

INDEPENDENT BUSHFIRE GROUP

Fire Study 8: Currowan-Tianjara Complex, Conjola Park and Milton backburn containment strategy,
Issue: Backburn failure because of limited time between completion and blow-up conditions
Period: 7 – 11 December 2019

Introduction

The purpose of this fire study is to analyse the failure of the containment strategy in the Milton to Conjola section of the Currowan-Tianjara bushfire complex. This analysis includes the Conjola Park fire escape and the containment line escapes further south towards the western side of Milton along the escarpment.

The fire reconstruction is a preliminary first step towards understanding the fire dynamics and fire strategies that either diffused or exacerbated the fire's behaviour on this sector of the bushfire. It will be enhanced using residents' information and photos taken on the day.

Situation

Prior to 31 December the Currowan and Tianjara fires were converging, the latter from the north and the former from the south. By 27 December the Currowan bushfire had reached the Porters Creek Dam Rd and Pointer Gap Rd which were later used as part of the backburn line on 30 December. The Currowan Fire was approaching the Yatte Yattah precinct from the north and met up with a backburn along the western side of the Princes Highway.

The Currowan part of the bushfire continued to burn slowly downhill between 27 and 30 December. Parts of it never met up with the backburn. On the early morning of 31 December there was still a 500m to 1000m gap between it and the backburns conducted to the south.

Easterly moist air masses dominated the coast and hinterland during this period. DFMCs ranged between 15 and 22% for most days prior to 31 December, the exception being 30 December when DFMCs were in the range of 8 and 22%. Even early morning on 31 December until the breakdown of the inversion at about 08:00 the easterly mass was still present over the fireground.

Fire reconstruction on the day

The breakout of the Currowan bushfire in the Yatte Yattah sector came from two active edges not suppressed since 27 Dec about 1-1.5 km to the north of the backburn. We have identified three ignition points based on fire linescan data obtained from a meeting with local residents on 7 May 2020 (*Figure FS25*). The first fire spot fire started up at about 09:05 from a small eruption event at 08:50 back near the start of the southern front fire front resulting from the fire re-ignitions. The wind was from the west at this time – it later veered to the NW from about 10:00 onwards until close to the arrival of the strong cool southerly wind change.

The initial three fires spread easterly at 18-25 m/min until about 10:00 when they reached the edge of a flat hill and started to spot into Bloodwood Road and the area either side of the Princes Highway at 10:15. These new spot fires started separate fire runs across the Princes Highway about 1.5-2.0 km east of the initial fires run, further back up on the main hill to the west. The fire spread on two fronts either side of Myrtle Gully in an SSE direction north of Conjola Park. It is estimated that the Currowan bushfires started to spot into Conjola sometime between 11:15 and 11:30. The Conjola Park fire run also likely spotted across the lake between 11:30 and 11:45 as well as into the Narrawallee Nature Reserve between 11:30 and 12:00. The vigorous southerly change came through at about 13:00 and swept these fire runs to the north. The wind went around to the WSW and then finally settled at SSW.

The fires moved north, on several different fronts on both the southern and northern side of Conjola Lake.

Sometime between 08:00 and 09:00 further south of the Conjola Park fire runs, another series of separate fire fronts started up to the south- east of Pointer Gap and west of Milton, all as a result of spot-overs on the fire containment lines. In between the Conjola Park and these more southerly fires, another set of fire runs caused further spot-overs between Pointer Gap and Yatte Yattah along the full length of the containment lines.

Important fire landscape and fire behaviour features

- The Milton escarpment contains semi-mesic Turpentine-Red Mahogany forest which had built up some fuel moisture recovery in the days preceding the 31 December breakout. This is a very different fuel to the heathy woodland and heathland on the Morton plateaux.
- It is difficult to work out from the information available whether the main fire or the backburns contributed to the spot fires that occurred at 10:30 on 31 December. It is possible that the interaction of the two coalescing fire fronts contributed to increased fire intensity, energy release, and release of fire brands from the dissipating convection column after the two separate sets of fires coalesced.

Fire weather patterns (see Figure FS26)

- The fire weather was relatively benign from 25 to 29 December before some of the worst fire weather on the South Coast on 30 and 31 December. Fire 'spike' days also occurred on 26 December. Fire weather was otherwise reasonably benign between 7 and 9 December and between 24 and 30 December (refer to weather chart).
- Fuel moisture recovery in most fuel types on and below the escarpment occurred overnight on most nights as a result of easterly air masses over the fireground, except on 5 and 10 December. The fire weather at Ulladulla was overall milder than at Nowra during this period.
- Fire weather deteriorated significantly from the morning until mid-afternoon of 31 December for about 2 hours. The FFDI was 89 at Nowra whereas at Ulladulla it was about 60.

Containment strategies

- Direct attack could have been a viable option to suppress the line of fire active to the north-west of Conjola Park given the benign fire weather conditions before 31 December. This could have been a lower-risk fire tactic than to implement a backburn the night before without much community consultation about the potential risks of fire escape.
- The containment lines on the escarpment and slopes west of Milton were highly convoluted and as a result were more likely to be breached on the morning of 31 December.

Potential lessons

- The key containment strategy used throughout the Currowan bushfire was indirect backburning which did not account for changes in fuel type varying between heathland, heathy woodland, dry shrubby eucalypt forest, and mesic and semi-mesic eucalypt forests, local topography, and drought effects.
- Nor did it apparently allow for variations in tactics, such as partial containment or direct attack in fire sectors close to the coast where easterly moist and stable air masses predominated.
- Instead of such reliance on backburning in the top-level Currowan fire strategy, local people with detailed knowledge of firegrounds, fuel types and topography could be used to develop local fire strategies and tactics. This could be said of any of the bushfires that impacted on local communities across the breadth of eastern NSW.

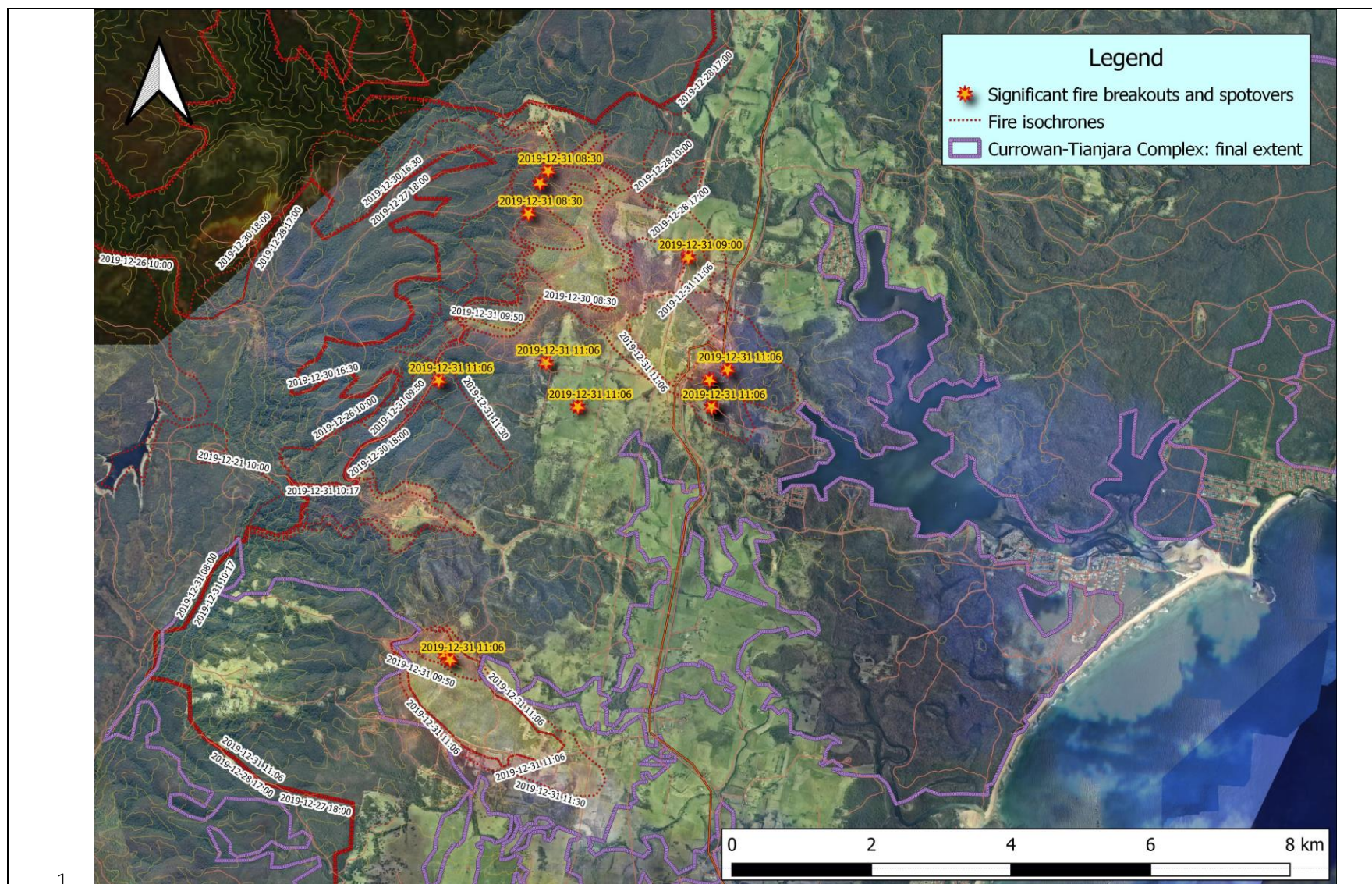


Figure FS24: Fire containment strategy overview map for Milton-Conjola section of Currowan-Tianjara Complex.

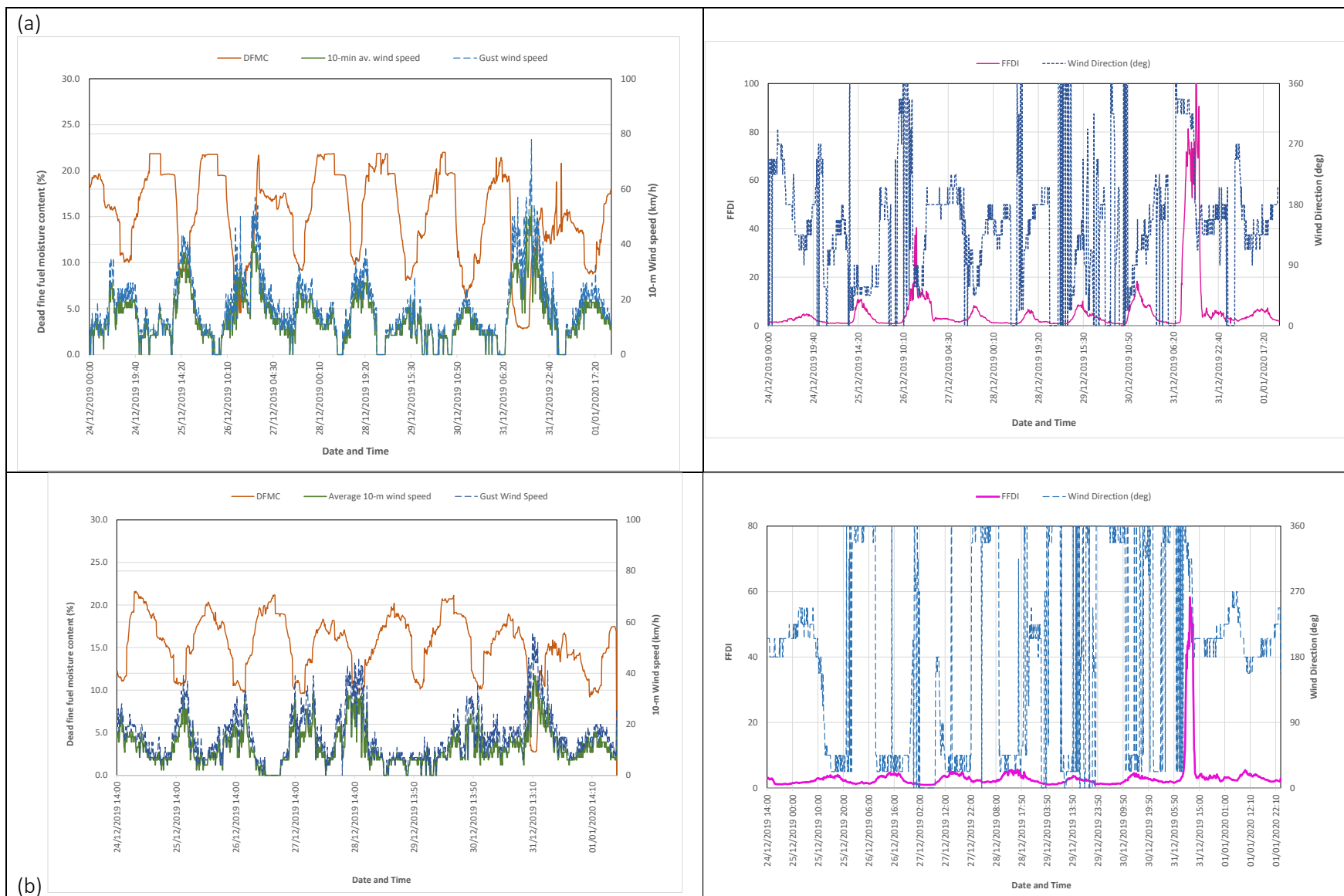


Figure FS26: Fire Weather: DFMC and average 10-m and gust wind speed (left panel) and FFDI and wind direction right panel) for Nowra and Ulladulla AWS – 24 2019 to 1 Jan 2020 for Nowra AWS 2019

Fire Study Author

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Nicholas Gellie is a landscape ecologist and fire scientist with 37 years' experience in fire management, fire research, fire ecology, fire risk planning and vegetation mapping. He has an in-depth knowledge of landscape and bushfire processes in south-east Australia, having reconstructed over 100 major bushfires, including 2003, 2007 and 2009 (Black Saturday) in Victoria, 2003 in Canberra and 2019-2020 in NSW, as well as in Portugal and in California. He has undertaken many consultancies and published many scientific papers. He has worked extensively on fire behaviour analyses and the effectiveness of planned burning programs. He was a pioneer of community fire planning in NSW, has been involved in suppression strategies and aerial ignition for numerous wildfires and has planned and implemented many prescribed burns. From 2009 to 2014 he worked with Victoria's Department of Sustainability of Environment and the Bushfire CRC on analysing the Black Saturday fires. He was a key consultant to the House of Representatives Select Committee's inquiry into the 2003 Australian bushfires, *A Nation Charred*.