INDEPENDENTBUSHFIREGROUP

Fire Study 2: Seabrook Road backburn, Green Wattle Creek fire

Issue: Backburn failure south-west of Balmoral

Period: 16 – 20 December 2019

Introduction

The purpose of this fire study is to analyse why the backburn ignited on the 19 December 2019 'spike' day on the eastern edge of Nattai National Park failed when fire weather conditions deteriorated before the passage of a cool change on mid-afternoon on the same day.

The backburn was apparently carried out to contain the Green Wattle Creek fire to the north-west but escaped eastwards and seriously impacted Balmoral and surrounds. See map *Figure FS11*.

Situation

Important fire landscape and fire behaviour features

- Naturally low-fuel mosaics in the upper reaches of the Wanganderry Creek catchments are ideal for water bombing and remote area fire operations.
- Indirect fire containment strategies involving backburning before a blow-up day have resulted in numerous past bushfires in backburn escapes becoming a new fire event in themselves (eg 2001 eastern Wollemi bushfires; 2003 Canberra bushfires; 2006/07 Upper Grose bushfire).
- The fire hardly moved in the Wanganderry Tableland area for almost ten days previously and continued to burn slowly despite the onset of severe weather 'spike' days. We estimate the ROS was between 0.1 to 0.2 m/min (200 m/day) and the fire went out on about 50% of its length.
- The recent (May 2019) prescribed burn of some 5,000 hectares was not used as an important strategic feature to tie the backburns back into the more remote Wanganderry Tableland sector and the fire activity on the Bindook Highlands *(refer to Figure FS11)*.

Fire weather patterns

- Fire spike days occurred on 5 and 10 December, with otherwise pretty benign fire weather between 7 and 9 December and between 11 and 19 Dec *(refer to weather chart Figure FS12)*.
- Fuel moisture recovery to over 20% occurred every night for the previous three nights resulting in slow fire spread of backburns overnight.
- DFMC fell to below 3-4 % at mid-day on 19 December while average 10-m wind speeds were approximately 20-30 km/h from the south-west prior to the southerly cool change. The winds accompanying the passage of the southerly wind change were 30-40 km/h. This very low fuel moisture occurred before and after the southerly wind change because of the slow take up in fuel moisture of 1-2 hours meaning severe fire behaviour conditions persisted for a short time after the passage of the southerly wind change.

Situational comments

- Many other in-bush backburns conducted in NSW before and on 19 December had escaped (see Fire Studies 1 and 9).
- On 19 December there was no imminent threat from the Green Wattle Creek fire, which was 15 km distant, 6 km behind a recent planned burn and burning slowly at a rate of 200-400 m/day and, in places, self-extinguishing because of the high nocturnal DFMCS in excess of 20%.

- The main Green Wattle Creek wildfire met the earlier backburn north of Seabrook Road backburn on the night of 19 December, as a result of the southerly wind change driving the backburn to the north-west. It had taken over 13 days to close the gap.

Potential lessons

- Backburns are likely to fail if not thoroughly mopped-up and secured several days before a blow-up event involving very high to severe fire weather.
- Specific fire threat warnings to the local community are needed to cover possible backburn failure.
- Prescribed burns can assist bushfire suppression if recent enough and in suitable fire conditions.

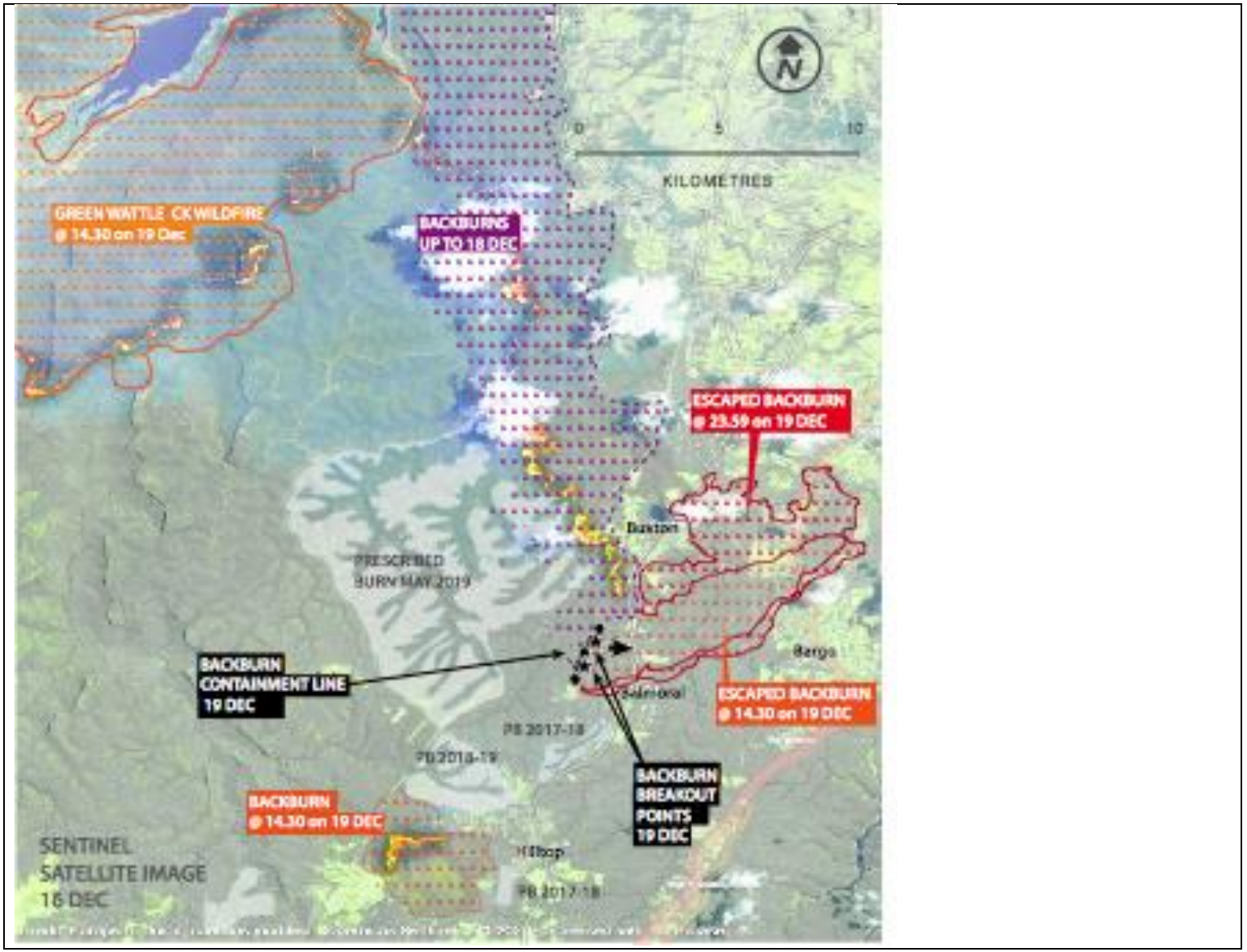

Figure FS11: Fire context map for Seabrook Road backburn escape, Green Wattle Creek fire.

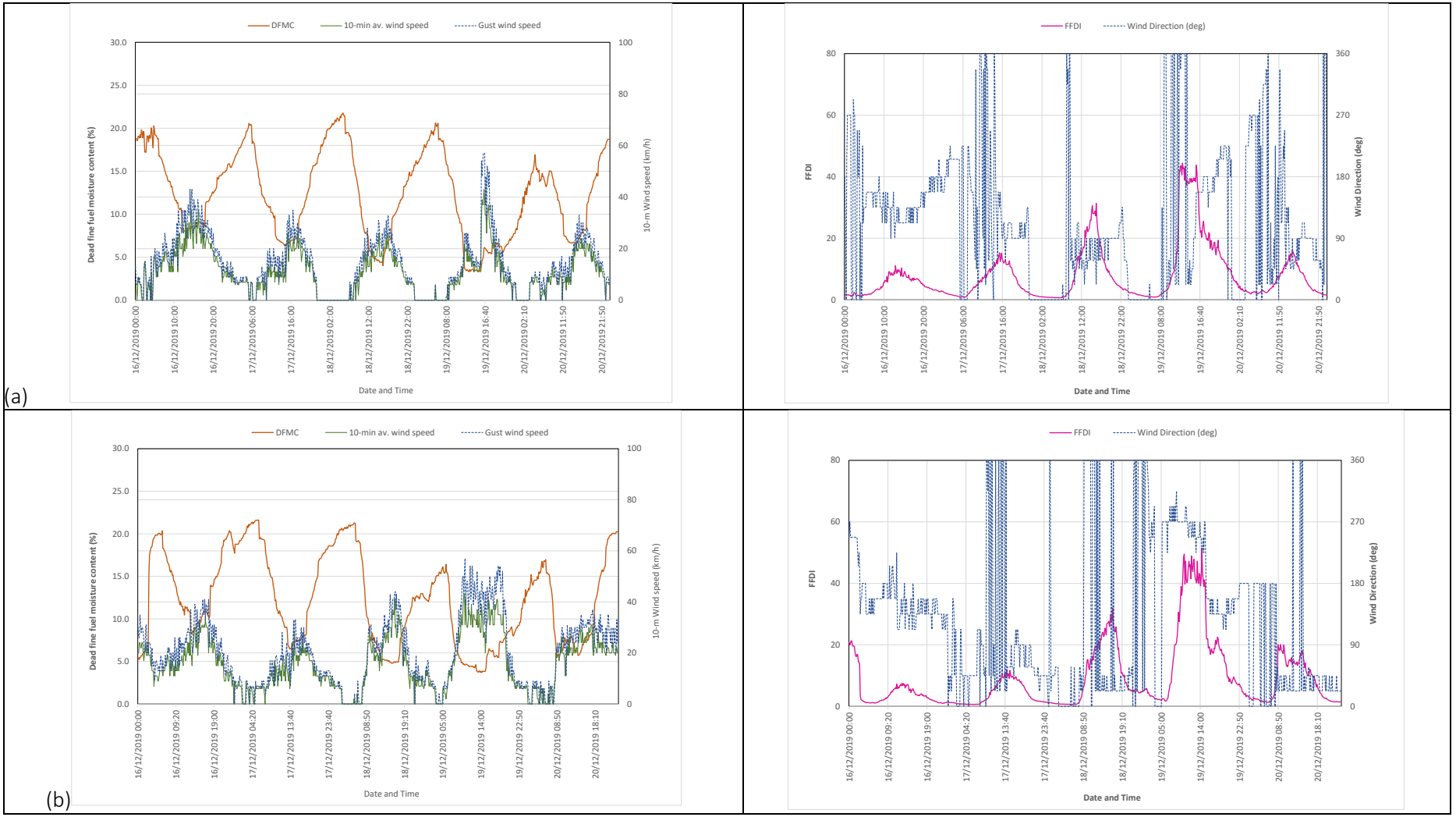

Figure FS12: Fire Weather (DFMC and 10-m wind speeds 1st column) (FFDI and wind direction 2nd column) – 12 Dec to 16 Dec 2019 for (a) Richmond RAAF AWS (first row) (b) Moss Vale AWS (second row).

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*.