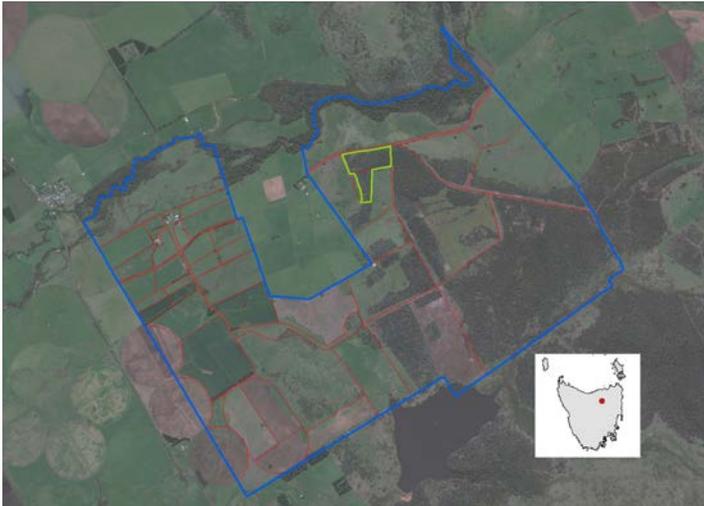


# Managing factors to control fire behavior and achieve a desired burn.

Michael Morrison, Camperdown, Nile



## Aim of the burn

To encourage native plant regeneration in woodland on Camperdown.

## Background

This 13ha remnant black peppermint woodland on Cainozoic deposits (DAZ) is a threatened vegetation community. The woodland has a native grassy and sagg understorey, with scattered native shrubs.

The fuel hazard rating overall was high, although in some areas the continuity and amount of fuels in the near surface layer was low, meaning the fire may struggle to carry through these patches.

The block had not been burnt in over 20 years, and despite having been fenced from stock and not grazed for 20 years there has been very little regeneration. The desire was to achieve a burn of varying intensity through the unit. Learnings from this burn then could be applied to other areas of native vegetation on the property to improve regeneration.

## Considerations for burning

### Boundaries:

Northern	Log heaps & Deddington Rd	Vulnerable
North east	Fence & neighboring bush	Vulnerable
South east	Fence & ploughed paddock. Some gorse on fenceline.	Secure (although fence vulnerable)
South west	Fence & ploughed paddock	Secure
North west	Fence & pasture (green and short)	Secure

It was possible to undertake this burn in any wind direction, with a light breeze ideal to push the fire through the areas with low fuel hazard.

“I didn’t expect to get so some many negative comments about the burn. There still seems to be a negative perception of fire in the community. I tell them to give it a chance – I’m confident that we’ll get some good regen. It has also opened things up and made it much easier for me to get in and control the gorse.”

*Michael Morrison*

## Burn day - 9 April 2015

### Weather forecast

The weather was fine for 3 days leading up to the burn, with a stable high pressure system over the state. The forecast for the day of the burn was for 15-20kph southerly winds, 19°C and 50% RH. The forecast for the few days following the burn was for similar conditions.

### Equipment & people

The property owner oversaw the burn (‘burn boss’).

#### 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 ahead of the lighting team.
- 1 x 1000L trailer pulled by a tractor, as back up.
- Permanent water refill 5 min drive across paddocks.

Due to access challenges units were positioned as marked on map.



Two lines of fire lit 10-15m apart gave the best results at this burn



Securing the vulnerable boundary by wet lining and lighting off the fence



Areas which burn very hot are important sites for eucalypt regeneration

“This burn really confirmed for me that effective planned burning is not difficult – mostly it’s common sense and some practical knowledge.”

Michael Morrison.

## The burn plan

Boundary security and fence protection were important considerations in developing this burn plan. The lighting plan below shows how the burn was conducted.

1. Back burn off NE boundary fence, lighting into the wind. Wet fence.
2. Burn along the N boundary. Log heaps created some challenges.
3. Infill lines through NE half of block walking into wind.
4. Burn along S boundary on E side of block. Wet fence.
5. Infill lines through SW half of block.
6. Burn off western boundary fence. Wet fence.
7. Light section 2.

The burn was started at 1.15 (after registering with TFS 1800 000 699) and finished at 4.30.



Result of wet lining and then burning off fences

## Key learnings

- Be aware of what the weather is doing and be prepared to adjust your burn plan – change the lighting pattern, direction or intensity (or stop the burn if necessary).
- Balance the factors which influence fire behavior to achieve the burn you want. Use the lighting pattern as the final tool to really fine tune the fire intensity.
- Wet lines can be used very effectively to protect assets such as fences, but may not provide a reliable, secure boundary.



Differing burn intensities means better outcomes for plants and animals

## Weather conditions during the burn

Weather conditions were monitored regularly before and during the burn. Wind direction changed which required changes to the burn plan. During planning the wind direction was SE, just prior to lighting it shifted SW, so the plan was reversed to ensure that the lighters were not working in smoke and the vulnerable boundaries were secured.

Time	RH	Wind	Temp
12.15	49%	S@15km/hr	17.5°C
1.15	47%	SSW@18km/hr	20°C
3.30	44%	SW@15km/hr	19°C
4.30	47%	SW@11km/hr	19°C

## Balancing factors

This burn provided a very good example of balancing the different factors which control fire behavior to create the desired fire intensity.

Factor influencing fire behavior	Level of factor	Impact on fire behavior
Fuel hazard (continuity and amount of dead material in the near surface layer)	moderate - low	reduce
Fuel moisture	10 - 15%	ideal
Wind speed	high	increase
Slope	low	negligible

After trying different options, two lighters lighting lines of fire lit close together (10-15m apart) was found to give the best result for fire behavior on this day at this site.

## What next for this unit?

- Spot spray gorse regrowth/seedlings in 1-2 years' time (at 400mm high).
- Monitor for regeneration – also monitor for browsing impacts from wildlife and feral herbivores and control if necessary.