

# Australian Fire Danger Rating System

## What is the Australian Fire Danger Rating System?

The Australian Fire Danger Rating System (AFDRS) Program is redesigning the forecasting of fire danger in Australia. The AFDRS is a project of national significance being developed collaboratively by each state and territory, and the Commonwealth government. It aims to improve public safety, reduce the impacts of bushfires and better support the community with nationally consistent ratings and messaging. The AFDRS will be implemented on 1 September 2022 across Australia.

## What are Fire Danger Ratings?

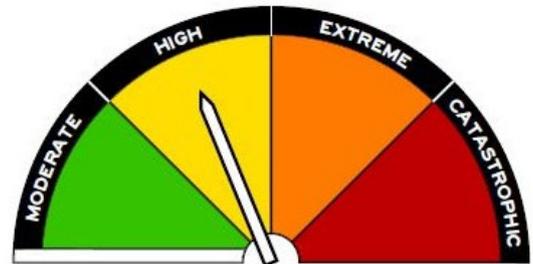
Fire Danger Ratings describe the potential level of danger should a bushfire start. They provide people with information so that they can take action to protect themselves and others from the potentially dangerous impacts of bushfires. Ratings are calculated using a combination of weather forecasting and vegetation information. They do not indicate the chance of a fire occurring.

## How is the AFDRS different from our current system?

The current Fire Danger Rating System is largely based on 60-year-old science applied on a large scale. New technology and research have greatly improved our ability to more accurately predict fire behaviour and the potential threat to the community.

The AFDRS will have four levels with action-oriented messages to encourage people to take action. The ratings and high-level messages are:

1. **Moderate:** Plan and prepare.
2. **High:** Be ready to act.
3. **Extreme:** Take action now to protect your life and property.
4. **Catastrophic:** For your survival, leave bushfire risk areas.



Supporting messages, including localised information, will clearly explain what community response is required at each level. The AFDRS also introduces an 'off' or 'no rating' level (white strip under Moderate) for days where no proactive action is required. This does not mean that fires cannot happen, but that they are not likely to move or act in a threatening way.

## What are the benefits of the AFDRS?

Currently, there are inconsistencies in how jurisdictions determine and communicate Fire Danger Ratings. By implementing a national system, wherever people are in Australia they will see and access consistent fire danger advice, maximising their ability to understand and appropriately respond to conditions. The AFDRS will also apply eight of the most contemporary fire behaviour models. This will see us move to a Fire Behaviour Index that provides a much more accurate scale of potential fire behaviour based on weather conditions and the applicable model.



## Total Fire Ban

A Total Fire Ban (TFB) is imposed as a risk-based prevention measure to restrict activities, reduce the likelihood of ignition in bushland/vegetation and increase awareness in the wider community on the day the ban is declared. The primary justification for recommending the declaration of a TFB is based on the forecast Fire Danger Index (FDI) and resultant Fire Danger Rating (FDR). The State of WA is currently divided into the three TFB FDI indicator zones (Zone 1: FDI 50+, Zone 2: FDI 60+ and Zone 3: FDI 75+).

As the AFDRS will provide a Fire Behaviour Index (FBI) as a scale of fire danger that produces fine-scale information across a range of fuel types (compared to the existing two fuel types), there will not be a requirement for TFBs to be declared at a different rating across separate zones. Under the new system, the transition between the High and Extreme rating (50 FBI) is associated with erratic fire behaviour and an increased likelihood of community loss and significant consequences. It has therefore been nationally recognised as the most appropriate threshold for a TFB declaration. The updated information will be incorporated into training products and other communication materials that will be rolled out to fire managers, local governments, industry, utilities and other impacted stakeholders.

<b>Fire Danger Ratings:</b> Broad categories designed to quickly communicate to the public the expected level of danger.	<b>Fire Behaviour Index:</b> A scale of fire danger that produces outputs across eight different fuel types (compared to the existing two fuel types).
Supports communities	Supports industry professionals
Simple and intuitive design	Detailed index for each fuel type
Fewer colours and levels	Better decision making
Action-oriented advice	Greater confidence in the system

Image 1: The difference between Fire Danger Ratings and the Fire Behaviour Index

See the image on page three describing the potential fire behaviour, suppression response and impact across each FBI category.

## How will the changes impact the Business and Industry Sector?

The new AFDRS calculates fire danger at a finer geographic scale than ever before. As it produces advanced fire danger predictions, stakeholders across government, the community and industry can have greater confidence in the information and advice provided.

The move from six to four ratings, new names and thresholds will change how Fire Danger Ratings are referenced within the *Bush Fires Act 1954*, *Bush Fires Regulations 1954* and *Bush Fires (Infringements) Regulations 1978*. DFES has been consulting with representatives across State and local government, agriculture and industry to identify and progress the required changes ahead of the nationally agreed 1 September 2022 implementation date.

Where you are working under an exemption issued by DFES under section 22C of the *Bush Fires Act 1954* which references a Fire Danger Index (FDI), you will be reissued with an exemption amended to reference a Fire Behaviour Index (FBI). The AFDRS will provide tools that will allow industry to obtain information that is precise to the location and the time of day of the activity.



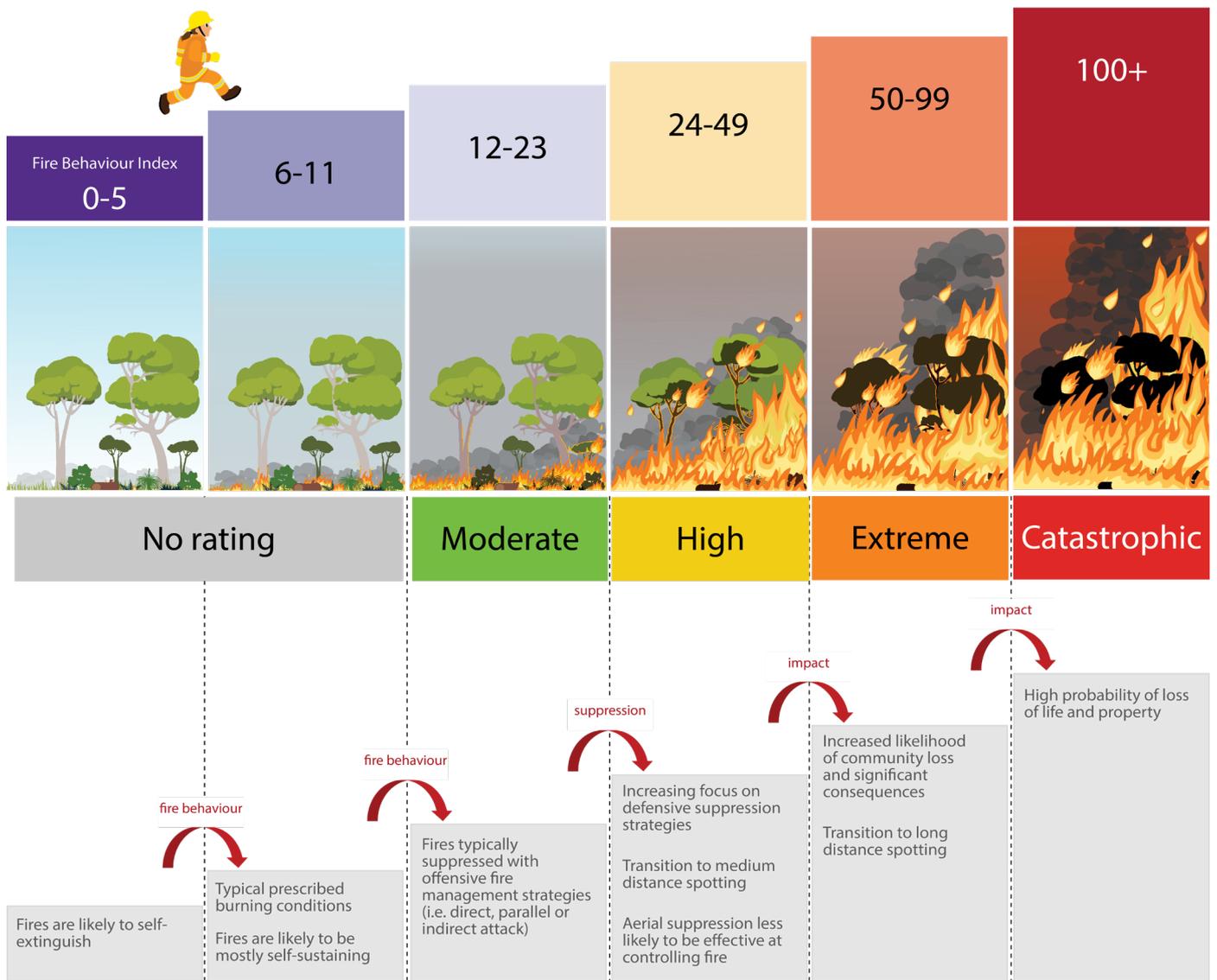


Image 2: Fire Behaviour Index based on transitions

### Hot Work (welding and grinding) and Road Work (grading and bituminising) Water Requirements

The volume of firefighting water required for these activities will be aligned to the new ratings however this will be a minimal change and the maximum water volume required will not increase.

### Catastrophic FDR

Changes to when hot work (welding and grinding), road work (grading and bituminising), off-road activity and catering activity are not permitted during a TFB are minimal as 'Catastrophic' will remain as the rating trigger for these restrictions. System testing and analysis has indicated that forecasting of 'Catastrophic' fire danger ratings will occur less frequently under the AFDRS.



## Harvest Vehicle Movement Ban

Currently during a TFB a Bushfire Control Officer MUST impose a ban, commonly referred to as a Harvest Vehicle Movement Ban (HVMB), on *off-road activity* for business, industry and agriculture if the Grassland Fire Danger Index (GFDI) exceeds 35. Analysis was conducted to determine the range of weather combinations and fuel inputs that equate to a GFDI of 35 and resulted in an FBI of 40 being confirmed as the trigger threshold for a HVMB during a TFB under the AFDRS.

## Tools

There will be a number of public facing products made available for industry, agriculture and the community to access information on the Fire Danger Rating products. Daily FDR and FBI forecasts will be available from the Bureau of Meteorology (BoM) public website. The Emergency WA website will reflect the new Fire Danger Ratings and be a primary public facing platform.

## Education products

Updates are being worked on for public information sources (e.g. Emergency WA) and a suite of education and training products will be made available to local governments, volunteers and other key stakeholders. A national awareness campaign is also under development, which will launch with the new system to help embed understanding of the new levels and actions.

## Fire Weather Districts

The AFDRS project presented an opportunity for WA to review the [current Fire Weather Districts](#) to improve how FDRs are communicated. The review commenced in January 2021 facilitated by DFES and BoM, involving agency staff and key stakeholders. Following consultation across each region and detailed analysis work, the revised Fire Weather Districts have been finalised and will be introduced with the release of the AFDRS. The new Fire Weather Districts can be accessed from the [interactive map viewer](#).

Effective from 1 September 2022 the new AFDRS model will be implemented. BoM will cease using the old model and only forecast using the new AFDRS. Given the volume of data associated with forecasting, there will not be an overlap period and the old model will no longer be available.

## Want to know more or stay in touch?

To learn more, visit [dfes.wa.gov.au](https://dfes.wa.gov.au). For information about the AFDRS WA implementation project, email [AFDRS@dfes.wa.gov.au](mailto:AFDRS@dfes.wa.gov.au) or [subscribe to our AFDRS Newsletter](#).

