

Planning to minimise risk and maximise returns from planned burning.

Bruce Michael and Indigenous Land Corporation, Murrayfield, Bruny Island.



“Great learning experience that put together a very thorough learning package. Gives us confidence to do more next year.”

Bruce Michael

Burn day 13 April 2015

Weather forecast

The weather was fine in the days leading up to the burn. The forecast for the day of the burn was for 10kph southerly winds, 16°C and 50% RH. The forecast for the few days following the burn was for similar conditions. The morning dawned cold and overcast with very little wind. Late morning the clouds cleared and humidity dropped – this decreased fuel moisture.

Weather conditions were monitored regularly before and during the burn:

Time	RH	Wind	Temp
11.00	63%	S@15km/hr	13°C
12.30	53%	S@10-15km/hr	17°C
1.30	47%	S@14km/hr	18.5°C
3.00	59%	SW@5-10km/hr	16.5°C
3.45	63%	S@8km/hr	14°C

Aim of the burn

The desire was to achieve a burn of varying intensity through the unit, to encourage regeneration of eucalypts and other native plants, and also to reduce the fuel hazard of the unit.

Background

18ha stringy bark (*Eucalyptus obliqua*) forest with a heathy understorey, dominated by grass trees and bracken. The unit had not been burnt in over 30 years, and despite having been fenced from stock for 10 years had very little eucalypt regeneration.

The unit had a fuel hazard rating of very high, with some areas extreme. It also had varying aspects and slopes. These factors meant that fire behavior would vary across the burn unit.

At the time of the planned burn, the block was surrounded by short, green pasture, and the entire boundary was driveable on the outside of the fence. In some places vegetation was growing through the fence. There was an internal track running east west through the unit. This enabled the burn unit to be separated into two sections, which could potentially have been burnt at different times. There were some wood heaps piled up within 5-10m inside the fence.

Equipment & people

The property manager oversaw the burn (‘burn boss’) and directed the teams. Due to the size of the unit and difficulties with visibility, this meant that he was with the lighting team for most of the burn.

Lighting team:

2 people manned drip torches and worked as a team lighting the burn, under instruction from the ‘burn boss’.

Fire suppression resources:

- 1 x 400L slip-on foam inducted unit manned by two people and putting out wetlines on fences ahead of the lighting team.
- 1 x 400L slip-on unit manned by two people following the lighting team and mopping up.
- 1 x 1000L quick spray unit, as back up.
- Permanent water refill 3 min drive across paddocks. Suction pump stationed here during the burn.



Spot lighting should target the dry fuels



Bruce Michael overseeing the burn



Resource set up: wetlines, lighters, mop up team

“Helping out at the Murrayfield burn was a great opportunity to learn about planned burning, and I can now put into practice what I’ve learnt on my own property.”

Jason Whitehead, Cockatoo Hill



The burn plan

A test fire was used for this burn, to give an indication of the fire behavior which would be expected. The fire was located (see burn plan) so that fuels were typical of the unit, would run away only a short distance to a green edge where it would self extinguish and wouldn't smoke the lighting team out.

Fence protection and securing the boundaries were key considerations in developing this burn plan. The unit was divided and lit in 2 sections. The diagram above shows how the burn was conducted. Steps are outlined below.

Section 1 (took 1 hr 45 min to complete)

1. Back burn off eastern and northern boundary fences. Wet fence.
2. Infill lines through NE half of section walking to SE.
3. Infill lines through SW half of block walking to NW.
4. Burn along the western boundary. Wet fence.
5. Burn off northern edge of internal track (walking east to west).

Section 2 (took 2 hr to complete)

6. Back burn off eastern boundary fence. Wet fence.
7. Infill lines through NE half of section walking to SE. This was called off part way through due to dangerous conditions.
8. Infill lines walking through section 2 from E to W.
9. Burn along the western and southern boundaries. Wet fence. Lighting pattern was changed to lines for this step to lift intensity due to moderating weather conditions.

Key learnings

- An effective communications system (e.g. hand held UHF radios) is essential in larger burns or where visibility of personnel is limited.
- In addition to weather, constantly assess the conditions on the ground for danger and be prepared to adjust the plan.
- Wet lines have their limitations when fuels are dry and overgrown.



Conducting a test burn gives an indication of how dry the fuels are and how the fire is likely to behave

Due to the breeze and high fuel hazard, the lighting was kept to a minimum - this burn was lit using spots of fire (5-10m apart), with the two lighters 10-15m apart. The burn was started at 12.30 (after registering with TFS 1800 000 699) and finished at 5.00.

Overcoming challenges

This burn presented several challenges, some of which didn't become obvious until the burn was underway, but all of which had been identified in the risk assessment and were managed as the burn progressed.

1. Overgrown fencelines meant that the wetlining ahead of the lighting team was not always successful in keeping fire away from fences. Mop up was essential, but even then some sections of fence were damaged.
2. Falling tree limbs after the burn presented a danger to mop up teams and also damaged fences in a couple of instances.
3. Dense, high bracken inside part of section 2 made walking through to light unsafe. The lighting plan was adjusted so that this area was lit from its edge, at a break of slope.
4. Equipment failure. The ripcord on one of the slip on pumps broke. This unit was replaced by the backup quick spray unit.
5. Large burning block and dispersed crew were a challenge for communications. UHF radios were used to overcome this.



Lighting up



Flame height equals 2x fuel layer height

What next for this unit?

- Repair damaged fences.
- Monitor for regeneration – also monitor for browsing impacts from wildlife and control if necessary.