



# AFDRS Fire Weather Forecast



The AFDRS Fire Weather Forecast is the main product used by fire and emergency management personnel for fire preparedness. It provides insight into the forecast fire danger risk and the underpinning weather parameters.

## What has changed?

The key changes to the forecast include:

- Fire behaviour information for up to eight different fire behaviour models, dependant on the types of vegetation present.
- Greater forecast information of fire danger at a local scale, both in a spatial sense with fire weather districts and sub-areas and based on fuel type.
- Additional weather information that contributes to fire risk such as wind change danger index and highlighting of significant values.

## What will it look like?

The new Fire Weather Forecast emulates the look and feel of the existing product. The Fire Weather Forecast consists of three sections containing tabulated data:

### *Summary*

Overview of the fire danger and some of the key parameters used to assist in fire ban decisions.

### *Detailed forecast*

Displays the forecast Fire Behaviour Index for each fuel type present along with the coverage and duration at certain fire danger thresholds.

### *Weather information*

Details weather parameters within a fire weather district.

## Fire Weather Forecast format

The Fire Weather Forecast will continue to be issued in a variety of formats such as PDF, html and xml. The html version will be dynamic, making use of expandable and collapsible tables to allow more details to be presented.

## Fire Weather Forecast validity and issue time

As with the existing product, the Fire Weather Forecast covers one forecast day, with four separate products issued to cover four individual forecast days:

- The products are issued each afternoon for the following day and each of the three subsequent days.
- In the morning, the forecast for that day may be re-issued in line with local arrangements.

## Preliminary forecasts

The day prior to a day of significant fire weather risk, an earlier version of the Day 1 forecast may be prepared and issued as a Preliminary Fire Weather Forecast.

## Summary section

1 Fire Weather District	2 District Rating	4 Maximum Sub Area Rating	5 District FBI	6 cHaines	7 Wind Change Danger Index	8 TAL	9 Minor Fuel Type Rating >= Extreme
Western	Extreme	Extreme	56	8	43	2	Y
Upper Derwent Valley	High	High	32	7	41	1	Y
East Coast	Moderate	Moderate	17	5	33	1	
South East	Moderate	High	15	4	24	1	
Kingsborough		Moderate	11	3	27	1	
Tasman	3	High	28	2	25	1	
Glenorchy City		High	21	4	22	0	
Hobart City		Moderate	10	6	25	0	
Clarence City		Moderate	8	5	24	0	
North East	High	High	38	6	36	1	

### Tuesday

Morning fog patches, otherwise dry apart from isolated light morning showers over the eastern parts and near the coast. Generally mild and partly cloudy over the south, but warmer and sunny over the north. Light winds and afternoon coastal seabreezes.

#### 1. Fire Weather District

Information is displayed at the Fire Weather District level as per existing Fire Weather Forecasts. In html displays, this can be expanded to show sub-area information, as shown in the example above.

#### 2. District Rating

Like the current Fire Weather Forecast, the District Rating displays the highest fire danger rating making up 10% or more of the area.

#### 3. Sub-areas or LGA

Fire danger information is displayed at a sub-area level when the table is expanded. Sub-areas are defined by agencies but in many cases are Local Government Areas (LGA). Note that sub-areas may straddle more than one Fire Weather District. In this case they will be listed under the district that the greatest proportion of the sub-area sits within.

#### 4. Maximum LGA Rating

For each Fire Weather District, the maximum fire danger rating at the sub-area level is displayed.

When the table is expanded to show sub-areas, this column shows the rating for each of these individual sub-areas. As for the fire weather districts, the rating for the sub-area is the highest rating that makes up 10% or more of the area. It is possible for a sub-area fire danger rating to be higher than the overall District rating.

#### 5. District/area Fire Behaviour Index

This is the 90<sup>th</sup> percentile fire behaviour index for that district/area.

#### 6. cHaines

The 90<sup>th</sup> percentile continuous cHaines index is displayed for the district/area. This is a number between 0 and 13 and will be highlighted when the value exceeds the 95<sup>th</sup> percentile climatological value.

#### 7. Wind Change Danger Index

The 90<sup>th</sup> percentile wind change danger index (WCID) is displayed for the area. The value will be highlighted when it reaches or exceeds 40.

#### 8. TAL

Thunderstorm Activity Level (TAL) is a value between 0 (no thunderstorm activity) and 3 (widespread thunderstorm activity). The 95<sup>th</sup> percentile TAL value for the area is displayed.

#### 9. Minor Fuel Type Rating >= Extreme

This highlights when a fuel type that makes up less than 10% of a Fire Weather District (a minority fuel type) returns a rating at or above Extreme. Any individual minority fuel type is not able to trigger a district rating at this level on its own.

Where a minor fuel type is rated at Extreme and the overall district rating is below Extreme the cell will be highlighted.

## Detailed forecast section

Fire Weather District	1 Fuel Type and Coverage	Fire Behaviour Index	2 FBI >= 24			4 FBI >= 50			FBI >= 100		
			Cover (%)	3 From	Duration	Cover (%)	From	Duration	Cover (%)	From	Duration
Western	Forest 54%	25	5	12	1						
	Buttongrass 36%	21	1	11	1						
	Other 10%		7	07	12	4	09	10	<1	10	2
	Shrubland 8%	44	6	09	6	4	11	3			
	Pine < 1%	17									
	Grassland < 1%	80	< 1	07	12	< 1	09	10	<1	10	2
	Woodland < 1%	26	< 1	09	6						
	District Summary		13	07	12	4	09	10	<1	10	2
Upper Derwent Valley	Forest 55%	42	30	10	8	3	13	1			
	Grassland 33%	38	25	09	6						
	Other 8%		7	09	8	5	11	2			
	Pine 6%	50	6	09	6	5	11	2			
	Woodland 1%	15									
	Buttongrass 1%	27	< 1	11	1						
	Shrubland < 1%	52	< 1	09	8	< 1	11	1			
	District Summary		62	09	8	8	11	2			

### 1. Fuel Type and Coverage

The static (PDF) version of the forecast shows information for all major fuel types (covering 10% or more of the area). Fuel types representing less than 10% of an area are grouped together under 'Other'. All minor fuel types are viewable in the html and xml version of the forecast.

The percentage of an area covered by a fuel is given alongside the fuel type.

### 2. Cover (%)

The percentage coverage displayed within each FBI range represents the total area coverage reaching or exceeding that FBI for that fuel type. This value is not able to exceed the percentage coverage of that fuel type across the Fire Weather District. 'Other' considers all minor fuel types combined and 'District Summary' considers all fuel types combined.

### 3. From

The 'From' column represents the local time, in hours, that the FBI threshold is first reached for that fuel type. 'Other' considers all minor fuel types combined and 'District Summary' considers all fuel types combined.

### 4. Duration

The 'Duration' column represents the elapsed hours since the start time until the fire behaviour index last exceeds the given threshold for that fuel type.

Because the 'Duration' is the time between the first and last exceedance, the fire behaviour index may not exceed that threshold for the entire time indicated by the hours.

'Other' considers all minor fuel types combined and 'District Summary' considers all fuel types combined.

## Weather information section

	1	2	3	4	5	6	7	8	9	10
Fire Weather District	Maximum Temperature (deg C)	Minimum Humidity (%)	Wind (km/h)			1500m Wind (km/h)		Mixing Height (m) AMSL	TAL	Rainfall (mm)
			Dir	Speed	Gust	Dir	Speed			
Western	19-24	25-35	NW	25-30	40-50	W	60	1900	0	0-2
Upper Derwent Valley	20-23	30-45	NW	20-25	35-50	WNW	50	2100	1	0
East Coast	19-24	30-40	N	15-25	30-40	NW	55	1900	1	0-2
South East	17-19	40-50	NW	30-40	50-60	NW	60	1600	2	2-4

The weather information section combines weather forecast information from two sections of the current forecast: District Weather Elements table and Location Forecasts.

*Values at specific locations will be replaced with ranges across the Fire Weather District.*

Forecast ranges tend towards the mid to upper end for temperatures and wind speeds, and mid to lower end for relative humidity across a Fire Weather District.

It will not capture the absolute extreme values, particularly where these are confined to a small portion of the district or a short period of time.

### 1. Maximum temperature

The mid to upper range of maximum temperature values across the district (i.e., 50<sup>th</sup> and 90<sup>th</sup> percentile values).

### 2. Minimum humidity

The mid to lower range of minimum relative humidity values across the district (i.e., 10<sup>th</sup> and 50<sup>th</sup> percentile values).

### 3. Wind direction

The predominant 10m wind direction to 8 compass points at times of the day when the FDR is at or above the Fire Weather District FDR.

### 4. Wind speed

The mid to upper range of 10m wind speed (i.e., 50<sup>th</sup> and 90<sup>th</sup> percentile) at times of the day when the FDR is at or above the Fire Weather District FDR. Wind speeds are in km/h and are rounded to the nearest 5 km/h.

### 5. Wind gust

The mid to upper range of wind gust (i.e., 50<sup>th</sup> and 90<sup>th</sup> percentile) at times of the day when the FDR is at or above the Fire Weather District FDR. Wind gusts are in km/h and are rounded to the nearest 5 km/h.

### 6. 1500m wind direction

The predominant 1500m above mean sea level wind direction to 8 compass points at times of the day when the FDR is at or above the Fire Weather District FDR.

### 7. 1500m wind speed

The average 1500m above mean sea level wind speed at times of the day when the FDR is at or above the Fire Weather District FDR. Wind speeds are in km/h and are rounded to the nearest 5 km/h.

### 8. Mixing height

The 90<sup>th</sup> percentile mixing height value above mean sea level, rounded to the nearest 100m.

### 9. TAL

Thunderstorm Activity Level (TAL) is a value between 0 (no thunderstorm activity) and 3 (widespread thunderstorm activity). The 95<sup>th</sup> percentile TAL value for the district is displayed.

### 10. Rainfall

This is given as a range, with the lower value being the rainfall amount there is a 75% chance (higher confidence) of receiving and the upper value being the rainfall amount there is a 25% chance (lower confidence) of receiving, as an average across the district. This is a daily value.

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For more information about the AFDRS Fire Weather Forecast, contact the **Fire, Heatwave and Air Quality Environmental Prediction Services Team** at [fireweather@bom.gov.au](mailto:fireweather@bom.gov.au).