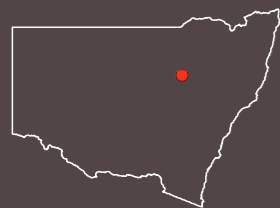




# Ferocious

## Wambelong fire



In mid-January 2013 a bush fire swept through the Warrumbungles National Park to the west of Coonabarabran, threatening Australia's largest optical observatory and destroying neighbouring farm land and properties.

It was the State's most destructive bush fire in a decade with more than 55,000ha burnt, including 95 percent of the Warrumbungles National Park and 53 homes. The smoke plume above the fire rose up 14kms – a plume so large is created its own weather conditions adding to the complexity of the fire. (see page 9 for more details)

The potent mix of hot temperatures, strong and shifting winds of up to 100kph, and bone dry undergrowth combined to make conditions very difficult for firefighters. At the time, Commissioner Shane Fitzsimmons said firefighters had been "absolutely flogged in the most atrocious of conditions" near Coonabarabran.

Most of the property loss occurred on the evening of Sunday 13 January but the Wambelong fire was active from 12 January to 21 February 2013.

ABOVE: NSW RFS Pilot Alex King took this photo on a reconnaissance flight over the Siding Spring Observatory late January 13 2013.

### 12 January 2013

Late in the day a Triple Zero (000) call indicated that a fire has started in inhospitable country in the Warrumbungles National Park, west of Coonabarabran.

NSW RFS crews including waterbombing aircraft and National Parks and Wildlife Service (NPWS) crews responded quickly. The fire was estimated to be 25ha burning along the northern side of John Renshaw Parkway, running east at a moderate intensity but not burning in trees. Ground crews reported a lot of lightning in the area but the fire was declared contained by the late evening.

### 13 January 2013

With Catastrophic conditions forecast for Coonabarabran and Extreme weather conditions forecast for the district, firefighters remained alert throughout the day. There was a concerted aerial waterbombing effort and ground crews worked on building containment lines.

Aircraft reported that lightning activity throughout the area had ignited further fires. A feature of the fire was the massive smoke plume, a pyrocumulos cloud, that was building in intensity throughout the day. One local resident reported on social media: "Plume looks like whipped cream and sky above it is stratus cloud - plume up that high." The plume itself impacted on the fire's behavior creating unexpected wind changes and ember movement. (See page 11 for more detail.)

### Observatory survives

An Evacuation Alert was given to the Siding Spring Observatory in the early afternoon with the NSW Police Force escorting staff at the Observatory as well residents in the area to the Evacuation Centres. An Emergency Warning was later issued in the afternoon of Sunday 13 January for all people in the Siding Spring area.

Evacuation Centres were established at Coonabarabran Bowling Club and the Baradine Tattersall's Hotel.

Late in the afternoon, the fire impacted on the Timor Road area and the Siding Spring Observatory. Outbuildings

at the Observatory were destroyed including lodgings for visiting astronomers. Crews were unable to gain access for several hours due to fallen powerlines, fallen trees, intense smoke and extreme heat on Timor Rd.

Late in the evening firefighters arrived on site at the Observatory to protect the remaining buildings and telescopes. The three FRNSW crews fought spot fires and ember attacks on the Observatory throughout the night. FRNSW Commissioner Greg Mullins later praised the retained firefighters for their efforts.

"Managers of the Observatory watched in awe and admiration from Canberra by video link as these firefighters fought to save several key buildings," he said, "They faced extreme danger at considerable personal risk."

Astronomers were able to remotely check on the telescopes and equipment reporting on social media.

"Siding Spring Observatory instruments registered a temperature of 120 degrees this afternoon," they wrote, "We have visual confirmation that five of the 12 Siding Spring Observatory telescopes are intact. We know of one telescope that is standing but we cannot communicate with it."

### Early evening southerly change

The fire was only 13km from the town of Coonabarabran when a southerly change passed across the fireground. While it eased fire conditions, it did send smoke and embers in a north and north easterly direction toward Bugaldie. A further Emergency Alert was issued for the Bulgadie area and residents were encouraged to evacuate.

The fire was now burning at around 2,500ha, five helicopters and five fixed wing aircraft were waterbombing the area. On the ground seven tankers, eight strikers and one pumper were in attendance from NSW RFS, NPWS and FRNSW. A total of 50 firefighters were on scene.

Reports from social media bring home just how hot and fast the fire is moving:

"The in-laws have just been evacuated from property eight kilometres from Coonabarabran," said one comment on Facebook, "Mother-in-law says wind was horrific, trees over the road, police had to cut with chainsaws to get escorts out. Thick smoke, embers. She says that they will be surprised if they have a home when they return!"

Late in the evening the fire was still moving very fast in a north to north-easterly direction. One hundred firefighters were on the ground. Hot ash, affected by strong and gusty winds, was falling in some areas. In Baradine, fifty kilometres north of Coonabarabran, heavy smoke was affecting residents and hospital patients. The local hospital was securing door and windows drafts with wet towels to prevent smoke into facility.

Electricity to the town of Baradine had also been cut with around 20 power poles in the area destroyed by the fire. The local hospital was running on generators.

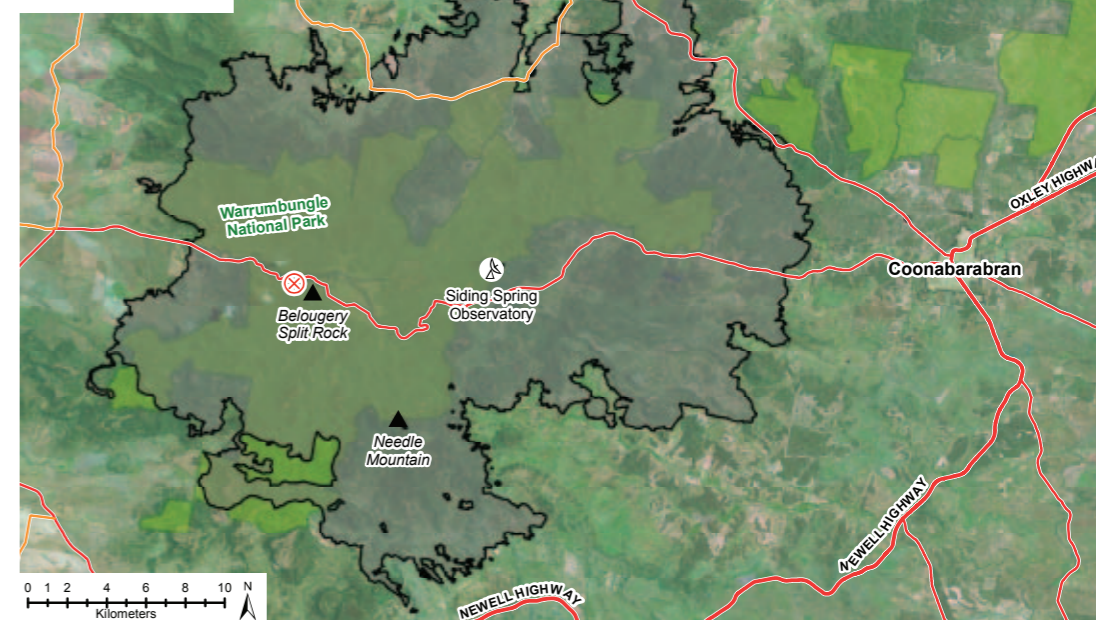
Firefighters continued aggressive firefighting efforts throughout the night yet the fire to expand quickly.

### 14 January 2013

Before the sun has even come up, crews were already reporting that many properties have been lost overnight. The fire was still running with a south to south-westerly wind behind it. Guesses were that 32,000ha has burnt and five to 14 houses have been lost. It was still unclear just how much of Siding Spring Observatory had been damaged. Power lines were down along Timor and Barradine Roads.

### Wambelong Fire

Area: 55,210 ha  
Perimeter: 405 km



Map Key: Approx. Origin, Burnt Area, Built Up Area, Township, National Park

RIGHT AND FAR RIGHT: Firefighters working on the Baradine Rd about 8kms out of Coonabarabran. Photos by Alex Chesser



After sunup, a NSW RFS aviation crew flew over the Observatory and were able to assess the impact of the fire, confirming that the main telescopes had all escaped damage.

Throughout the day, further reports rolled in of houses lost and livestock and property damaged. Around 80 firefighters were working on containment lines but the public have been warned that the fire was still uncontained and it is still not safe to return to their homes.

"It is a really dangerous and hostile environment now," Commissioner Fitzsimmons told the Seven Network.

The fire was moving north-west and west through private property and throughout the day the focus was on protection of firefighters and assets on the north and western side of the fire including Bugaldie Village and rural properties on Baradine Rd. Firefighters were constructing

a containment line in the area north of the Baradine Road. On the eastern side, air attack is operating between Timor and Baradine Road.

#### Overrun

At the peak of the fire, Coonabarabran farmer and Warrumbungles Group Captain Bob Fenwick and his crew were caught in an overrun inside their truck.

"I just don't know how we got out of it," he told The Australian newspaper, "We were just

engulfed in fire. I'm sure the vehicle caught fire at some point because it sure won't start today."

Mr Fenwick said he had fought up to 40 fires in his time as a volunteer but nothing rivalled what he had witnessed at the Wambelong fire. "There's no way firefighters are trained to fight fires like that," he told the newspaper. "The speed and ferocity of it was just frightening. The wind was just unbelievable. It was moving along the ridge line as fast as you could drive."

Group Captain Fenwick lost his own home in the fires.

#### 15 January - 24 January 2013

In the early hours of Tuesday 15 January the radio and TV Communications tower at Needle Mountain came under threat. Aerial attack was increased to successfully protect the tower.

Milder weather conditions throughout Tuesday, however, meant the fire was burning at a lower intensity. Firefighters, with the assistance of aircraft,



# Fire cloud



The smoke plume about the Wambelong fire rose 14kms into the atmosphere. Here the NSW RFS weather experts explain the phenomenon of the pyroCb cloud formation.

By Simon Louis (RFS Meteorologist) and Laurence McCoy (Senior Fire Behaviour Analyst)

The above photo was taken by a commercial air pilot and displays an example of pyroCb - a pyrocumulonimbus cloud from the Wambelong fire in January 2013.

PyroCb formation is an extremely dangerous situation for firefighting. An interesting feature of this picture is that the fire at ground level appears to be driven by southerly winds while the smoke column and pyroCb are being pushed in a different direction by upper westerly winds.

Traditionally fire planners concentrated on fire behaviour and weather on the ground, however, as a result of more recent severe bush fire events there has been an increasing interest in the effect of atmospheric conditions above ground level.

Pyrocumulonimbus clouds form when the additional heat generated by the fire causes a column of air to rise up into the atmosphere. As the air in the column cools, water vapour condenses to form cloud. When the atmosphere is unstable enough and the fire on the ground is intense enough, these clouds can develop into thunderstorms and become known as pyrocumulonimbus clouds or pyroCb.

PyroCb formation is an extremely dangerous situation for firefighting as they can cause strong and unpredictable winds, intense spotting, new fires from lightning strikes and

generally unpredictable fire behaviour. There have also been recorded events where pyroCb has produced some rain at the fireground. This can have the opposite effect and reduce fire behaviour.

Recent examples of events where pyroCb has been observed include the Warrumbungles' Wambelong Fire, the Kilmore East Fire (Black Saturday) and the Canberra Fires of 2003. These are some of the most intense bush fires in recent history, exhibiting fire behaviour beyond the capability of traditional fire behaviour models to predict.

Plume looks like whipped cream and sky above it is stratus cloud. Plume up that high."

1755hrs, 13/1/13, Report from social media

were still busy protecting properties on the southern and western flanks of the fire. Crews were also working on a flare up in grass lands on the south western side of the fire. This kind of activity continued for several days with firefighters responding quickly to flare ups.

Over the coming days, there was potential for properties to come under threat in the Wallumburrawang, Cennruiach and Wandiallah Creek areas.

Given the potential threat, patients from Baradine Hospital were relocated to external health facilities in surrounding towns. The Newell Highway, as well as some local roads, were closed for extended periods during the fire. There

was considerable damage to telecommunications infrastructure throughout the fire.

By Wednesday 16 January residents were given limited access to damaged properties under Police supervision.

On the weekend light rain fell on the fireground, however crews kept a watching brief to ensure the fire did not breach containment lines.

The fire was declared out on 24 January after burning 55,000ha, 53 homes, 131 other buildings, 847 head of sheep, 318 head of cattle and 1,697km of fencing.

## What is the Siding Spring Observatory?

Siding Spring Observatory is one of the world's premier astronomy and astrophysics facilities.

The Australian National University's Research School of Astronomy and Astrophysics, operates the 4m AAT and 1.2m UK Schmidt telescope at Siding Springs. The AAT is one of the world's top telescopes and a key instrument in exploring the Milky Way galaxy and Magellanic Clouds.

The Siding Spring Observatory is a working research facility

and is managed by the Australian National University's research school of astronomy and astrophysics and regularly visited by Nobel Laureate Brian Schmidt.

While the flames came close to the Observatory on Sunday 13 January and severely impacted five of its buildings, including its visitors' lodgings, 10 valuable telescopes run by Australian, Polish, British, Korean and US researchers all escaped destruction.



Photo by Alex King