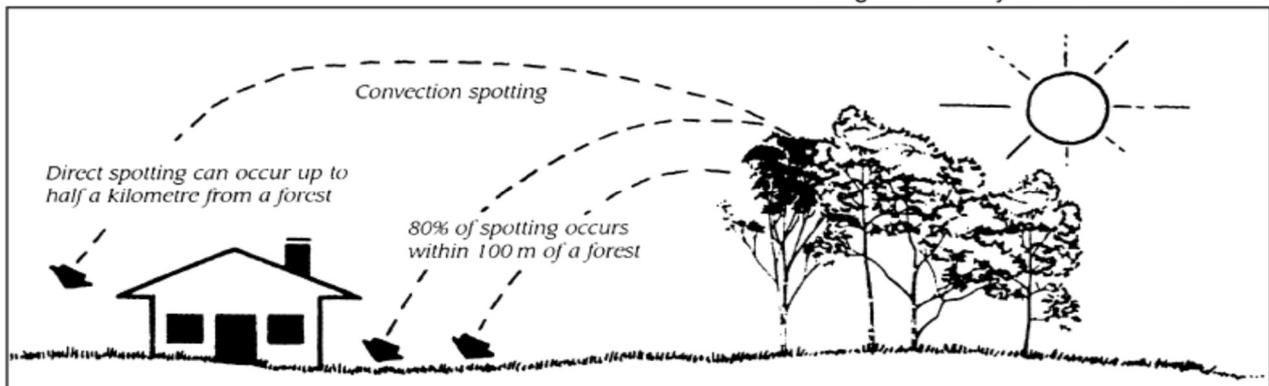
The second stage occurs when the fire front arrives. Ember attack, radiant heat, flames and smoke are at their maximum. But this only lasts for a few minutes while the fire front passes.

Stage 3: After fire front has passed

After the fire front has passed, embers continue to be blown from burning tree trunks, outbuildings, fence posts, woodheaps and the like. This final stage may last several hours.

Stage 1 As fire front approaches	Stage 2 When fire front arrives	Stage 3 After fire front has passed
½ - 1 hour	5 – 15 mins	3 – 8 hours
Ember attack	Ember attack Direct flame contact Radiant heat	Ember attack

Diagram courtesy of WA Bushfire Service.



Forest fires can cause 'spotting' (small ignitions caused by burning bark and twigs blown ahead of the main fire front which evolve into large fires). Spotting can occur hundreds of meters ahead of the fire and has been recorded as far as 30km in extreme conditions. However, the greatest chance of spotting is immediately adjacent to the going fire front.

For more information about being Bushfire Ready:

Contact the Bushfire Information Hotline

on **1300 362 361** (TTY 133 677)

visit www.cfs.sa.gov.au