

Western Australian Fire Behaviour Calculator



The Fire Behaviour Calculator (FBC) is an online tool that calculates potential Rate of Spread, intensity, spotting and flame length using variables inputted into fire spread models for different vegetation types. The FBC ingests forecast weather from the Bureau of Meteorology into models for personalised locations and Fire Danger Rating (FDR) and Fire Behaviour Index (FBI) outputs relating to each fire behaviour model.

Thresholds in Western Australia:

- **24 FBI** across fuel types
Revoke or Suspend Permits to Burn
- **40 FBI** in cut/grazed Grassland only
Harvest and Vehicle Movement Ban (HVMB)
- **50 FBI** across >10% Fire Weather District
Total Fire Ban

Access the FBC here:

aurora.landgate.wa.gov.au/fbc



Note: For the FBC to work offline, initially you need internet connection to bookmark it to your smartphone device.

HVMB Calculation Table (CSIRO Grassland Fire Spread Model)

Input variables - cut/grazed fuel condition, 4.5 tonnes per hectare fuel load, 100% curing and slope averaged to 0 degrees.

		Relative Humidity (RH) %						
		10%	15%	20%	25%	30%	35%	
Temperature	20°C	26	28	30	33	36	39	42
	25°C	23	25	27	29	32	34	37
	30°C	20	22	24	26	28	30	33
	35°C	20	20	21	23	25	27	29
	40°C	20	20	20	20	22	24	26
Wind Speed (km/h) at 2m height							Output FBI = 40	

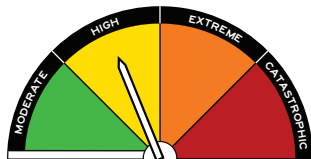
The above table should be read starting at temperature, moving horizontally across to the wind speed input and vertically up to RH e.g. Temperature of 25°C + 27km/h Wind Speed + 20% RH = 40 FBI

Fire Behaviour Index (Grassland)

Indicative Fire Behaviour and Fire Weather

MAX FLAME HEIGHT <1 m	0-5	RATE OF SPREAD 0-30 m/hr	NO RATING Fire difficult to ignite and sustain. Fires generally unlikely to spread and likely to self-extinguish.
<1.5 m	6-11	<1.3 km/hr	NO RATING Fire easily sustained. Typically wind driven fires that can spread quickly.
1.5-2.5 m	12-23	0.5-6 km/hr	MODERATE Typically wind driven and rapidly spreading fires with the potential to gain size quickly.
2-3 m	24-49	2.5-10 km/hr	HIGH Wind driven, rapidly spreading fires with potential for development into large fire area/size and with the potential for short distance spotting and long flame lengths.
2.5-3.5m	50-99	5-16 km/hr	EXTREME Extremely rapid fire growth and increasing likelihood of large final fire area/size. Possibility for fire behaviour to become erratic and plume driven. Strong convective column formation. Wind speed and direction likely to be erratic at times.
>3m	100+	>8 km/hr can be expected, possibly >16 km/hr	CATASTROPHIC Extremely rapid fire growth and increasing likelihood of large final fire area/size. Possibility for fire behaviour to become erratic and plume driven. Strong convective column formation. Wind speed and direction likely to be erratic at times.

The new Australian Fire Danger Rating System (AFDRS) levels are:



MODERATE

Plan and prepare

EXTREME

Take action now to protect life and property

HIGH

Be ready to act

CATASTROPHIC

For your survival, leave bushfire risk areas