

An Analysis of the Jamieson Track bushfire and its escapes

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The fire authorities know the truth about this fire.

- It should have pricked their corporate consciences to say – Hey, we let our fire escape our control and it burnt out 116 houses and damaged more and disrupted countless lives; we must acknowledge our duty of care to our taxpayers, apologise to them and make reparations.
- It should have alerted them to say– Hey, Enough! We must go back to basics and get our act right.

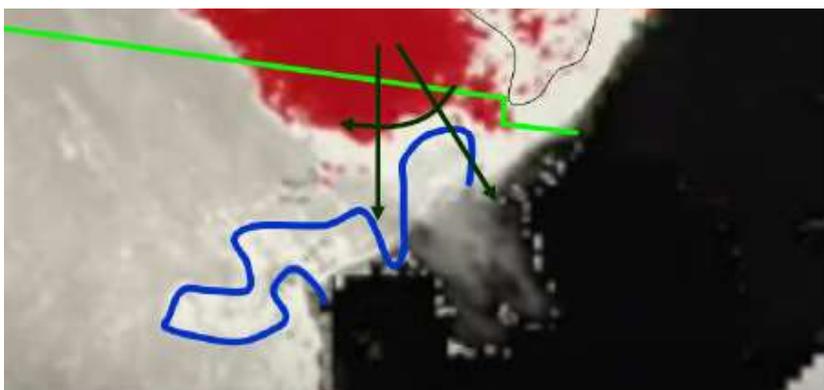
But they have done neither. Their supervising Ministers have done neither. Instead, strong media statements proclaiming their innocence and their clever misuse of “independent” investigators like IGEM and Coroner suggest that they intend to cover it all up.

This report aims to lift the covers and reveal the truth about this fire. The truth is always enlightening and refreshing for the victims. Indeed, the truth will prevent us all being future victims. If this decayed fire protection system operates next fire season, it will allow a runaway bushfire in severe fire weather to attack another town at random, or will it be two or four towns? If it is not our town next year, wait for our random turn.

1 The truth will clarify the liability of fire authorities and the government to the burnt-house victims under common law and statute law

Under common law, if a bushfire occurs on a person's land and that person interferes with it and if the fire subsequently escapes and causes damage, that person is liable. There is significant evidence in this report to show the government interfered with the fire and that the fire escaped and caused damage.

Under statute law, a public authority is required to take all reasonable steps to prevent escape of a fire from its land. There is significant evidence in this report to show that the fire escaped from public land because all reasonable steps were not undertaken.



This line scan shows the ember laden blast from the red flame area in the National Park at the peak of the attack on Separation Creek - Wye River (blue outline) at 3.47 PM on 25 December. Green line is the southern boundary of the NP. Black arrows are wind directions, N and NNW.

2 The truth will clarify the shambles into which Victoria's bushfire protection system has descended

This report takes advantage of the large amount of detail that is publicly available about the Jamieson Track fire from inception as a lightning fire that was “stopped” by a helicopter water drop at 1 ha yet managed to defy successive government fire suppression teams and grow into an “unstoppable” destroyer of towns. It is a warts-and-all account. Anything that could go wrong in this campaign fire did, and in the process, it destroyed 116 government-evacuated houses in moderate fire weather. This was a monumental failure and is a symptom of an ineffective bushfire protection system. Root and branch reform is urgently required to prevent us all being future victims.

The report reveals that this week-long campaign fire did not occur in severe fire weather. A Best Practice forest fire suppression response would have prevented all of the escapes, but the report reveals a litany of Best Practice breaches. The final escape on Christmas Day could have been prevented if Best Practice had been applied and resourced adequately.

Best Practice Defined as world's Best Practice forest fire suppression principles and practice It derives from decades of the worldwide body of forestry and fire management literature, on the job skills and training practiced and honed by specialist forestry departments.
They should be found in departmental policy and procedure manuals.
I have authored and published *The Science of Bushfire Risk Management* (2006), which includes Best Practice theories and principles for forest fire suppression and for defence of property and region.

Instead, the final escape of this fire caused a moderate ember attack on two towns. The same control team was responsible for preparing the town for the possibility of an escape and for coordinating the towns' defence if an escape occurred. They evacuated the towns but did little to protect the 300 vacant houses other than rely on suppression by a few aircraft and 1 strike team of 5 tankers. Thus, their Plan A response was inexcusably under-resourced and their Plan B prevention was inexcusably absent. See INSET for description of Plan A and Plan B.

INSET

I propose that the root causes of continued bushfire damage are deficient objectives and incorrect strategies for emergency response and damage prevention.

➔ The current objective is zero life loss. This justifies evacuation policies but it is well known to cause house loss. Therefore, zero house loss must be the second objective for the simple reasons that saving the house saves the life and saving the house prevents disruption of lives.

➔ The current preeminent Plan A weapon against bushfires is suppression but in severe fire weather, Plan A suppression has a very limited capability. On ground troops try valiantly to stop the fire, but some escape and these infernos run uncontrolled with the wind. Thus at the precise time we need protection, Plan A fails, meaning the Plan A “suppression dominated” government leaders “protect” us with a systemically flawed model - when risk of damage is greatest, ability to prevent damage is least.

➔ They have no Plan B. It is not in their DNA to protect our towns by Plan B methods - strategic fuel load management to mitigate threats determined by valid bushfire behaviour analysis, community self-reliance and cooperation, informed self-defence in bushfire-protected safety.

I propose that Government approval of fire authority reliance on suppression as its preeminent Plan A weapon against bushfires without complementary Plan B protection policies is a fixable root cause of our bushfire problem. I suggest Plan B strategies will not be implemented by fire authorities until Government requires that objectives include zero house loss. Government must do so because people demand zero house loss.

The Plan A “suppression dominated” government leaders said the losses could have been greater. I say NO. They are out of touch with the people's wishes and indeed the Royal Commission wishes. The losses should have been much lower and would have been if the

towns were properly bushfire-protected by Plan B strategies. Let's make sure they are in future so that the towns are permanently protected from the bushfire menace. Let's encourage fire authorities to implement Plan B strategies.

Sadly, the report is a story of incompetence and ignorance amongst fire professionals of a scale and type that I could not have foreseen since my days in this same Department. Standards have slipped so much, they are now a proven danger to the community. This report should have been prepared by the leaders because whatever could go wrong in this fire fight did go wrong. But this report will be seen as criticism of them and the author will be pilloried by the leaders who caused the mess, despite using their own documents. I call upon parliamentarians to take their supervisory role of senior public servants seriously and instruct the fire agencies to deliver our state what all taxpayers want – solve the bushfire problem in Victoria now and for all time and give us safety and worry from this fully preventable disaster.

This report is written by an experienced forest bushfire professional who identified the Black Saturday disaster as a symptom of declining standards, and who regarded the Royal Commission as useful, but deficient for not addressing the true causes of the bushfire problem in Victoria. The Jamieson Track fire is a symptom of a further decline of standards. Let this Report be the start of ongoing and continuing improvement.

The Report factually traces the Day by Day events at this fire ground using documented Primary and Secondary sources and analyses fire maps, fire control plans, thought processes, decisions, actions and non-actions through the prism of Best Practice forest fire suppression. My comments are made to clarify or question, or, if Best Practice forest fire protection is achieved or not-achieved or compromised, to educate.

Departures from Best Practice that led to a prolonged fire campaign are highlighted as teaching opportunities and for assignment of accountability.

I am particularly interested in identifying bushfire behaviour because without good understanding of it, bushfire prevention, defence and suppression cannot be successful.

Although the report is long, the whole story is not told here. When residents ask local DELWP employees socially about aspects of the fire fight, they say they cannot talk about it. Perhaps they have been sworn to silence. Perhaps the ignominy they might feel when reading this Report will loosen their lips so we and they can learn not to repeat their mistakes.

Sources used for this analysis

Primary sources

Primary sources are real time observations and decisions made on the day of the incident by the fire ground managers or independent sources that provide relevant information services, eg, witnesses, media reports, weather observations or forecasts.

Sit Reps Situation Reports prepared by Incident Controller at Colac HQ for Melbourne HQ

ISP Incident Shift Plan is provided by Colac HQ to all crew leaders on the fire line and supporting the fire line effort.

Maps obtained from DELWP via FOI requests

Line scans obtained from DELWP via FOI unless otherwise noted

Independent information sources Bureau of Meteorology (BOM), Media on line

Interviews have been done with some key witnesses

Secondary sources

Secondary sources are considered review documents produced subsequent to the bushfire incident:

IGEM Report February 2016 Review of the initial response to the 2015 Wye River – Jamieson Track fire,
 Coroner Report September 2017 Form 29: DECISION BY CORONER WHETHER OR NOT TO HOLD AN INQUEST INTO FIRE
 EMC Report** = Statement by Craig Lapsley, Emergency Management Commissioner, 30 June 2016
 CSIRO Report Cited as Leonard et al, Wye River / Separation Creek - Post-bushfire building survey findings (2016) CSIRO Client Report EP16924

** Coroner's report states: *In order to investigate the matters concerning the appropriateness of the decision making of those in charge of fighting the Jamieson Track fire, I requested and obtained a detailed statement from the Emergency Management Commissioner, Mr Craig Lapsley*.*

* *Statement Craig Lapsley, Emergency Management Commissioner, 30 June 2016*

Abbreviations and definitions

CFA	Country Fire Authority
CSIRO	Commonwealth Scientific and Industrial Organisation
DELWP	Department of Environment, Land, Water and Planning
Dozer	Bull dozer
EMC	Emergency Management Commissioner
EMV	Emergency Management Victoria
FAD	First attack dozer
FDI	Fire Danger Index Scale of bushfire weather severity, 1 to 100.
Fire Authorities	CFA, DELWP, MFB, EMC / EMV
Firebird / fire spotter	helicopter-borne observers
FLIR camera	Forward Looking Infrared camera carried by helicopter a low elevation
FW	Fixed wing aircraft
Helitak / helitanker	Helicopter water bomber
IC	Incident Controller – leads IMT at ICC
ICC	Incident Control Centre
IGEM	Inspector-General for Emergency Management
IMT	Incident Management Team
Land management agencies	DELWP, NPS,
LAT	Large Air Tanker
Line scan	Infrared scan of fire extent done by fixed wing aircraft at 10,000m elevation
MFB	Metropolitan Fire Brigade
NPS	National Parks Service
P	Person = fire fighter
Sit Rep	Situation Report
SRC	State Response Controller
SCC	State Control Centre
SCT	State Control Team
SOP	Standard Operating Procedure
SOU	Slip On Unit = small tanker, carries 400 litres of water
Tanker	Large water tanker, carries 3000 litres of water
TFB Day	Total Fire Ban Day Forecast FDI exceeds 50.

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Day 1 4 pm Day 1 to Midnight Day 1, 19 December 2015

Summary of Day 1 State-wide Total Fire Ban Day

What should have happened according to Best Practice forest fire suppression principles:

Rapid on-site arrival by leader to assess size and potential of fire and first attack crew to commence control line around fire edge.

If helitak water drops are done, they must be secured by ground forces with earth tracks, otherwise effort is wasted and fire spread continues.

Leader determines fire control objective and orders follow-up resources to achieve it.

Expectation for this fire on this site in this afternoon's windless conditions is containment of 400m perimeter by first attack crew within 1 hour or so of arrival, complete black out by midnight, and patrol overnight. Do not send crews to such fires that will not work after dark.

What happened:

Lightning fire reported at 4.10pm in National Park on crest of long spur half way along an old fire track from Wye Rd to Jamieson Track. Post-fire site inspection reveals fire origin was 20-minute walk along this track from Wye Rd.

[Delaney Track lightning fire was also detected around 4pm in State Forest several km to the NW. First attack crew also sent. Some crew sharing occurred between both fires overnight.]

Small first attack crew (9 or 11 fire fighters) arrived around 5pm, spotter helicopter was on site and helitak reportedly stopped fire's spread. Estimated area 1 ha, perimeter 400m.

Fire control plan #1 was to wait for crew's arrival at fire edge and then determine the plan.

First attack crew waited on Jamieson Track for dozer, due to arrive at 6pm. Dozer was to build track into the fire for access by first attack crew.

Fire control plan #2 was formulated at approx 7pm, superseding #1. It was direct attack – surround the fire edge with earth track, then black out and patrol. Contain by midday Day 2. [Note: They misunderstood the meaning of “contain” the fire – A “contained” fire means the fire cannot spread across nominated control lines. A “controlled” fire has been blacked out around its perimeter to prevent escape by short distance spotting. Their Plan really meant to contain the fire's spread overnight and to black it out by midday Day 2.]

Fire area was assumed to be 1ha, but nobody had visited site yet.

Dozer and first attack crew reached fire origin around 9pm, at dusk, five hours after detection.

First attack crew did not work on line after dark for safety reasons. No extra resources were ordered.

Dozer worked till midnight with fire fighters watching on. First attack crew monitored fire overnight from the track safe in their vehicles.

Fire area was assumed to be 1ha, but nobody had assessed perimeter yet.

Consequences:

Midnight summary of fire status: **GOING**

Fire still uncontained. Perimeter length unknown, control line constructed was unknown. Presumed fire area was 1 ha, perimeter 400m, but nobody had assessed perimeter yet.

Objective was to contain perimeter by midday Day 2.

To achieve objective with first attack crew unable to work in the dark, there was still hope, but pressure was now them or on the changeover shift to track the fire at first light, say 5am, before the forecast wind change arrives.

Today's performance rating against Best Practice forest fire suppression: **0 / 10 -**

unacceptable delay in fire fighter arrival at fire edge, no control line work done overnight by fire fighters, no assessment of actual fire area so that resources can be matched to expected workload and thereby achieve the fire control plan.

Day 1 4 pm Day 1 to Midnight Day 1, 19 December 2015

Day 1 was declared a TOTAL FIRE BAN DAY by the fire authorities
 The fire was reported in National Park at grid reference 514250 at 4.10 pm. The lead fire suppression agency was DELWP.

1 What the Primary Sources reported at the time of the fire

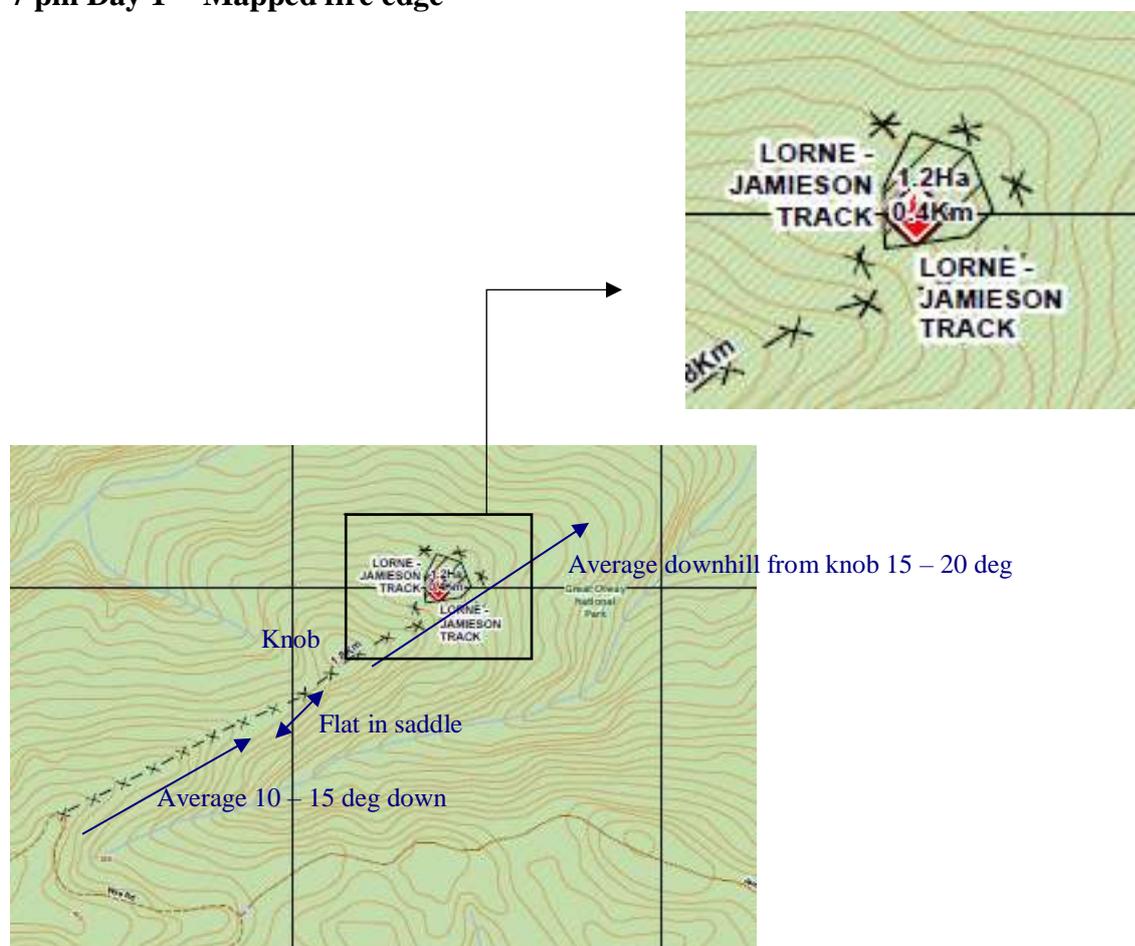
Primary sources are those that provided reports on the day, eg, decision makers making real time reports and independent sources providing information.

1.1 Fire behaviour related aspects

A Fire Behaviour

The authorities' understanding of fire behaviour is best shown by the maps they produced and the source data they used, in particular, the line scans they organised.

7 pm Day 1 Mapped fire edge



DELWP Map 1 Observation date 7pm Day 1, 19 Dec 2015 Gridlines are 1 km x 1 km
 Map produced @ 19.40 Day 1 19 Dec 2015
 Map title 20151219_19.41
 Notation on map: "Estimated fire shape", area 1.2 ha, perimeter 0.4 km
 X-X-X means planned control line

Comment: The planned control line shown on the map is now known to be a misnomer because most of it is the entrance track into the fire. The encirclement of the fire area is the true control line. The map gives the impression that the spur track had to be constructed to reach the fire, but in fact, the entrance track pre-dated the fire. See Figure 1 below.

Summary of fire behaviour notes from Sit Reps:

Sit Rep 4.48pm Area = 0.5 ha
 Sit Rep 5.46pm Area = 1 ha, built slowly from 0.5 ha, aerial observers cannot see flame
 Sit Rep 8.39 pm Area = 1 ha estimated perimeter 0.4 km

B Weather

Weather notes from Sit Reps

All Sit Reps said “Moderate” spread potential

Sit Rep 8.39pm mentions storms forecast tomorrow, strong gusty winds, rain. No mention of Day 2 being a TFB

Weather notes from ISP (after 4.30pm)

Forecast for rest of 19 Dec – Hot and sunny, winds from N to NE 25 – 40kph. Colac max 39C.

Bureau of Meteorology

BOM records for wind speed during Day 1 and 2 were not available from the closest weather station at Aireys Inlet at the time of writing. BOM records recorded 43⁰C for Aireys Inlet on 19 December. Aireys Inlet weather station is some 25 km north east of the fire ground, meaning when weather systems move from west to east at 40 kph, the fire ground weather is 20 min to a half hour ahead, depending on the angle of the approaching front.

In absence of Aireys Inlet weather data, we can use the weather charts and the Sheoaks weather data (between Geelong and Ballarat) to estimate the prevailing air mass properties (wind strength and direction, air temp and RH) that crossed southern Victoria. When the cold front moved through on 19 and 20 December 2015, the air mass characteristics that crossed the fire crossed Sheoaks approximately 1 hour later, give or take 15 minutes.

The following Table estimates prevailing airflow at the fire ground as 1 hour [± 15mins] ahead of Sheoaks airflow time.

Sheoaks time	Wind direction / speed / temp / RH	Fire ground time ± 15mins
19/12 midday - 4pm	NW / 30-35 kph / 37-41C / 11-14%	19/12 11 am - 3pm
19/12 4pm – 1 am	Variable / 4-15 kph / 25-30C / 35-50%	19/12 3 pm – midnight
20/12 1 am – 5.30 am	N / 20-30 kph / 29-31C / 20-30%	20/12 midnight – 4.30 am
20/12 5.30 am-9.30 am	NW / 20-30 kph / 30-32C/ 19-21%	20/12 4.30 am – 8.30 am
20/12 9.30 am – 1.30 pm	W / 17-26 kph / 31-33C / 26-31%	20/12 8.30 am – 12.30 pm
20/12 1.30 pm – 3.30 pm	W / 20–35 kph / 16–18C / 44–93%	20/12 12.30 pm – 2.30 pm

The Table shows that when the fire was detected at 4.10 pm, wind direction was variable, wind speed was light, air temp was moderate and RH was increasing. These air mass conditions persisted until midnight.

Press reports about weather on Day 1, 19 December

Sunday Herald Sun on line December 19, 2015 9:35pm

Temperatures at Avalon, near Geelong, topped 45C, taking locals by complete surprise. Bureau of Meteorology forecaster Alain Baillie said the searing conditions were caused by a lack of cold fronts over the past week with a “huge pool of warm air” building over central Australia then being dragged down by a high pressure system. CFA crews battled more than 381 fires across the state. The fires are burning in hot, dry conditions with a total fire ban in place across the state this weekend.

C Forest environment – terrain and vegetation

Sit Rep 5.46 pm said of the fire environment: “Difficult to access; Dense heavy fuels”.

Comment: Evidence suggests the Sit Rep and the Secondary Sources (see 2.1) exaggerated the difficulty of the fire’s location and fuel hazard. Why?

(1) Difficult to access?

Figure 1 overlays tracks onto Map 1, both the pre-existing tracks and the tracks constructed during fire suppression.

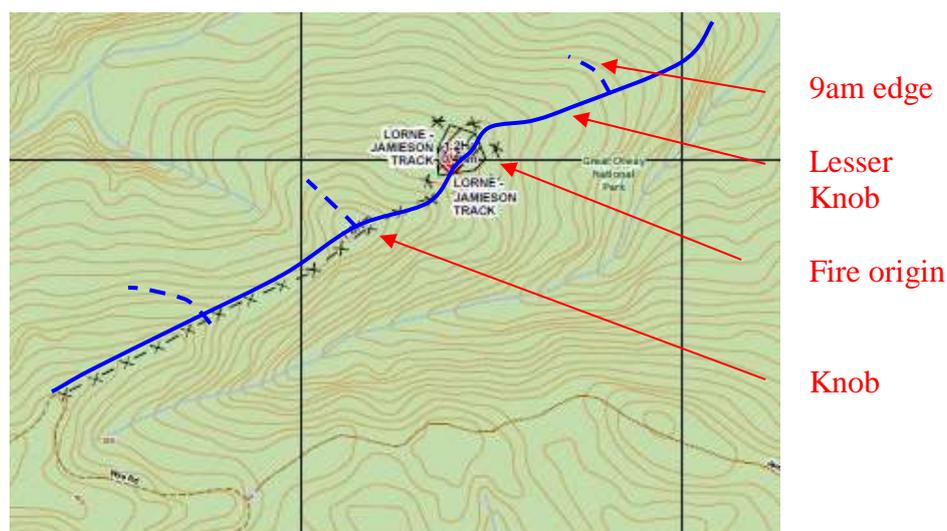


Figure 1 Tracks overlaid onto Map 1. Solid blue line is main spur track, dashed lines are off shoot tracks

Field inspection by the author reveals that the spur track (solid blue line) from Wye Rd to the Knob existed before the fire and its surface was in driveable condition at the time of the fire. At worst there was fallen debris that had to be cleared in a few places. The track’s condition before and beyond the Knob indicates that it also pre-dated the fire, a relic of an old fire access track during forestry days that gave crews useful access down the long spur to the River. National Parks would surely have kept it trafficable for fire protection and access reasons. It is obvious that the first and second left hand tracks pre-dated the fire, the first was an old logging track into the messmate stand below Wye Road and the second track left of the Knob was an old fire track down a spur line. The third track east of the Lesser Knob to the left was built during fire suppression along the fire edge of the 9am map update on Day 2 (Map 2).



Figure 2
View along the pre-existing spur track to North East between Wye Rd and the Knob. In the foreground, note the vigorous post-fire shrub regrowth on the right and the unburnt bracken / wiregrass shrubs on the left. Note the occasional blackened messmate trunk on the right and the unburnt trunks on the left.

(2) Dense heavy fuels?

Field inspection of unburnt vegetation along the spur track near the fire origin found understory was grassy with low shrubs up to 1m tall, commonly bracken patches and sparse taller shrubs beneath tall trees, predominantly blue gums with non-flammable bark.



Figure 3 Unburnt vegetation left of the spur track on the Knob does not resemble the Sit Rep description of “dense heavy fuels, difficult to access”

1.2 Fire suppression response (Primary sources)

Chronological order

Sit Rep 4.48pm Day 1

(Sit rep was dated 4.10pm but was sent at 4.48pm):

Description: Fire area was reported as 0.5 ha, and perimeter was 0.1 km.

Resources on line: First attack crew of 6 despatched with one fixed wing aircraft

Sit Rep 5.46pm Day 1

Fire Control Plan Build dozer line to fire edge and then assess plan options.

Construction to commence at 6.15pm.

Description Aerial observers cannot see flame, dozer to commence construction of 1.5 km track into fire at 6.15 pm

Resources ordered or on line: Total first attack crew = 9P, 1 tanker, 2 SOU, 1 FAD, 1 FW and 1 helitak

ISP (Incident Shift Plan) prepared approx 6-7pm 19/12/15 Day 1 for 19/12/15 Day 1

[Note: This is the day shift plan, overnight shift not mentioned. This ISP does not mention Delaney Track fire. ISP's first identify two fires on Day 3. IGEM Report reveals below that resources were shared between fires from Day 1]

Lightning fire started at 4.30pm.

Fire size 1 ha

Helitack has bombed the fire and stopped spread.

Objective ***Contain fire by midday on Day 2 (20 Dec)***, construct mineral earth break around fire, patrol and black out, bomb with helitak

Resources 11 fire fighters, 30 in Colac HQ, 14 Other roles, 1 dozer

Aircraft at Colac airbase = 3: 2 spotter aircraft, helitak

Sit Rep 8.39 pm Day 1

Fire control plan: Construct mineral earth line around fire, mop up and patrol, crews on night shift to monitor. ***Fire to be contained by midday on Day 2.***

Description: Fire area was reported as 1 ha and perimeter was 0.4 km. Dozer track to fire almost completed. Fire bombed by helitack,

Resources on line: Total first attack crew as above.

Comment The 8.39pm fire control plan was consistent with Best Practice forest fire suppression principles, except the deadline time was too late (see 5.2 below).

1.3 Eye witness reports

Local CFA crew was first to sight smoke from Jamieson Track at approx 4.30pm. Crew leader requested permission to suppress the edge but believes he was told not to by DELWP. Leader believes to this day that his and other crews could have contained the fire during the afternoon.

2 What the authorities said after the fire (Secondary sources)

2.1 Fire behaviour related aspects

A IGEM

Fire behaviour

The first report of the Jamieson Track fire was at 4.10pm.

At 4.48pm a reconnaissance aircraft estimated the fire covered 0.5 hectare.

Weather

At the time of detection, winds were from the North.

19 December was rated as a day of extreme Fire Danger. The weather forecast for the Barwon Otway area on this date was for temperatures to be above 30 °C and generally dry, hot and gusty conditions.

Over the period 19–21 December, the weather remained relatively benign.

Comment: Two of these three days were state wide TFB's. Strangely, the IGEM report does not mention TFB as such, yet three were declared within a week and TFB is a trigger for high level emergency preparedness

Forest environment

This crew were not able to access the fire in their vehicles, encountering terrain that was densely forested and steep.

Extreme danger of the forest environment; steep terrain, thick vegetation; and the weather

Comment: Compare this description of exaggerated difficulty with Figures 1 and 2 and the mild weather at that time. Why does an independent IGEM overstate the difficulties faced at the fire ground?

B EMC [Unseen EMC report (June 2016) quoted by the Coroner in 2017]

Fire behaviour

At about 9.00pm ... the fire behaviour was described as "notable", with 1-2m flame heights and fire readily climbing to the tops of stringybark trees, which were in excess of 40m in height. (EMC source not stated)

Sector commander ... concluded that attempting to construct a control line with hand tools would be futile, given that the spotting activity would immediately overrun any line constructed

Thresholds for safe operation of machinery were exceeded overnight (=19th). Under these conditions successful direct attack was not possible due to weather, fuels and exceedingly steep and inhospitable terrain.

Weather

Shortly after midnight, the Sector Commander noted that the temperature exceeded 30°C and the fire behaviour continued to increase. (EMC source not stated)

Forest environment

The very heavy fuels associated with tall stringybark forests,

The tops of stringybark trees, which were in excess of 40m in height.

Comment: The emphasis on stringybarks is inaccurate. Most of the forest trees are blue gums with occasional messmates. Some slopes are pure messmates, eg, the slope NW of the spur track below Wye Rd, but it was not burnt.

2.2 Fire suppression response (Secondary sources)

2.2.1 Fire control plan

A IGEM

The initial control strategy was to construct a bare earth containment line around the fire and direct attack with aerial water bombing.

The initial strategy was containment through the construction of hand lines and dozer breaks, while managing fire activity with aerial bombing.

B EMC [Unseen EMC report (June 2016) quoted by the Coroner in 2017]

The plan was for the bulldozer to construct a mineral earth track into the fire, an estimated distance of 1.5km

It was determined that the preferred and safest option was to access the fire by bulldozer rather than using ground crews alone, given the very heavy fuels associated with tall stringybark forests, and forecast weather conditions.

The crew did what they could to check on access to the fire while awaiting the arrival of a bulldozer.

They were initially able to pick up a disused and extremely overgrown logging track

A watch was maintained on the Jamieson Track fire overnight.

The intent was to recommence bulldozer operations during daylight hours on 20 December 2015

Comment: It is very concerning that the EMC accepted the on-site crew decision to cease night-time work in contravention of the approved Colac HQ Fire Control Plan which was Best Practice - “Construct mineral earth line around fire, mop up and patrol, crews on night shift to monitor”.

EMC placed more importance on the decisions of the on-site OIC than Colac HQ’s documented fire control plan, yet Sector Commander thwarted achievement of the control plan.

Eg, *“During this period, the Sector Commander and the bulldozer driver, both very experienced firefighters, recognised that the fire behaviour continued to increase and consequently determined that it was not safe to proceed further”.*

“The Sector Commander decided that it was unsafe for firefighters to proceed on foot, He also concluded that attempting to construct a control line with hand tools would be futile, given that the spotting activity would immediately overrun any line which was able to be constructed”

Curiously, the EMC report does not point this out as a concern. For example, if the goal of the fire control plan had been faithfully enacted, the on-site team should have immediately requested more resources to prevent fire spread by spot overs. Why then, did EMC not counsel the on-site team in Best Practice standards?

2.2.2 Suppression Response

The suppression descriptions by the primary source and the two secondary sources were often very different.

Sit Reps Primary source	IGEM quotes Secondary source	EMC quotes Secondary source
<p>Sit Rep 4.48pm (Sit rep was dated 4.10pm but was sent at 4.48pm): First attack crew of 6 despatched with one fixed wing aircraft</p> <p>5.46pm Total first attack crew = 9P, 1 tanker, 2 SOU, 1 FAD, 1 FW and 1 Helitak Dozer to commence at 6.15pm “Dense heavy fuels, difficult to access”.</p> <p>8.39 pm Total first attack crew as above.</p>	<p>DELWP crew were not able to access the fire in their vehicles.</p> <p>CFA responded on 19 December with 27 personnel and 9 tankers.</p> <p>These CFA crews were stood down at 6.40pm on this date as the terrain was inaccessible for the tankers</p> <p>One medium helitack located in Bendigo was assigned at 4.46pm. The helitack arrived at the fire ground at approximately 6.00pm and was operating on both the</p>	<p>(No mention of CFA being stood down)</p> <p>The bulldozer reached the western flank of the fire at about 9.00pm and commenced work, tracking a short section to the south into a very steep gully.</p>

<p>Fire bombed by helitack, dozer track to fire almost completed</p> <p>Note – no reference to sharing crews between fires</p>	<p>Jamieson's Track and Delaney's Creek fires, returning to Colac at 8.44pm.</p> <p>Initial water bombing commenced by approximately 6pm on 19 December. Fire crews were still working on the access track.</p> <p>First responding crews initially focused on accessing the fire, and assessing its location, size and activity.</p> <p>The crew continued to work on the containment line until light failed. Dusk was at 9pm</p> <p>For safety reasons the crew was withdrawn to the dozer track at this time.</p> <p>During the night the crews patrolled the fire, undertaking containment works where possible. The night crew of 10 personnel was shared across the two fires.</p> <p>The first response had 1 large dozer, with 2 available on stand-by. The dozer was able to work until approx 1am on 20 December, when it encountered steeper terrain.</p>	<p>The Sector Commander decided that it was unsafe for firefighters to proceed on foot, He also concluded that attempting to construct a control line with hand tools would be futile, given that the spotting activity would immediately overrun any line which was able to be constructed</p> <p>At this time, (presumably 9PM) firefighters were directed to continue to operate slip-on units in support of the bulldozer, which continued to be engaged in construction of a containment line</p> <p>During this period, the Sector Commander and the bulldozer driver, both very experienced firefighters, recognised that the fire behaviour continued to increase and consequently determined that it was not safe to proceed further. The bulldozer withdrew to safer ground, arriving back up at the constructed track on the northern edge of the fire at about 12.30am on 20 December 2015. When the bulldozer began to withdraw at around 11.30pm, about 80% of the fire perimeter had been tracked. (This is dubious. What is source?)</p> <p>A watch was maintained on the Jamieson Track fire overnight. The intent was to recommence bulldozer operations during daylight hours on 20 December 2015</p> <p>Conditions were such that unacceptable safety risks to fire fighters prevailed.</p>
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The differences are examined in section 6.3.

3 Deduced fire behaviour

This section uses information from primary and secondary sources as references to re-create the fire's behaviour on Day 1.

DELWP Map 1 shows the lightning strike occurred on a NE spur, about 300m below the top of a knob on a long spur. The down slope was approx. 17°. The adjacent NW slope of the spur line fell away at 15 to 20°, but the SE slope fell into the gully at 40°.

The lightning strike ignited a spot fire. It burnt into surrounding litter bed and at 4.10 pm produced sufficient smoke above the tree canopy to be detected. Atmospheric conditions

were mild, meaning fire behaviour was very quiet for the rest of Day 1. Post fire media aerial photos across the origin show negligible scorching in the canopy. The absence of crown scorch is explained by low heat at canopy level. Leaf death occurs when temperature exceeds 65°C for a few seconds. This confirms flame height was low.

At 4.48 pm, fire area was reported as 0.5 ha. This means perimeter was 0.1 km.

At 5.46 pm, the fire area was 1 ha. This means perimeter was approx 0.4 km. Aerial observers could not see flames to observe flame height.

The 7pm DELWP Map 1, which was available to Colac HQ, showed the fire area was 1 ha and perimeter was 0.4 km. The source of this map is unknown. Surprisingly, it showed the fire was almost circular, approx. 100m diameter, and more surprisingly showed most of the fire spread was 100m down slope and NE of the point of origin.

Calculations:

Head fire rate of spread (ROS) = 50 – 100m in 1 hour = 50 – 100 m / hr

This slow spread rate is consistent with fire spreading uphill with a narrow front and low flame height in litter bed.

At 8.39pm, the fire area was said to be 1 ha. This meant Colac HQ believed the fire had not grown in three hours, and yet, there is no evidence that crews had yet arrived at the fire edge. This belief was a naïve assumption. It is reasonable to expect the fire had expanded its radius another 150 to 300m in those three hours. It is therefore most likely that the actual fire edge at 8.39pm resembled the size on Figure 4, eg, area 6 ha, perimeter 1 km.

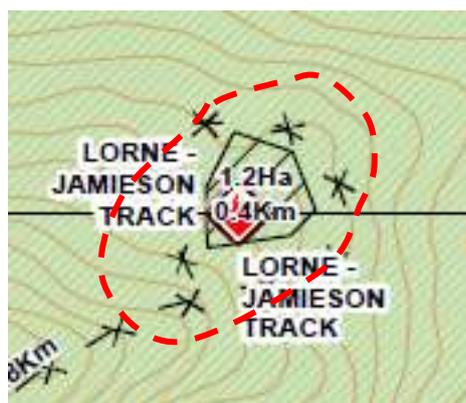


Figure 4 Estimated fire area at 8.30 pm. Red dash line = Indicative perimeter of fire at 8.39pm

4 Deduced fire suppression response

This section uses information from primary and secondary sources as references to re-create actual fire suppression response in Day 1

4.1 Fire Control Plans

The initial strategy (Sit Rep 5.46pm) was to build the access track to the fire edge and then assess control options.

The next fire control plan (Sit Rep 8.39pm) was to construct an earth line around the fire, fully blacked out and patrolled by midday on Day 2.

4.2 Resources allocated and deduced work done on the ground

A first attack crew of 6 was despatched with one fixed wing spotter aircraft. This crew was later bolstered with a helitanker and a dozer, bringing total crew to 9 fire fighters and 2 or 3 small tankers.

The sources agree that a dozer trail was built from the Wye Road hairpin bend along the spur line to the prominent knob. However, recent site inspection reveals the spur track pre-existed the fire and was already driveable.

The dozer was due to start at 6.15pm, but it reached the fire edge at 9pm, dusk.

The secondary sources state that ground troops waited for the dozer to clear the track before they arrived at the fire edge, at around 9pm.

The secondary sources stated but said there was no suppression work done on the fire edge after dark by the on-site crews. There was some work by the dozer after dark on Day 1. One source said 80% of the fire edge was tracked by 11.30pm.

The IGEM stated that crews were shared overnight with the Delaney fire.

Comment: The pre-existing track (Figure 1) bisected the fire area yet its existence has not been acknowledged in any documents. The fire origin was an easy 20 minute walk along this track from Wye Road. The work done to encircle the fire edge remains a mystery.

5 Analysis - Effectiveness of suppression response

The professional assesses effectiveness by degree of achievement of each fire control plan.

Explanation: Because forest fire suppression is a perimeter exercise, a useful quantifiable indicator of fire control success is a measure of control line to total perimeter. To qualify as an effective control line in a forest fire, several sequential steps have to be ticked off as follows:

Construct containment line to bare earth around fire perimeter → secure containment line against flame spread → prevent fire edge generating short distance spot overs by deep blacking out → continue to patrol the control line diligently with adequate resources to catch flame escapes and spot overs while small.

This is classical Best Practice dry fire fighting in forest.

Success depends on stopping spot fire escapes while small.

If any steps fail. The spot fire will escape, and the cycle has to restart at step 1.

5.1 How effective were Incident Controller's plans and actions in achieving suppression objectives?

A First fire control plan

The first fire control plan was formalised in the 5.46pm Sit Rep

Build the access track with the dozer to the fire edge and then assess control options.

Was this plan appropriate (compared to Best Practice) and did resource allocation allow achievement of plan?

Plan was inappropriate: Best Practice forest fire suppression (particularly on a TFB day) requires the first attack crew to walk into the fire to physically assess its status and order back up resourcing needs with the aim of keeping the fire small. Lead time for first attack

crews on a TFB Day is generally rapid with automatic arrangements for back up. Lead time for dozers and aircraft is logistically longer, often by 1 to 3 hours.

Considering that Day 1 was a TFB and Day 2 was also a TFB, the response was too leisurely. On available evidence, the first attack crew reached the fire edge for the first time five hours after detection. This delay is incomprehensible and is yet to be explained.

Resource allocation allowed achievement of plan: Time of arrival of crews in the fire's vicinity was not known, but can be estimated between 5 and 6pm, which was 1 to 2 hours after detection. The site of origin was very accessible. The spur track into the fire is a 15 minute drive up the wide well-made Wye Rd from Wye River where competent local fire brigade people reside, or an additional 20 minutes for troops from Lorne. There was a spotter aircraft in the sky to guide them. Therefore, crews could have walked into the fire edge upon arrival and conducted an assessment and / or commenced suppression activity.

Instead, they evidently waited at Wye Rd for the dozer to create access for their vehicles along this pre-existing spur track.

To what extent was this fire control plan achieved?

Not at all. According to the fire control plan, first attackers would assess control options when they reached the fire edge. But just before they reached the fire edge at 9pm, Colac HQ formalised the fire control plan in the 8.39pm Sit Rep without benefit of site assessment or consideration of control options, as the fire plan required.

B Second fire control plan

The second fire control plan was formalised in the 8.39pm Sit Rep

Construct mineral earth line around the fire by midday on Day 2, including blacking out and patrolled.

Was this plan appropriate and did resource allocation allow achievement of plan?

Partially appropriate plan: Overnight containment, blacking out and patrol was appropriate and Best Practice. Goal for achievement of midday Day 2 was incorrect because the forecast available to HQ at that time said the Westerly wind change was due early morning. Therefore, the midday goal was a few hours too late. The deadline should have been containment by midnight Day 1 and control by 8am at latest.

Resource allocation prevented achievement of plan: After dusk, crews did no work on the containment line, and instead operated from their slip on units on the dozer track. The dozer is said to have worked somewhere until around midnight or 1am. The statement by the EMC that the dozer tracked 80% of the fire edge by 11.30pm is regarded as dubious. Site inspection by the author failed to find evidence for 2 hours of dozer activity along the spur track or in the vicinity of the fire origin. Nevertheless, if true, it can be readily verified by witness interview.

No resources were allocated to assess actual fire size. Perhaps there was no urgency in the calm conditions, and perhaps everybody naively assumed the fire area remained stationary at 1 ha and 400m perimeter and they would easily round it up after dawn on Day 2. As inconceivable as it seems, neither an on-site leader or a HQ leader asked that the length and

status of the edge be accurately assessed so that resource requirements can be reviewed to achieve the fire control plan.

To what extent was this fire control plan achieved?

Not achieved by midnight, but it would have been if Best Practice forest fire suppression had been followed.

Explanation: The fire control plan was achievable by midnight with allocated crews if the fire perimeter remained at 400m, but because fire suppression leaders failed to assess perimeter length and failed to order reinforcements, the fire control plan failed.

5.2 Comparison of Incident Controller's performance with Best Practice plans and actions

A reasonable process for effective planning and resourcing requires the known scenario and potential escape scenarios to be addressed. Departures from this process can now be identified.

Known scenario The known perimeter of the going fire was static at 0.4 km.
Escape scenario If fire escapes, response is not identified or enunciated

Situation

The fire area was assumed by everybody to be small and static. Flame was too indistinct from aircraft. First task was to get assessor on site immediately to map and estimate total perimeter and transmit to HQ so that resources matched its length.

Field crews and HQ knew of gusty Westerly change during morning of Day 2.

Best Practice plan

Rapid arrival of assessor and / or first attack crew on site

Build track around going fire within an hour or two of arriving.

Method = hand trail followed up by dozer track. Then, secure the line by blacking out and patrol the control line.

Order back up resources for overnight patrol and for crew changeover before wind change occurred.

Actual plan:

First attack crew to wait for dozer to build entry track (arrived at fire 5 hours after reported)

Build track, secure and patrol by midday on Day 2

They assumed static perimeter, therefore requested no extra resources

<i>Verdict</i> <i>Fail</i> – lackadaisical approach, lazy due diligence

Indicative resourcing

Minimum resources required: 1 dozer and one crew of 6 fire fighters to patrol each 500m of fire perimeter.

Actual resources allocated 1 dozer, 1.5 crews (shared between two fires)

<i>Verdict</i> <i>Fail</i> – incompetence - they did not know they were under resourced

Outcome that could have been achieved by 8pm:

Of total perimeter (assume 0.4 km):

Control line constructed = 0.4 km (estimated)

Live perimeter yet to be tracked = 0 km

Live perimeter with natural non-flammable barrier yet to be patrolled for hot spots = 0 km

Outcome achieved by midnight:

Work done by dozer was unknown and work done by crew before and after dark was zero.

<i>Verdict</i>	<i>Fail - inaction</i>
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Overall Verdict

Rating against Best Practice was 1 / 10

Suppression failed because Best Practice was not followed

Main reasons:

- Unacceptable delay in arrival of first attack troops at fire
- Waiting for dozer to break out track before first attack crews arrived was unacceptable practice on this fire
- On-site crew leaders must have realised the fire was larger than 0.4 km perimeter but failed to notify Colac HQ and failed to request additional resources to contain it before the wind change next morning.
- Colac HQ failed to request updated perimeter dimensions or accurate map of fire.
- Planning and supervision relied on assumptions rather than facts, eg, leaders assumed perimeter length rather than measured it, they assumed fire would be contained by morning rather than ensure adequate resources were deployed to ensure containment happened.
- Failure to achieve objective was due to inadequate commitment to fire control plan's goal by both Colac HQ and on-site commanders. Such failure was the cause of inadequate knowledge of exact length of live perimeter which prevented proportionate resource and led to gross under-resourcing.

5.4 Conclusion

Headline: Suppression response was ineffective because the fire control plan was too leisurely and resource allocation was inadequate, presumably because accurate intelligence was lacking, which was in turn a symptom of lackadaisical attitude of leadership team on-site and at HQ.

The non-containment of the fire perimeter overnight was a serious breach of the urgency of the fire control plan ahead of the TFB next day. The inaction of the first attack crew and their non-supervision by Colac HQ was a breach of core Best Practice forest fire suppression principles and can only be regarded as incomprehensible and irresponsible, and the direct cause of the preventable expense and town destruction that followed over the following weeks.

6 Supplementary concerns

6.1 Specific divergences from Best Practice forest fire suppression

A Hand trails are built before dozer trails and best work is done at night

One tenet of Best Practice forest fire suppression is for first attack crews to stop fire spread in the surface fuel layer with handmade trails and where terrain allows, consolidate them later

with a dozer track and vehicle access. This priority was borne from practicality – fire fighter crews are more mobile than dozers and arrive on site faster.

Another is that direct attack by hand and dozer crews is more effective at night because the flame is milder and therefore safer, ie, lower flame height and slower moving, allowing the trail to be built in close proximity, often in the fire's light. To work safely at night, HQ ensures they send fire fighters and dozers that are suitably trained and equipped. Typically, the dozer arrives during the night equipped with lights and broadens the control line for vehicle access for subsequent blacking out.

As reported at this fire, the crew remained with the dozer until it completed the access track to the fire edge around 9pm (which is dusk) and was then restricted to their vehicles for safety reasons but the dozer kept working for a couple more hours.

It is of great concern that the IGEM and EMC not only condoned this action, but the IGEM made inference that vehicle access to the fire edge was a prerequisite for action by the fire crews on the fire edge. Disturbingly, the EMC repeated this inference, also failing to recognise it defied Best Practice forest fire suppression.

The condoning by IGEM and EMC of departure from Best Practice also meant they accepted the delay of first attack crews at this fire as reasonable. No control line construction started on this fire for 5 hours after detection, yet the fire was 20 minutes easy walk from Wye Road, and when they arrived, fire fighters did no work because it was dark. The direct result was that the small fire was not contained with a track that first night, despite the presence of dozer and crew.

The condoning by IGEM and EMC of departure from Best Practice weakens respect for Best Practice forest fire suppression. The unintended consequences of poor practice forest fire protection were bad enough in this week of moderate weather. They are appalling to contemplate if this fire week had occurred in severe weather.

If Colac HQ and on-site commanders put this rationale to the IGEM for not completing the control line in the dark and he accepted it, retraining of all parties is urgently required in Best Practice forest fire suppression, yet this was not in the IGEM Report as a "Learning". Disregard of Best Practice was the cause of the delay in arrival and the failure to encircle this fire overnight and was a direct cause of the subsequent fire escapes that plagued this fire and caused massive expense and destruction of towns. Best Practice is what the taxpayer pays for. Also See 6.3 below.

B Water bombing procedures

Best Practice forest fire suppression regards line construction by aerial water attack as useful, but only if consolidated immediately by adequate ground troops with bare earth containment lines.

IGEM made repeated inference that aerial water bombing was a valuable suppression resource but was apparently unaware of the Best Practice principle. On Day 1, aerial water bombing was done at distance from ground troops and was therefore ineffective and wasteful. Retraining is urgently required in the economic and effective use of aerial water delivery in forest fire suppression, yet this misunderstanding was not in the IGEM Report as a "Learning".

C Securing control lines

Best Practice forest fire suppression is that a control line is constructed to prevent flame spread along the surface fuel layer, and once built, the role of the crews is to prevent escape of spot fires across the line by patrolling, by extinguishing, by blacking out and mopping up.

The EMC uncritically quoted the Sector Commander as follows. Control line construction with hand tools was “futile, given that the spotting activity would immediately overrun any line which was able to be constructed”.

Whether the quote derived from the EMC or the commander, both need urgent retraining for four reasons:

- They have no knowledge of proven Best Practice forest fire suppression.
- They have no understanding that a constructed line prevents flame spread, and that the primary role of mopping up is to prevent escape of spot fires across the line.
- If they believe this is true for hand trails, it must also be true for dozer lines.
- Taken to its logical conclusion, control lines are a worthless fire suppression technique.

Furthermore, this EMC statement was unacceptable because it referred to a period of light to moderate winds at night in a blue gum forest with low ember tendency. It gives the EMC the appearance of being an apologist for inaction by the commander.

6.2 IGEM acceptance of poor practice

IGEM gave uncritical support of decisions, actions and inactions by Colac HQ and the first attack team despite their causal role in failure to achieve the goals of the fire control plans.

Consider this entry: ***OBSERVATION 1 – INITIAL ATTACK***

IGEM considers that the available resources were allocated appropriately (according to the incident Level) to implement this strategy, following due consideration of the fire; safety concerns relating to the extreme danger of the forest environment; steep terrain, thick vegetation; and the weather.

It is clear that the safety of firefighters was the foremost consideration from the onset of the fire at all levels of control.

IGEM supports the assertion of incident control personnel that the fire could not have been resourced more during the initial attack without an unacceptable escalation of risk.

This observation lacks credibility:

1 Clearly, allocated resources were inadequate to implement the strategy because the fire expanded uncontrollably. Judged by outcome, 10 people shared over 2 fires was inadequate to deliver the midday goal.

2 If the environment was so dangerous, why did the IGEM not recommend that the strategy was unachievable and needed to be changed?

3 The IGEM’s support for the concept that more resources would have created a greater risk was not justified with any substantial argument nor examined as a possible excuse to disguise non-action.

Explanation: If a crew of 9 and a first attack dozer was inadequate or could not safely implement the strategy of completing control line overnight, the fire line commander would have requested additional resources overnight. If the crew knew the fire grew overnight, more resources would have been requested overnight to achieve the goal and the on-site commander would have deployed them safely. But there is no evidence of such requests. The fact that they were not made suggests that IGEM Observation 1 is a contrived hindsight justification for non-action.

Unintended consequences of IGEM Observation 1:

This IGEM observation disregards the importance of the goal of the fire control plan, ie, contain the fire by midday on Day 2, and the IC's belief that containment was possible with the allocated resources.

IGEM disregards the urgency of containment overnight because of the TFB on Day 2.

IGEM accepts crew safety concerns are legitimate justification for non-achievement of fire control plans but fails to recommend the fire control plan be amended.

IGEM infers that non-specified safety issues can override the fire control plan, world Best Practice, and standard operating procedure to justify non-action. Eg, a specific IGEM concern was falling limbs and trees. He then noted appropriate policies and procedures were incorporated into training and operations, and further noted these concerns were accounted for by the leadership. Thus, the IGEM's tree problem was not really a problem at this fire. However, IGEM did not specify other reasons for withdrawing crew from the fire edge at dusk.

6.3 Misinformation**A Fake reporting**

There was one large credibility hurdle with today's reporting by Colac HQ, IGEM and EMC. The track they had to build to gain access was already extant and most of it was driveable. The authorities ask us to believe that no control line construction began on this fire for 5 hours after detection, yet the fire was 15 minutes' walk along a track from a main road.

B The differences in fact between the IGEM and EMC reports are substantial.

To question the IGEM Report is to question Government policy, because Ministers gave full public acceptance to the interim IGEM Report as accurate and correct. The final IGEM Report was similarly praised by the Coroner. Nevertheless, the Coroner requested a statement from the EMC, well after the Final IGEM Report was published (February, 2016), and the EMC report to the Coroner (June, 2016) provided new information that the IGEM would or should have uncovered in a comprehensive investigation.

Some information provided to the Coroner by the EMC differs from the IGEM. Which information does the Coroner accept? Why?

Points of difference in fact

IGEM	EMC
CFA attended in large numbers but were stood down	CFA attended
Overnight resources were shared between two fires	Not mentioned
Dozer worked till 1am Dozer work not specified	Dozer worked till 11.30pm when safety risks due to fire intensity increased Dozer tracked 80% of fire edge
IGEM did not quantify containment lines but reported the fire broke containment lines at 8.23am, which prompted more aircraft to be ordered.	EMC implied the fire broke containment lines after 11.30pm.
On the morning of 20 December, the change brought westerly winds of 40–50 km/h.	Strengthening north-westerly winds led to a significant escalation in fire intensity from 12.30pm on 20 Dec. Between 12.30pm and 1.00pm, the wind shifted to the west,

	associated with a frontal change, and the fire made a significant run, spotting across to the next ridge. Rain followed the frontal change and caused the aerial support to be grounded.
--	--

Points of agreement between IGEM and EGM

Dozer reached edge of fire around 9pm

Crews were withdrawn to dozer line around 9pm

Crews monitored fire overnight

In summary, the information in the two reports by Secondary Sources is problematic to differentiate between factual accuracy and hindsight justification of action or inaction.

Day 2 12.01 am Day 2 to Midnight Day 2 20 December, 2015

Summary of Day 2 State-wide Total Fire Ban Day

What should have happened according to Best Practice forest fire suppression principles:

Starting afresh at midnight with the fire still going and assuming the crew leader is faithful to the fire control plan objective of containment by midday on Day 2, the crew leader should have immediately assessed in the dark the actual area of the fire with a GPS, particularly perimeter length and constructed line and ordered a fresh crew of fire fighters willing to work at night. Failing that, the crew leader should have requested the appropriate number of resources to be on site at 5am so that the containment line can be completed before 8am, before the westerly winds came. That would stop the fire's spread.

Let's assume the crew leader knew it the fire was larger and got in enough resources to contain it, the next task was to prevent its escape when the westerly wind change came. The crew leader would have assessed that the eastern flank, which was contained by wet line (a deep sheltered gully), will be the danger side for ember throw today, meaning the key task today was to limit spread of spot fires across the gully. The crew leader will order urgent arrival of helitaks and ground-based fire fighters to secure spot fires when small and an infrared detector helicopter to monitor hot spots and direct resources. The western flank can be tracked with dozers and hand crews.

What happened:

7.22am Belated? crew changeover time. No reports of work on line prior to this. Fire area unchanged, still believed to be 1ha, but this was an assumption because nobody had yet assessed its size.

After crew changeover,

- fire area at 9am was assessed at 20 ha, perimeter 2.1km.
- dozers began constructing control line along western edge down to Jamieson Creek.
- Only 11 fire fighters deployed
- No extra resources were ordered yet a vigorous wind change was forecast for this morning.

Westerly wind change arrived around 8.30am but wind speed remained moderate.

By 9am, fire control plan #3 was direct attack – build 2km of control line with earth track by 10 pm Day 2.

No extra resources were ordered

Unstated fall-back control line on eastern edge was wet line, a deep sheltered gully.

At 12.30 pm vigorous cold front arrived, winds remained westerly. Fire escaped by ember throw from hot spots along crest of spur westerly across wet line. Gross fire area grew to 63ha by 1.30pm, but large areas within did not ignite because they were “wet” fuels, ie, higher moisture content fuels in gullies or on sheltered slopes.

At 12.37pm, fire control plan #4 was direct attack – build 4km of control line with dozer, contain by 10 pm Day 2.

Still no extra resources were ordered.

Rain fell after 3pm, grounding aircraft.

At 3.36pm, fire control plan #5 was direct attack - build 6km of control line with dozer, contain by 10 pm Day 3. Fire control team began investigating back burn option.

Consequences:

Today's achievement failure became tomorrow's problem.

Midnight summary of fire status: GOING

Fire still uncontained. Area now 86ha, perimeter length 6.6km, control line constructed = 2km.

Objective was to contain perimeter by 10pm Day 3. Again, they misunderstood the meaning of "contain" the fire. Their Plan really meant to contain the fire's spread ASAP and to black it out by 10pm Day 3.

The objective was achievable in mild weather

Today's performance rating against Best Practice forest fire suppression: 4 / 10

Control line along western edge and part of southern edge was good, but they should have brought in many more resources to (1) stop fire spread at 20ha and (2) stop spot fire spread on east side of wet line when cold front arrived. Recognition of the following strategic viewpoint went missing after fire's escape - fire edge of escaped fire was contained by track on western edge, wet line along Jamieson Creek to the north, two wet lines (= tributary gullies) to the south. Jamieson Track was fall back control line. To contain fire, 1.5 km of control line was needed along southern edge. By evening, 0.5 km of this track was completed. This should have informed them there was only 1 km to be constructed.

[Explanation: By definition, the moisture content differential of a wet line is as effective as a dozer track, but if access is limited, some dozer work may be required. Even though fire control plan said build 6 km of control line, most was wet line and only 1km of dozer line construction was required on this fire.]

Day 2 12.01 am Day 2 to Midnight Day 2

Day 2 was declared a TOTAL FIRE BAN DAY by fire authorities

1 What the Primary Sources reported at the time of the fire

Primary sources provided reports on the day, eg, decision makers making real time reports and independent sources providing information

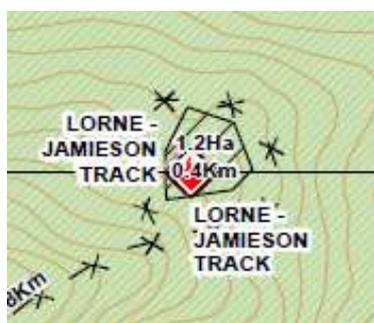
1.1 Fire behaviour related aspects

A Fire Behaviour

A succession of published maps is the clearest way to understand the progression of this fire

7.22 am Day 2 Fire area unchanged

Sit Rep of 7.22 am provided no new information about fire area. It reported fire area as 1 ha, implying the fire area was virtually unchanged from Map 1 (reproduced below). However, it also stated that the fire had grown overnight and was now 80% untracked, ie, 80% of the fire's edge was live and had no control line.



Map 1 reproduced

Comment: The strong inference is that as late as 7am on Day 2, Colac HQ did not ask the night crew and the night crew did not tell Colac HQ what the actual perimeter of the fire was. This is an incomprehensible breach of Best Practice forest fire suppression.

8am Day 2 Fire behaviour prediction simulations

At 8am on Day 2, fire-spread simulation scenarios were prepared using Map 1 as the starting point and the 7am weather forecasts for Colac, summarised as follows:

7am to 9am, Day 2 NW wind, average 45 kph

9am to 8pm, Day 2 W wind, average 35 – 40 kph

The simulation derived rates of spread of 1 kph until 10.30 am, falling to 0.5 kph and less thereafter. It said the fire will run to SE under a NW wind till 10.30 and by 11.30am will veer East under a Westerly wind.



Figure 5A 8.30 to 10.30am fire spread prediction, Jamieson fire 20 December



Figure 5B 8.30am to 1.30pm fire spread prediction, Jamieson DELWP – fire behaviour predictions by Phoenix Rapidfire DELWP Documents obtained under FOI

Comments

1 This prediction was probably ordered around 7.30am, perhaps when the unexpected increase in fire area was realised.

2 The professional bushfire specialist understands the Phoenix model has no correlation with reality in this case. At 8am, the fire was on a hill top surrounded by steep down slopes. The only way a fire can spread is downhill and would only travel at a fraction of 1 kph.

The inaccuracy of the Phoenix model in this fire is compounded by the following assumptions:

- It assumes the forest fuel load is 25t/ha when consumed fuel load is closer to 10 t/ha.
- It assumes terrain is flat, yet terrain is deeply undulating. It implies rate of spread increases on steep up slopes but does not account for rate of spread on steep down slopes.
- It assumes the litter bed is continuous, but it ignores the non-flammable gullies and steep southerly slopes which confer substantial discontinuity.
- It assumes the bushfire spreads by flame spread when it stops dead at the gullies and can only spread across them by embers.
- It assumes ember throw distances for flammable trunks but ignores that blue gum forests have non-flammable trunks.

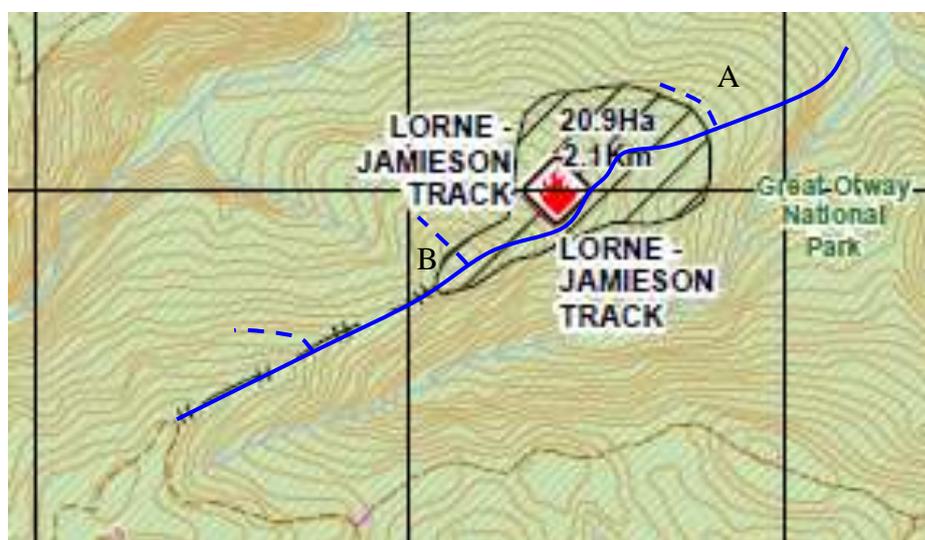
- It assumes a continuous run rate of 1 kph by a broad fire front when terrain does not allow a broad fire front to develop beyond each ridgeline from where its spread is made discontinuous by a downslope.
- It uses the McArthur forest model algorithm whose foundational theory has been comprehensively disproven and its fire behaviour algorithms have been condemned by the same CSIRO scientists who own the rights to the McArthur Meter

Despite these incorrect assumptions and algorithms, the yet-to-escape fire ran within the Phoenix prediction boundaries (see Map 7 below). If the Phoenix prediction output was regarded with any credibility by fire authorities, they would surely have been concerned enough to deploy many more resources on Day 2. However, they did not. Why ask for a simulation and then ignore it?

9 am Day 2 Mapped fire edge

DELWP Map 2 shows an estimate of the fire area, presumably observed by on-ground troops after the 7.22am Sit Rep.

This map was an estimate that was subsequently corrected by the 11.30am line scan



DELWP Map 2 **Observation date 9am** **Day 2, 20 Dec 2015** **Gridlines are 1 km x 1 km**
 Map produced @ 11.17 Day 2 20 Dec 2015
 Map title 20151220_1110
 Notation on map: 20.9 ha, 2.1 km perimeter
 || --- || ----|| means "machine out-track" = dozer track

Comment The pre-existing spur track is overlaid on Map 2 as blue line. Field inspection on 30 Jan 2018 identified a dozer track, probably built along the 9am edge starting at point A. Clearly, the dozer continued NW and presumably followed the fire edge anti-clockwise along the slope as far as it could push. Meanwhile, a spur track starting at the knob at point B was used by another dozer, either simultaneously or later, to follow the fire edge clockwise downhill around the fire edge. They probably aimed to encircle the N and W edge of the 9am fire area.

At some stage, the fire escaped the dozer track at A (around 10 am), after which both dozers continued to run lines towards Jamieson River, one along the spur track on the east side and the other along the fire edge on the west side.

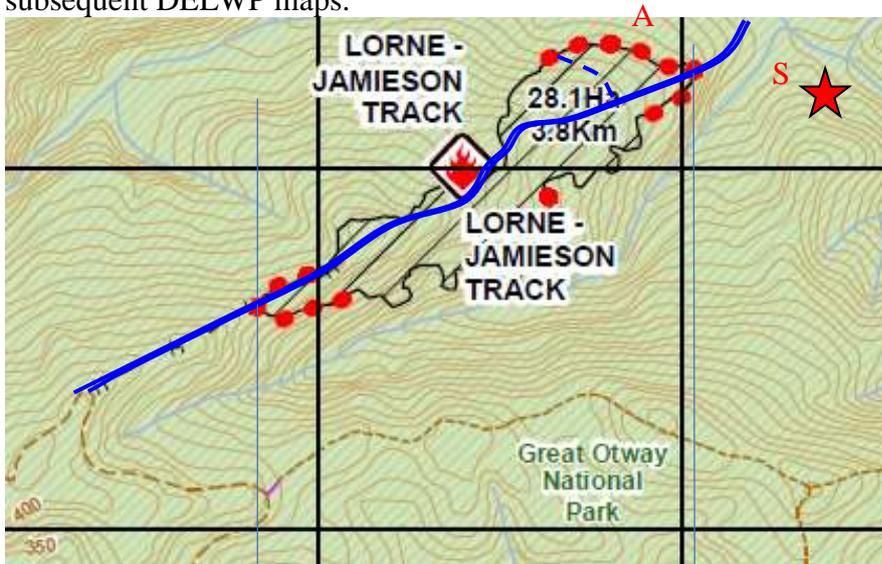
11.30 am Day 2 Line scan

Here is a published picture of the 11.30am line scan of the Jamieson fire, published at 1.00.41pm on Day 2. Red star was a spot fire.



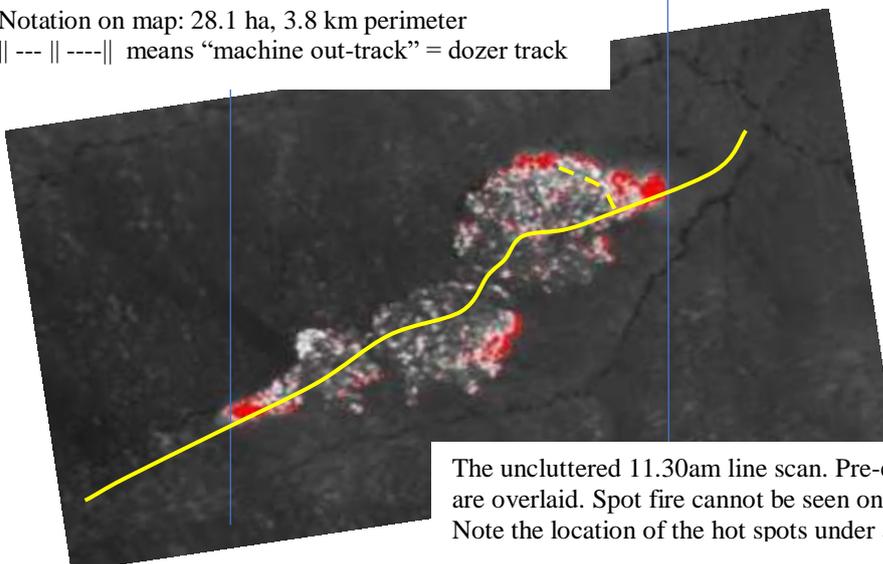
11.30 am Day 2 Mapped fire edge

Map 3 is a DELWP outline of fire spread, based on the published 11.30am line scan. It shows the northern edge of the fire at point A was 250m from Jamieson Creek. The red star at S was a spot fire outside fire area as seen on line scan but was not shown on this map or subsequent DELWP maps.



DELWP Map 3 **Observation date 11.30am Day 2, 20 Dec 2015** Gridlines are 1 km x 1 km
 Map produced @ 12.13pm Day 2 20 Dec 2015 Map title 20151220_1200

Notation on map: 28.1 ha, 3.8 km perimeter
 || --- || ----|| means “machine out-track” = dozer track



The uncluttered 11.30am line scan. Pre-existing and new tracks are overlaid. Spot fire cannot be seen on this image. Note the location of the hot spots under a Westerly wind.

Comment The line scan shows the active edge in red and the area burnt out before 10 am in mottled red and white. The narrowness of the red (current heat) and white hot-spots (1+hour heat) on the line scan indicates a fire front backing slowly downhill, generating a mixture of low flame patches and remnant hot spots.

Between 9 and 11.30am, the wind was moderately strong from the West. Before 9am, the wind had been moderately strong from the N and NW for several hours. There had been no spot fires across the adjacent non-flammable gully during this time, a testament to the poor spotting potential of blue gum forests.

12.30 pm Day 2 Fire behaviour prediction simulation

At 12.30pm, Phoenix Rapidfire used the 9am fire map (Map 2) as a base and the 7am Colac forecasts to produce a fire spread map from 2 to 4pm. The request for a formal spread prediction preceded the breakaway, but if they had evidence of turbulent air mass, they did not use it. They used a benign forecast, meaning the area to be burnt would be small, as Figure 6 shows.



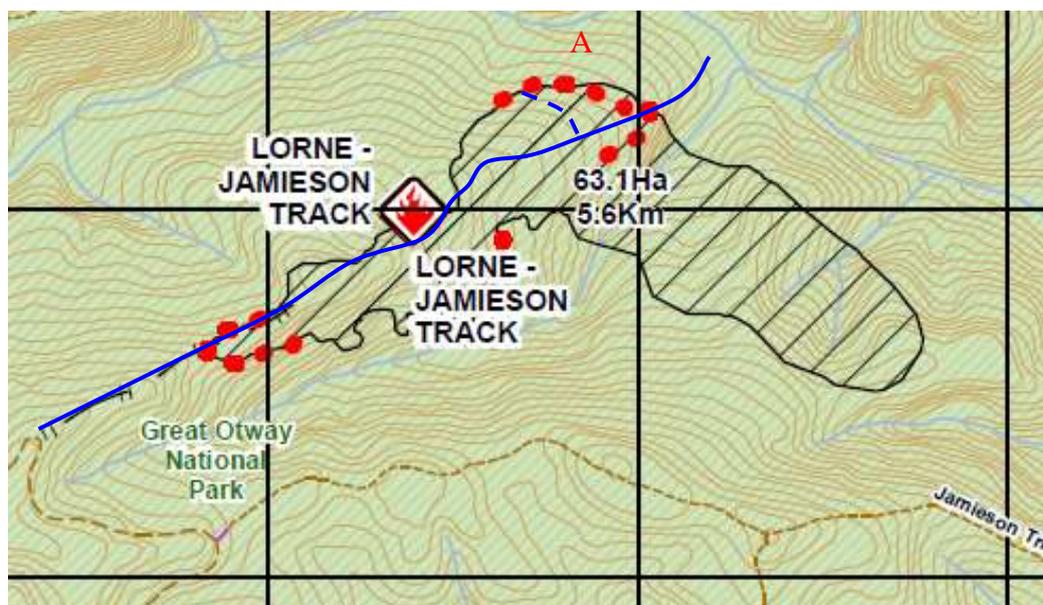
Figure 6 Spread prediction 2 to 4pm,

Comment The need for a spread prediction report at 12.30pm on Day 2 makes little sense unless there was a concern about an escape. The use of the 7am Colac forecast rather than an updated spot forecast for the fire ground was curious, but probably made little difference.

It is ironic that the fire spread prediction made at 8am generated a massive fire escape area which did not eventuate and the prediction made at 12.30pm generated a small escape area, but the actual escape area was much larger and in a different direction. It must be difficult for Controllers to choose which prediction to trust.

1.15 pm Day 2 Mapped fire edge after the escape

Map 4 is a DELWP estimate of fire's extent at 1.15pm on Day 2. The tongue to the SE suggests a wide front was pushed by a NW wind shortly before 1.15 pm, say 12.30 to 1pm, but we see later why the concept of a broad front can be ruled out as impossible in this terrain. This map also indicates the map maker believed the northern edge of the fire at point A had not yet moved downhill and was still 250m from Jamieson Creek, whereas by then it was much closer to the Creek.



DELWP Map 4 Observation date 1.15pm Day 2, 20 Dec 2015

Map produced @ 1.30 pm Day 2 20 Dec 2015

Map title 20151220_1330

Notation on map: 63.1 ha, 5.6 km perimeter

|| --- || --- || means “machine out track” = dozer track

Red dots are active parts of fire perimeter. It is curious that the new tongue does not have red dots.

4.30 pm Day 2 Mapped fire edge

Map 5 is a DELWP estimate of fire’s spread at around 4.30pm on Day 2, and also shows the completed containment line at this time. It indicates the map maker believed the northern edge of the fire and the control line at point A were still 250m from Jamieson Creek.



DELWP Map 5 Observation date 1.30pm Day 2, 20 Dec 2015

Map produced @ 4.37pm Day 2 20 Dec 2015

Map title 20151220_1630

Notation on map: 65.3 ha, 5.7 km perimeter

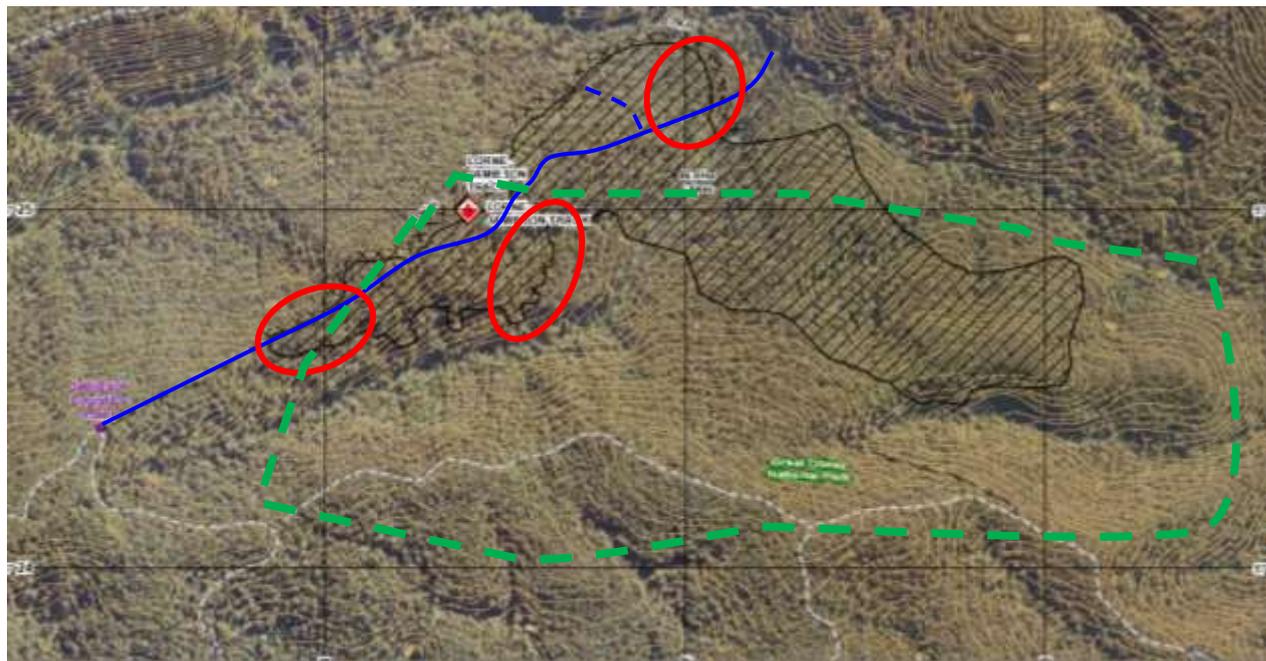
|| --- || ----|| means “machine out-track” = dozer track

X X X X means completed control line

Note: It is not clear if the control line was completed by 1.30 pm when the 1.30 map was finalised, or by 4.30 pm using the 1.30 map as a base.

7.30 pm Day 2 Situation Overview

Map 6 is a precursor of Map 7, overlaying the line scan fire area and constructed lines onto Google Earth



DELWP Map 6 Observation date 7.30pm Day 2, 20 Dec 2015

Map produced @ 8.39pm Day 2 20 Dec 2015

Map title Situation Overview 20/12/ 2015 2030

Notation on map: 86 ha, 6.6 km perimeter

|| --- || ---|| means "machine out-track" = dozer track

X X X X means completed control line

Red circles indicate hot spots on the 11.30 am line scan.

Green dash line indicates the 8 am Phoenix escape scenario

The grid lines are 1km apart.

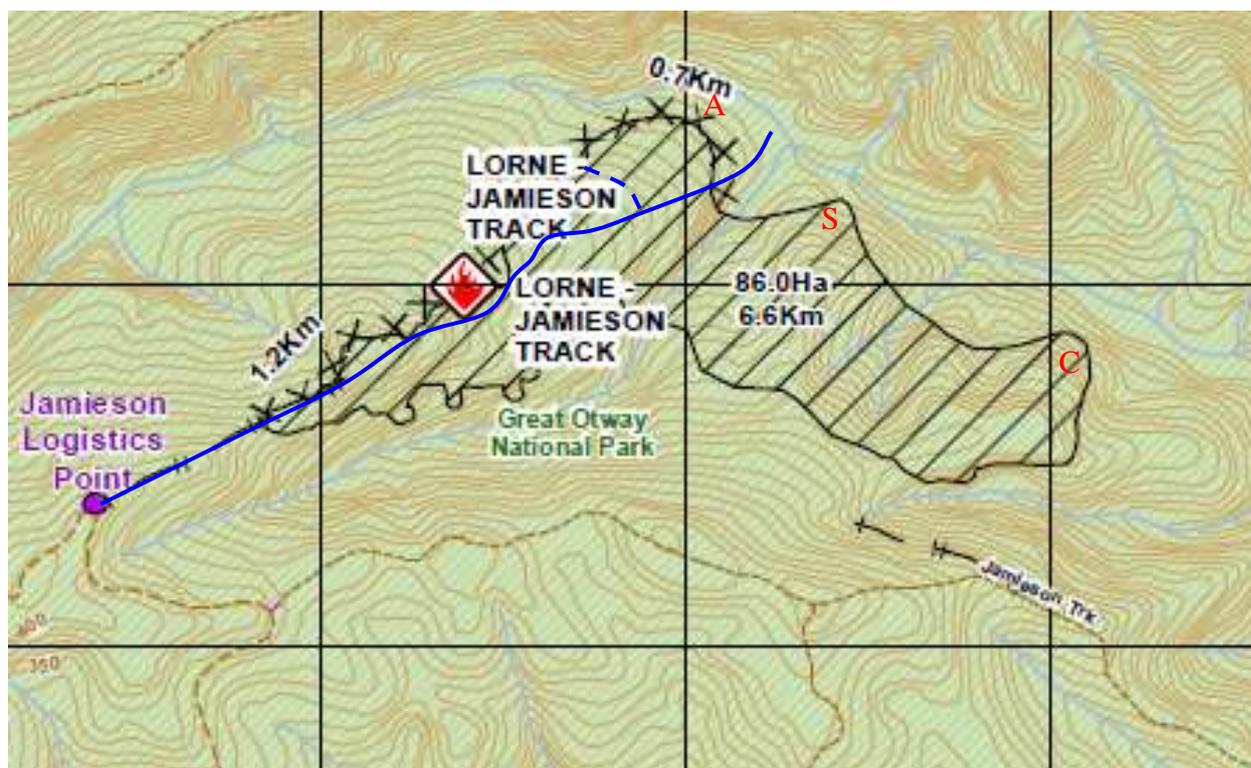
7.30 pm Day 2 Mapped fire edge

Map 7 is a DELWP outline of fire spread at 7.30pm on Day 2, and also shows completed containment lines and dozer access tracks at this time.

It shows that the fire edge at point S corresponds with the location of the spot fire of the 11.30am line scan, shown on Map 3.

It shows points A, S and C appear in line, corresponding to a line of spot fires dropped by a NW wind before 1pm. However, the prevailing wind at the time was Westerly.

It shows the map maker has finally moved the northern edge of the fire at point A and its containment line northwards to 100m from Jamieson Creek.



DELWP Map 7 Observation date 7.30pm Day 2, 20 Dec 2015 Gridlines are 1km apart

Map produced @ 8.42pm Day 2 20 Dec 2015

Map title 20151220_2030

Notation on map: 86 ha, 6.6 km perimeter

|| --- || ----|| means "machine out-track" = dozer track

X X X X means completed control line

Comment Can a Westerly wind explain the fire's apparent expansion to the SE? The hot spot edges on the 11.30 am line scan have been overlaid on Map 6 as red circles. A strong westerly air flow in a rising air mass can explain a downwind spray of embers to the East from the two southern circles, but the Northern circle was either burnt out by then, or its embers fell into the non-flammable gully vegetation and self-extinguished. The possibility of a NW deflection within the Jamieson River gorge wall cannot be ruled out. Also see Section 3 below.

Summary of fire behaviour notes from Sit Reps:

	Actual fire area (deduced)	Sit Rep's reported area
7.22 am Sit Rep	Fire area 10 - 20 ha Perimeter 1.5 - 2 km	Fire area 1 ha Perimeter 0.4 km It added "fire has grown overnight, now 80% untracked"
10.25 am Sit Rep	Fire area 10 - 20 ha Perimeter 1.5 - 2 km	Fire area 20 ha Perimeter 2 km
12.37 pm Sit Rep	Fire area 28 ha Perimeter 4 km	Fire area 28 ha Perimeter 4 km Spot fires beginning to ignite downwind
3.36 pm Sit Rep	Fire area 65 ha (significant unburnt area within) Perimeter 6 km	Fire area 65 ha Perimeter 6 km
7.40 pm Sit Rep	Fire area 86 ha (significant unburnt area within) Perimeter 6.6 km	Fire area 65 ha Perimeter 6 km

B Weather

Weather notes from ISP

Forecast for Sunday 20 Dec – winds northerly 25 to 40kph, shifting westerly in morning.

Weather notes from Sit Reps

Note: no mention of TFB, yet Day 2 was declared TFB

All Sit Reps said “Moderate” spread potential. Actual wind speed at the fire ground was not reported, but the forecast wind speeds suggested spread rates well above moderate. Eg, the forecast weather for Colac for 7am to 9am was NW winds, average 43 – 46 kph, 9am to 9pm W winds, average 35+kph. Potential winds gusts up to 70-100 km/hr can be expected during the wind change between 8 and 9am.

Sit Rep of 7.22am mentions forecast W-SW wind change between 8 and 10am

Sit Rep 10.25am said west wind change has reached fire ground, but also says smoke is impacting Lorne, presumably an editing error intended for the Delaney fire which is west of Lorne.

Sit Rep 12.37pm said west wind change has hit fire ground and speed has increased causing increased fire activity. It says smoke is impacting Lorne. [This referred to smoke from the Delaney fire]

Sit Rep 3.36pm said fire made a run from 12.30 to 1.30pm in westerly direction and was wind driven. Light rain has now fallen over fire ground, grounding aircraft and moderating fire behaviour.

Sit Rep 7.40pm said fire has not spread any further due to rain.

Bureau of Meteorology

The following Table estimates prevailing airflow at the fire ground as 1 hour [± 15mins] ahead of Sheoaks airflow time.

Sheoaks time	Wind direction / speed / temp / RH	Fire ground time ± 15mins
19/12 midday - 4pm	NW / 30-35 kph / 37-41C / 11-14%	19/12 11 am - 3pm
19/12 4pm – 1 am	Variable 4-15 kph / 25-30C / 35-50%	19/12 1 pm – midnight
20/12 1 am – 5.30 am	N / 20-30 kph / 29-31C / 20-30%	20/12 midnight – 4.30 am
20/12 5.30 am-9.30 am	NW / 20-30 kph / 30-32C / 19-21%	20/12 4.30 am – 8.30 am
20/12 9.30 am – 1.30 pm	W / 17-26 kph / 31-33C / 26-31%	20/12 8.30 am – 12.30 pm
20/12 1.30 pm – 3.30 pm	W / 20–35 kph / 16–18C / 44–93%	20/12 12.30 pm – 2.30 pm

The Table shows that a moderate Northerly blew a drier air mass over the fire until around 4.30 am on Day 2. At 4.30 am, a similar air mass was blown by a moderate NorWester for 4 hours, followed by a moderate Westerly from 8.30 am until around 12.30 pm.

Aireys Inlet station recorded a peak gust at 1pm was 76 kph on 20/12, meaning at approx 12.30 pm on fire ground. This coincided with the turbulent arrival of the cooler and moister air mass, also driven by a Westerly, which caused substantial spotting on the fire ground for up to 1 km downwind.

Comment: The Colac forecast said wind turbulence would occur when the Westerly change came after 8.30am, but not so. Instead, the turbulence occurred when the cool moist air arrived around 12.30pm, during which the wind direction remained unchanged.

Media reports about weather on Day 2, 20th

Sunday Herald Sun on line December 19, 2015 9:35pm

“We expect the change through the Mallee and western Victoria mid-morning, about 9am or 10am,” he said. It was expected to reach Melbourne about 1-2pm, but the northeast of the state would not cool down until late evening, Mr Baillie said. “After the change, we can expect temperatures to drop back to the mid-20s,” he said. “We’re looking at about 24 in Melbourne by 5pm. “There is a little bit of rain expected with the change.

Melbourne’s temperature peaked on Sunday at 37.8 degrees Celsius at about 11:20am, before dropping to around 30C by midday.

<https://thenewdaily.com.au/news/national/2015/12/20/fires-victoria-south-australia-weather-australia/>

1.2 Fire suppression response (Primary sources)

Primary sources cannot agree whether by the morning of Day 2 – was zero containment line built (DELWP Map 2) or was 20% of fire edge (length undefined) contained (Sit Rep)?

A DELWP Maps

DELWP Map 2 shows no control line around the fire edge

DELWP Maps 5, 6 and 7 show that the fire control plan was partially enacted by constructing approx 1.5 km on the W and N side of the fire’s perimeter during the afternoon and a total of 1.8 km by 7.30pm.

Maps 6 and 7 also show that 0.5 km of another dozer access track was constructed towards the SE tongue from Jamieson Track.

B Fire suppression response (Primary sources)

Chronological order

Sit Rep 7.22am Day 2

Said 80% of the fire edge was not tracked but did not specify the total length.

Fire to be contained by midday on Day 2.

ISP prepared between 7.30 and 9am on 20/12/18 Day 2 for 20/12/18 Day 2

[Note: This is the day shift plan, overnight shift not mentioned. This ISP does not mention Delaney Track fire. It becomes apparent below that resources were shared between fires]

Lightning fire started at 4.30pm.

Fire size 1 ha

Helitak has bombed the fire last night and will continue today.

Objective ***Contain fire by 10pm on Day 2 (20 Dec)***, construct mineral earth break around fire, patrol and black out, bomb with helitak

Resources 11 fire fighters, 30 in Colac HQ, 14 Other roles, 1 dozer

Aircraft based at Colac airbase = 3 – 2 spotter aircraft, 1 helitak

Sit Rep 10.25am Day 2

Said strategy was direct attack with aerial bombers, and construction of 2 km dozer line.

Fire to be contained by 10pm on Day 2.

Three dozers working. Fixed wing bombers and helitankers working.

Sit Rep 12.37 pm Day 2

Said strategy was direct attack with aerial bombers, and construct 4 km dozer line.

Fire to be contained by 10pm on Day 2.

Three dozers working. Fixed wing bombers and helitankers working.

Sit Repts 3.36 pm and 7.40 pm Day 2

Said strategy was direct attack with dozers and hand trail, blackout and patrol.

Construct 6 km dozer line.

Fire to be contained by 10pm on Day 3

Dozers and hand crews working, but aircraft stood down.

ISP prepared 7pm on 20/12 Day 2 for 21/12/18 Day 3

[Note: This is the day shift plan. This ISP mentions Delaney Track fire. ISP's did not identify two fires until now, Day 3.]

Jamieson Tk fire Fire jumped gully into drier coastal vegetation at 12.30pm on 20/12, currently untracked, new dozer track 1.5 km long to be built to escape area.

Fire size 65 ha

Helitack has bombed the fire last night and will continue today.

Objective **Contain fire by 10pm on Day 3 (21 Dec)**, construct mineral earth break around fire, patrol and black out, bomb with helitack

Resources 14 fire fighters, 5 dozers

Aircraft based at Gerangamete airbase = 3 – 1 spotter aircraft, 2 helitack

Delaneys Road fire Fire = 6ha, no significant escapes on 20/12,

Helitack has bombed the fire last night and will continue today.

Objective Continue to construct & consolidate on Day 2 (20 Dec) blackout & patrol

Resources 26 fire fighters, 3 dozers

Swing shift mentioned (tonight's?) 24 fire fighters 2 dozers

Total on fire line, both fires on day shift plus swing shift = 64 (= 26+14+24) personnel, 20 SOU, 4 tankers

Aircraft based at Gerangamete airbase = 3 – 1 spotter aircraft, 2 helitack

Comment: Can we assume that there were 24 fire fighters on the line overnight on both fires on Day 3?

2 What the authorities said after the fire (Secondary sources)

2.1 Fire behaviour related aspects

A IGEM

Fire behaviour

At 8.23am further aircraft were requested as the fire had broken the containment lines and was growing rapidly.

Comment: There were no documented containment lines at that time.

Weather

On the morning of 20 December, the change brought westerly winds of 40–50 km/h.

Light rain from mid-afternoon and through the night of 20 December moderated fire activity.

B EMC [EMC report (June 2016) quoted by the Coroner]

Weather and Fire behaviour

The temperature during early Sunday morning remained at around 30C, with high winds. Strengthening north-westerly winds led to a significant escalation in fire intensity from 12.30pm. Between 12.30pm and 1.00pm, the wind shifted to the west, associated with a frontal change, and the fire made a significant run, spotting across to the next ridge. Rain followed the frontal change and caused the aerial support to be grounded

Comment: This weather description is inaccurate. Winds were moderate on Sunday morning. The winds were westerly from 8.30am and did not change direction till evening.

2.2 Fire suppression response (Secondary sources)

2.2.1 Fire control plan

A IGEM

The IMT adopted a direct attack strategy using a medium helitack and large air tankers (LATs) to suppress the fire.

Comment Best Practice direct attack by aircraft requires adequate resources on the ground to construct the earth control line and to secure wetted edge from escape.

By the afternoon of 20 December, the IMT had commenced planning and analysing alternative options for controlling the fire. Records show the IMT produced iterations of options analyses at 1pm on 20 December.

Comment If this is true, Colac HQ was unnecessarily and distractedly considering an alternative to Best Practice fire suppression when the known fire size was only 65ha, and due to be contained by 10pm on Day 2. As Figure 8 shows, the perimeter was some 7km, but most of it was “wet line” (= non-flammable gully floor) and only 1 – 1.5km of new track was needed to contain the fire spread in readiness for blacking the edge out. There was no fire behaviour need to consider a different strategy at that time because the afternoon forecast was mild as were the next few days, meaning ample opportunity to control the fire’s entire edge in safety before Christmas.

Another interpretation of this IGEM statement is feasible. If the Government’s true purpose for the IGEM Report was to be the Government’s answer to strong press and UFU criticism that the back burn caused the loss of houses (see Addendum), the report’s focus and omissions make much more sense. Was the IGEM Report now building the case that the back burn was the only reasonable choice in the circumstances?

The IC’s expectation late on 19 December was containment of the fire by midday 20 December. By 21 December, containment was not expected until late 24 December, due to increased fire activity on 21 December, including a spot fire to the east of the main fire.

Comment: The IGEM’s uncritical acceptance of a succession of failed fire control plans is remarkable. It undervalues the purpose of a plan.

B EMC

During the morning of 20 Dec, fire intensity exceeded thresholds considered maximum for crews to successfully rakehoe control lines by hand. Under these conditions successful direct attack was not possible due to weather, fuels and exceedingly steep and inhospitable terrain.

Comment: This statement is too general to be regarded with credibility, suggesting its purpose is to justify non-construction of control lines by rakehoe crews. If so, it is remarkable that the EMC needs to defend perceived inaction by on-line crews.

2.2.2 Fire suppression response (Secondary sources)

The descriptions by the primary source and the two secondary sources were often very different

Sit Rep Primary source	IGEM quotes Secondary source	EMC quotes Secondary source
<p>7.22 am Fire remains 80% untracked and has grown overnight. Crews changing over and commencing work with dozer The Day 2 shift has 12 personnel and 2 dozers on the fire line.</p> <p>Sit Rep 10.25am said 3 dozers construct control lines. Aerial water drops, 12P, 1T, 2 SOU, 3 dozers, 1 aircraft</p> <p>Sit Rep 12.37pm said similar, but now 4 aircraft</p> <p>Sit Rep 3.36pm said 2km control line constructed, 17P, 1T, 4 SOU, 3 dozers, 2 aircraft, but grounded</p> <p>Sit Rep 7.40pm said 2 km control line constructed,. 14P, 1T, 2 SOU, 4 dozers, 2 aircraft</p>	<p>At 6.58am on 20 December the IMT requested aircraft at the fire ground as soon as possible. The medium helitack and support aircraft were airborne at 7.24am.</p> <p>At 8.23am further aircraft were requested as the fire had broken the containment lines and was growing rapidly.</p> <p>The aerial response was strengthened between 9am and 1.30pm with a total of 7 fire fighting (as opposed to observing) aircraft</p> <p>On-ground resources were increased, with three dozers, and 30 firefighters (8 night crew were shared across the 2 fires).</p> <p>The three dozers continued to work on establishing bare earth containment lines.</p> <p>Fire fighting resources were increased to 14 and 8 personnel (day and swing shift respectively) and three dozers. The terrain precluded more resources being deployed. One crew was only able to cut 140 m of containment line by hand in a day.</p> <p>Of the six kilometres fire perimeter, crews had established two kilometres of containment by late on 20 December.</p>	<p>At 7.22am on 20 December 2015, it was estimated that the fire had grown to about five hectares in size. (Dubious. What is source of data?)</p> <p>Due to spot over occurring throughout the night, about 80% of the fire perimeter was by then, untracked.</p> <p>Between 9am and 1.30pm, a total of seven fire fighting aircraft, including 4 fixed wing and 3 heli-tankers had been despatched to fight the Jamieson Track fire.</p> <p>Because the fire jumped containment lines, additional bulldozers were deployed.</p> <p>At 5.40pm, the fire was estimated to be 65 hectares in size, with a 6km perimeter. Despite constant attention and best efforts, about 70% of the perimeter remained uncontained.</p>

3 Deduced fire behaviour

This section uses information from primary and secondary sources as references to re-create the fire’s behaviour on Day 2.

The fire edge of Map 2 was the result of 8 hours of a moderate prevailing N then NW wind across the perpendicular spur, causing the two-way spread as the INSET below describes.

It is probable that the 9am DELWP Map 2 was a reasonable approximation of fire perimeter expansion along the spur line at 7.22am. It can now be used to calculate fire spread rate overnight:

Calculations:

Fire spread down slope to the NE for 400m. Average overnight ROS downslope = $400\text{m} / 12\text{ hours} = 33\text{ m / hr}$.

The mechanism of downhill spread along the spur line is explained in INSET.

INSET

Mechanism of fire spread along ridgeline perpendicular to wind direction

Moderate N to NW winds (pink arrow) blew during early morning across the fire area on the SSW -NE aligned spur line (green) until around 9am. During this time fire expansion was very interesting. It spread laterally along the spur line in two directions by flank spread theory as the following diagrams show.

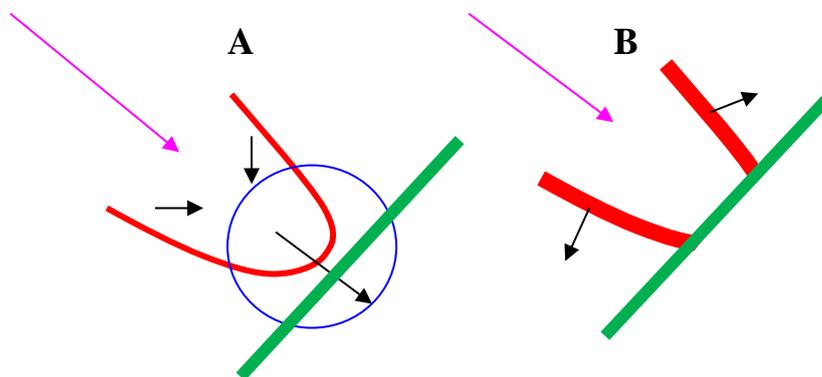
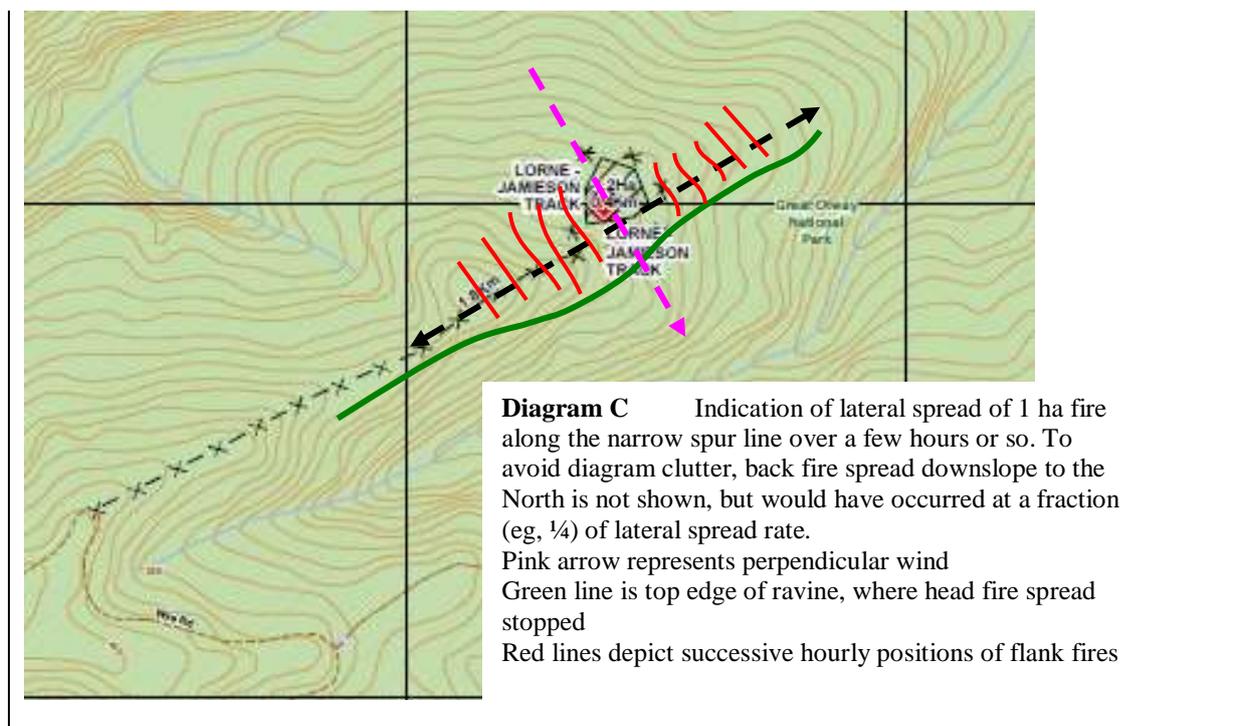


Diagram A shows the expanding red fire front (whose internal area has burnt out) pushed by the pink wind arrow. Black arrows indicate air flow direction over the head fire (long arrow) and flanks (short arrows). The blue circle is the head fire's convection uplift zone and we see that it pulls the flank fires inwards. This means lateral expansion of flanks is suppressed by the head fire convection column.

Diagram B shows the same fire shortly after with the head fire removed because it has run into a non-flammable area, ie, the steep down slope into the gully. The convection column has now gone, so each flank fire is enlivened by the parallel wind and its flame grows taller and more vigorous and becomes wider because it can only expand outwards into unburnt fuel bed. Flank fires now expand outward at a faster rate than the Diagram A flanks.

Diagram C (below) shows how the pink solid N - NW wind arrow blew across the small fire area and pushed the head fire towards the green line, which is the top of the ravine, ie, a non-flammable area that extinguished the head fire as in Diagram B. The wind continued for the next few hours and the flank fires expanded to the left and right, each hour indicated by successive red flank lines.



At around 8.30 - 9am, the wind swung from NW to Westerly and the northern fire edge continued to creep downhill towards the creek. The star spot fire on Map 3 is consistent with a Westerly wind from a hot spot on the northern fire edge which is a high point on the spur. More spotting may have occurred eastwards into the Jamieson Creek gully, but it self-extinguished.

The arrival of the cool air mass around 12.30pm was turbulent enough to enliven all hot spots on the spur and cause uplift of embers from the entire spur, hurling them up to 1 km downwind over 500m width, where some ignited in the flammable parts of the forest and the spot fires ran up the steep dry slopes. This would explain the rapid expansion of external fire area during the time when the air mass was rapidly cooling and becoming moister. Within an hour or so after the turbulence subsided, say by 2 – 2.30 pm, the wind moderated and the cooler moister air weakened all spot fires to a trickle. Then 2 mm of rain fell around 3pm and fire spread stopped. The fire's true external shape was captured in the 7.30 pm line scan, but there was a large internal portion that had not burnt.

Maps 6 and 7 show that the bulk of the “tongue” is a steep NE slope into Jamieson Creek with three bisecting gullies. Figure 7A re-presents these maps to indicate the non-flammable areas and the red arrows show the uphill direction that spot fires would have run. Figure 7B shows the aerial view of the Day 2 escape area.

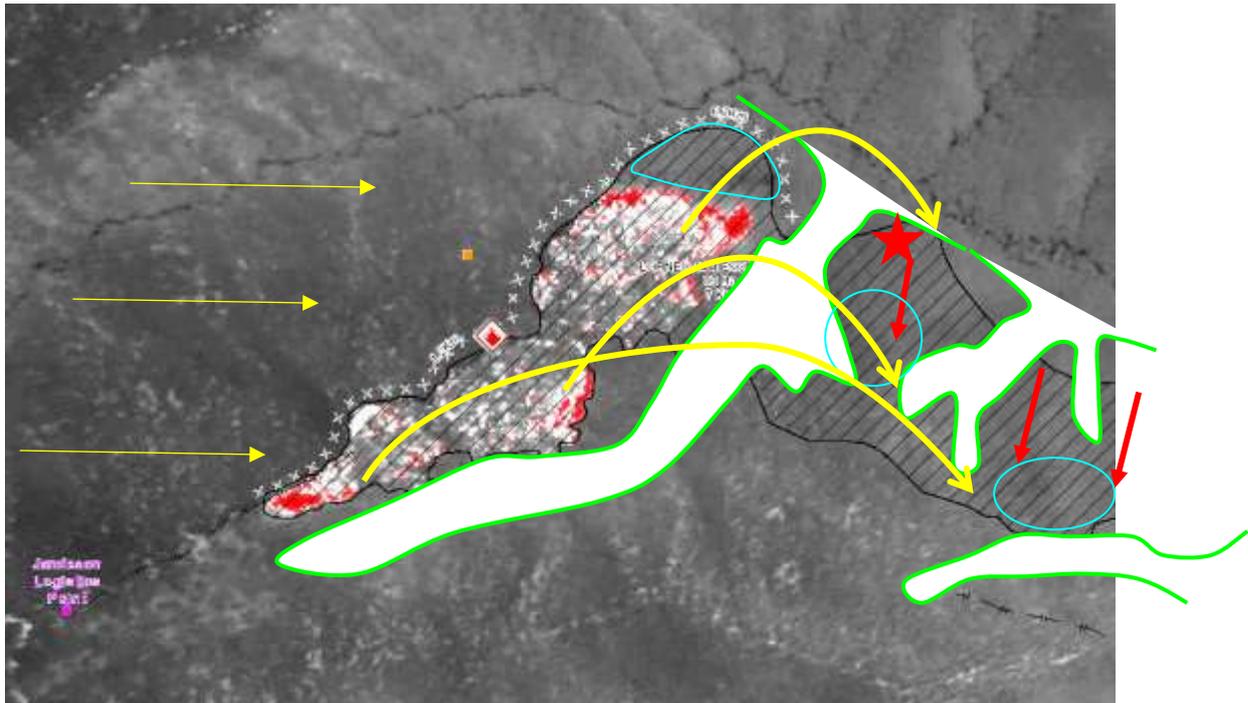


Figure 7A Linescan of 11:30am 20 December 2015 overlaid with 7.30pm fire edge (black hatch) and control line built on Day 2 [X X X X = built control line, northern half completed on Day 2 before mid-afternoon]

The line scan shows the active edge in red and the area burnt out before 10 am (approx) in mottled red and white.

Green outlines approx non-flammable gullies and slopes

Red star is spot fire shown on original 11.30am line scan.

Blue triangular area was burnt out after the 11.30am line scan and before 3pm rain

Blue circle is part of scorch canopy area on hilltop 1

Blue oval is part of scorch canopy area on hilltop 2

Yellow curved arrows indicate possible spotting pathways under a Westerly wind (yellow arrows).



Figure 7B View across Jamieson Track towards the south west after the fire. Photo published by ABC on line. Blue dash line is Jamieson Track. It is the dividing line between predominantly green canopy foliage of the back burn area and scorched canopy of the Christmas day escape area.

Yellow dotted line is spur track from Wye Rd to Jamieson Ck. Red arrow is the approx. lightning strike area.

Blue outlines the fire area before the escape on Day 2. Red outlines the extent of the escape on Day 2. Note the scorched areas in the blue and red areas. The scorch areas in the blue area were the ember source areas for the escape around 12.30pm and the scorch areas in the red area were the uphill runs by the spot fires that ignited.

Between the scorch areas are unburnt forest slopes and gullies.

White arrow is hilltop 1, Orange arrow is hilltop 2.

White dash line is dozer track cut on Day 2.

Comment: Could the escape have been predicted or prevented?

Yes and Yes

The escape occurred with the arrival of the cold front bearing cooler moister air and associated turbulence. The Westerly wind change predated the front by 4 hours and was not turbulent. In hindsight, the Colac forecast predicted turbulence with the former but not the latter. "Please note that the gridded weather is for mean wind and ... potential winds gusts up to 70-100km/hr associated with the wind change between 0800-0900." Did this forecast fool them into a false sense of security?

The westerly wind was forecast, meaning the danger was spotting across the eastern gully. Adequate helicopters equipped with infrared and water bombing plus ground troops could have prevented spread of spot fires downwind, but instead, the fire fighter focus was on the control line being built along the western side.

4 Deduced fire suppression response

This section uses information from primary and secondary sources as references to re-create actual fire suppression response on Day 2

4.1 Fire Control Plan

The initial fire control plan for Day 2 was to construct earth lines around the known fire area (then on the long spur) by midday on Day 2. Later it was delayed till 10 pm on Day 2. After the breakaway, the fire control plan deadline was extended to 10 pm on Day 3.

Comment: We will see later (eg, Figure 8) that this latter change of deadline was unnecessary and premature

4.2 Resources allocated and work done on the ground

Works done on Day 2 before the breakaway were not documented, yet dozer activity was referenced from early morning. It can be presumed that the 9am Map 2 area was encircled (or almost so) by either dozers or dozers and hand crews. After it escaped downhill during the Westerly wind change around 10 am, the dozers probably continued a track down the spur track and around the Western edge of the descending fire flank. By 1.30pm or soon after, the control line around the W and N side of the point of origin was almost completed, some 1.5 km along the western and northern fire edge.

In the meantime, a myriad of hot spots enlivened on the spur when the true cold front arrived around 12.30pm and generated an ember storm that showered into an area 500m wide and 1 km long downwind, igniting many firebrands. There may have been some aerial water drops, but there were no fire fighters on the ground to prevent relights.

After the breakaway, 0.5 km of fresh dozer trail was constructed on route to the eastern tongue from Jamieson Track, side-cutting on very steep slopes (see Figure 7B). Apart from this trail, there is no evidence that ground based resources were allocated to the eastern tongue on Day 2.

5 Assess effectiveness of suppression response

The professional assesses effectiveness by degree of achievement of each plan.

Explanation: Because forest fire suppression is a perimeter exercise, a useful quantifiable indicator of fire control success is the ratio of contained line to total perimeter. To qualify as an effective control line in a forest fire, several sequential steps have to be ticked off as follows:

Construct containment line to bare earth around fire perimeter → secure containment line against flame spread → prevent fire edge generating short distance spot overs by deep blacking out → continue to patrol the control line diligently with adequate resources to catch flame escapes and spot overs while small.

This is classical Best Practice dry fire fighting.

Success depends on stopping spot fire escapes while small.

If any steps fail. The spot fire will escape, and the cycle has to restart at step 1.

5.1 How effective were Incident Controller's plans and actions in achieving suppression objectives?

A First fire control plan

At 7.22am, the fire control plan required containment by midday on Day 2. This reinforces the deduction that Colac HQ was unaware of the fire's true extent at 7.22am. After the 9am Map 2 was prepared, the 10.25am and 12.37pm Sit Reps revised the fire control plan to contain the perimeter by 10pm on Day 2.

Was this plan appropriate (compared to Best Practice) and did resource allocation allow achievement of plan?

Plan was appropriate: Around late morning, when achievement of the midday goal was not physically possible, it was appropriate to revise the deadline to later in the day at 10pm. The 11.30am line scan showed the exact lengths and allowed accurate resources to be calculated.

Resource allocation allowed partial achievement of plan: By 10.25am, dozers had long commenced work on a control line around western and northern perimeter. This was consistent with the fire control plan and a reasonable use of dozers on-site. Map 5 shows that 1.5 km was almost completed by 1.30pm. It protected the eastern side in good time. Some terrain was very steep, eg, 25 to 30+deg. Some of the mapped control line appears too steep for either dozer or vehicle access, but no doubt side-cutting allowed track construction. The percentage built by dozers and hand trailing was not reported, but because only 12 to 17 people were on the line, the hand trail production rate would have been negligible.

Indicative line construction rate by a dozer can be conservatively calculated at 1.5 km between 8am and 3pm = 200m per hour.

This was good work for the western part of the fire, but the forecast for Day 2 clearly established the Eastern side as the danger side for spotting. Fortunately, flame spread to the east was contained by a wet control line - deep, steep non-flammable gully. All documented sources were silent on the plan to prevent ember spread from the Eastern perimeter.

Logically, knowledge of a westerly wind change would have alerted planners to increase deployment of adequate resources for detection of spot overs and their rapid extinguishment by water bombing and rapid consolidation with bare earth lines by extra ground forces. Unfortunately, the Sit Reps mention only 1 fixed wing and 1heli-tanker on site, clearly inadequate for the task, and the allocated 12 to 17 crew was overwhelmingly insufficient to deal with both sides of the fire.

To what extent was this fire control plan achieved?***Partially***

Approx 1.8 km of control line was constructed on the west side of the fire, which held fast. But the wind storm extended the breakaway perimeter by a few km to the SE. Nevertheless, an analysis by Best Practice principles would have revealed that only 1.5 km of new control line was required on Day 2 to contain the fire (See Figure 8). But that analysis did not occur, and the deadline was extended until 10pm on Day 3.

B Next fire control plan

The 3.36pm and 7.40pm Sit Reps revised the fire control plan to contain the perimeter by 10pm on Day 3.

Was this plan appropriate (compared to Best Practice), and did resource allocation allow achievement?

Plan was inappropriate: The 10 pm goal on Day 2 was physically achievable by using wet gullies as non-flammable barriers and constructing 1 km of control lines. Despite benign weather ahead, despite having adequate dozers on site to construct control lines, despite proof that such work was possible, eg, the timely completion of the containment line in very steep terrain on the western and northern sectors, and despite adequate time to build another 1.5 km or so of control line (Figure 8) and thereby achieve the 10pm containment goal on Day 2, the 3.36pm Sit Rep inexplicably changed the containment goal to 10pm on Day 3.

Resource allocation allowed partial achievement of plan by 10pm on Day 2 and with extra resources tomorrow, full achievement by Day 3:

The control line around the W and N side of the point of origin appeared to be completed. 0.5 km of the additional 1.5km was constructed. The extra 1km could have been constructed on Day 2, leaving a simple program of initial blacking out and mopping up to be completed tomorrow with at least a dozen extra crews on site.

To what extent was this fire control plan achieved?***Partial***

Most of the required control line was built, but the deadline of 10pm on Day 3 meant everything could now be delayed till tomorrow, provided adequate fire fighter crews were allocated. Delay in this achievable deadline diluted the urgency of achievement. In this case, it was a signal that a change of strategy was imminent.

5.2 Comparison of Incident Controller's performance with Best Practice plans and actions

A reasonable process for effective planning and resourcing requires the known scenario and potential escape scenarios to be addressed. Departures from this process can now be identified.

Known scenario The known perimeter of the going fire will be static over the next few days at approx 7 km.

Escape scenario Not identified or enunciated, but three days of mild weather was ahead, meaning escape from blacked out boundaries was preventable by good management

Situation (see Figure 8)

The western and northern sides have 1.8 km of control line.

Jamieson River and other gullies are wet control lines, total length 4 km.

Requisite new control line approx 1 – 1.5 km to achieve containment (= confine perimeter spread)

Fall back control line is Jamieson Track = 4 km long

Three days of mild weather ahead allows ample time for complete blackout and mop up before next severe weather on Friday.

Best Practice plan for rest of Day 2

Build 1 – 1.5 km of new control line by evening of Day 2 as shown on Figure 8.

Method = dozer track and hand trail. Then, secure and patrol with many extra resources overnight and on Day 3.

Actual plan:

Contain whole 7km perimeter by 10pm on Day 3

<i>Verdict</i> <i>Fail</i> – they misunderstood value of wet control lines and the meaning of containment

Indicative resourcing

Minimum resources required: Current dozer fleet on site plus one crew of 6 fire fighters to black out and patrol each 500m = 12 crews of 6 fire fighters each on site.

Plus 1 helicopter with infrared and one for precision water bombing.

Actual resources allocated Day 2 were not increased: 4 dozers, 2.5 crews

<i>Verdict</i> <i>Fail</i> – insufficient fire fighter crews for Day 2 blacking out and patrol
--

Outcome that could have been achieved by midnight Day 2

Of total perimeter = 7 km:

Control line constructed = 3 km (estimated)

Live perimeter yet to be tracked = 0 km

Live perimeter with wet control lines yet to be patrolled for hot spots = 4 km

Actual outcome achieved by midnight: No new containment line constructed since 3pm

<i>Verdict</i> <i>Partial success</i> - there were adequate dozers to complete 1 - 1.5 km of control line by evening of Day 2, but it was not done and nor were extra fire fighter resources deployed until next Day.

Overall Verdict

Rating against Best Practice was 4 / 10

5.4 Conclusion

Headline: **Suppression response was partially effective, but the edge that was not contained eventually got away.**

Was failure to complete the control line as described and to understand that the fire was almost contained related to the leadership inexperience?

Explanation: Even though fire control plans said build 6km of control lines, most was wet line and only 1km of dozer line was required on this fire. By definition, the moisture content

differential of a wet line is as effective as a dozer track, but if access is required, some dozer work may be done.

OR was failure to complete the control line as described and to understand that the fire was almost contained related to the leadership indecision, inherent in this IGEM comment?

By the afternoon of 20 December, the IMT had commenced planning and analysing alternative options for controlling the fire. Records show the IMT produced iterations of options analyses at 1pm on 20 December.

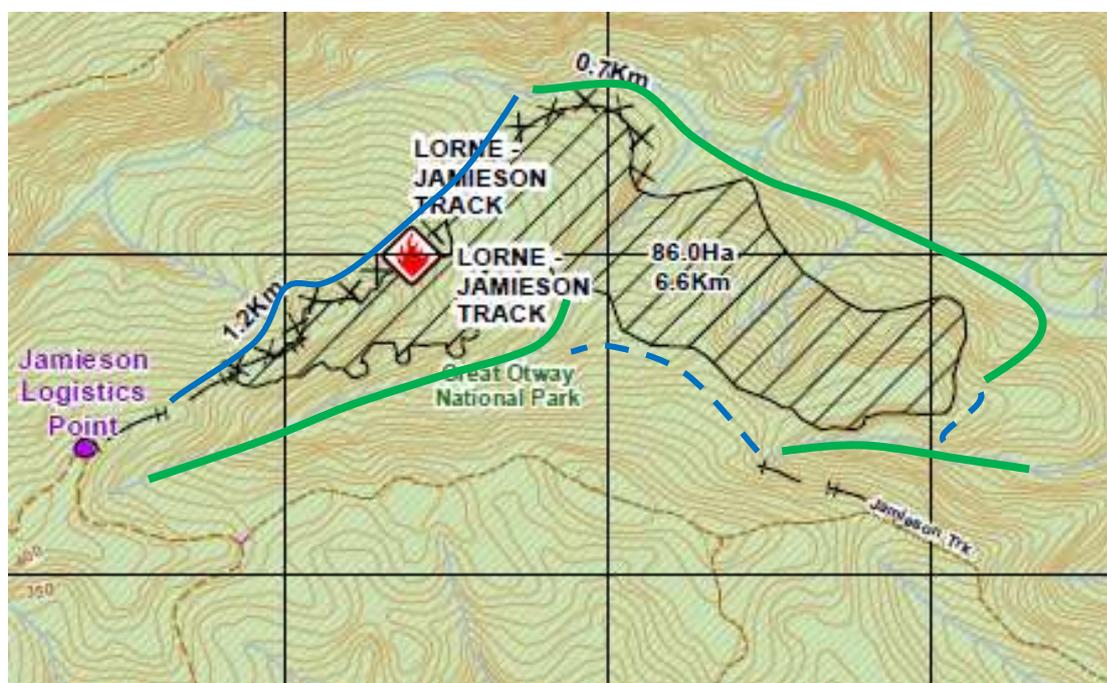


Figure 8 Best Practice fire control plan for Day 2 and Day 3.

Solid blue line is established control line to be blacked out and patrolled

Dashed blue line is 1 km control line yet to be constructed and then blacked out and patrolled

Green line is wet control line (= non-flammable gully barrier), yet to be blacked out and patrolled

6 Supplementary concerns

6.1 The range of descriptions about the weather during the morning of 20 Dec was remarkably inconsistent.

Coroner quoted EMC *During the morning of 20 Dec, fire intensity exceeded thresholds considered maximum for crews to successfully rakehoe control lines by hand*

Compare this with IGEM *Over the period 19–21 December, the weather remained relatively benign. The fire area increased significantly over the period, from 1 ha late on 19 December, to 65 ha on 20 December, and 92 ha by end 21 December.*

And again:

Coroner quoted EMC *Between 12.30pm and 1.00pm, the wind shifted to the west, associated with a frontal change, and the fire made a significant run, spotting across to the next ridge.*

IGEM *On the morning of 20 December, the change brought westerly winds of 40–50 km/h*

Compared to:

Sit Reps - All said “Moderate weather”.

And:

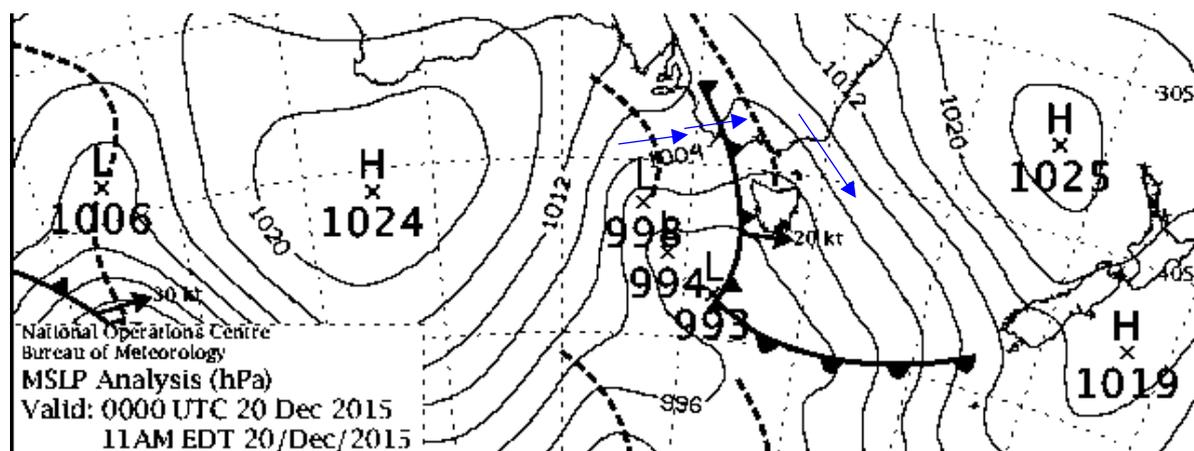
Colac forecast for Day 2 exceeded moderate:

The 7am forecast for Colac on Day 2, 20 Dec was as follows:

Day (optional)	Date (dd/mm/yyyy)	Time (24h)	Air Temp (oC)	Relative Humidity (%)	Wind Dir	Wind Speed @ 10m (km/h)
Sun	20/12/2015	6:59	31.2	20.6	320	43.2
Sun	20/12/2015	7:59	31.3	20.5	320	46
Sun	20/12/2015	8:59	31.3	22.1	270.6	43.9
Sun	20/12/2015	9:59	28.5	30	269.5	38.6
Sun	20/12/2015	10:59	27.8	38.2	269.5	35.2
Sun	20/12/2015	11:59	27	42.6	269.5	35
Sun	20/12/2015	12:59	25.8	44.8	266	38.1

The forecast said these winds were mean wind speed, but noted that potential winds gusts up to 70-100 km/hr would be associated with the wind change between 8 and 9am

Look at the 11am weather map



Ahead of the trough (right-side dotted line) was a prolonged NW air flow of moderate speed. Between the trough and the cold front was a westerly air flow of light to moderate speed. The cold front stalled just west of Cape Otway between 5 and 11am, but then pushed rapidly across country, crossing the fire ground after midday with turbulence. After the cold front was a prolonged period of westerly air flow of light to moderate speed.

6.2 IGEM and EMC readily justified non-action by fire fighters

The IGEM appeared keener to make excuses for non-action than his statutory role of assuring the public / Parliament that emergency management is satisfactory

IGEM and Coroner quoting the EMC stressed how steep and dangerous the terrain was, perhaps as a literary method of justifying non-action by Government workers, but we have seen the line construction rate by dozers in this impossible country was 200+m / hour. This means if 1 km of line is to be constructed 2 dozers will build it in 2 - 3 hours. This would have contained the fire on Sunday night of Day 2.

Did the IGEM or EMC ask why was this not done? No. Instead, the Secondary Sources implied the ineffectiveness of direct attack on the fire's edge was the cause of the steady increase in size of the fire, the inference being that a new strategy, ie, back burning was patently the better strategy. They did not notice the poor fire control plans and the leisurely attitude or the under resourcing. Their comments make sense if their real purpose was to justify the backburn strategy.

IGEM *The initial strategy of direct attack, preparation of containment lines and patrolling increased in intensity; despite this the fire continued to grow in size and was spotting.*

Construction of containment lines was slow in the difficult terrain, with reports indicating little progress between 19–22 December.

There were significant risks to the safety of firefighting personnel engaged in establishing the containment lines around the fire on steep slopes, which meant that increasing the on ground resources was not feasible.

Thus the IGEM said progress was slow, but they cannot deploy more troops because of safety concerns.

IGEM *Construction of bare earth containment lines continued during 20 December. On-ground resources were also increased, with three dozers, and 30 firefighters (8 night crew were shared across the 2 fires). Of the six kilometres fire perimeter, crews had established two kilometres of containment by late on 20 December.*

Key contributors commented repeatedly that the conditions where crews were working were extremely difficult and dangerous, with steep, slippery slopes.

One crew was only able to cut 140 m of containment line by hand in a day.

Thus the IGEM highlighted the difficulties and the excruciating slowness, but disregarded the fact that control line was being built at 200m+ per hour.

Day 3 12.01am Day 3 to Midnight Day 3, 21 December 2015

Summary of Day 3 Mild weather

What should have happened according to Best Practice forest fire suppression principles:

Being faithful to the fire control plan objective of containment by 10pm on Day 3, the fire leader would complete the 1 km control line to fully contain the now stationary and placid fire perimeter and ensured adequate aerial and ground resources are on site to black out the constructed line and the wet line well before tonight's deadline.

The fire leader knew about the hot windy weather on Day 7, meaning they can complete the blackout and the preparation of Jamieson Track as the fall back control line well before then.

What happened:

Resource allocations remained unacceptably low:

- Jamieson Track fire 86 ha going fire, 14 fire fighters deployed, compared to
- Delaney Track fire 6 ha contained fire, 26 fire fighters deployed.

Sit Reps reported 70 fire fighters on Jamieson Track fire. This was re-quoted by IGEM, but was grossly inaccurate

During afternoon, Colac HQ reported the fire area had expanded by almost 16ha and a new spot fire escaped. Both expansions were dismissed by a later line scan. Was it a genuine mistake or a hoax to encourage a pro back burning decision.

No built control line was reported on Day 3

Fire control plan changed four times on Day 3.

- Initially, fire control plan #5 was direct attack - build 6km of line, contain by 10 pm Day 3.
- 11.03am fire control plan #6 was direct attack - build 5km of line, contain by 10 pm Day 4.
- 3.26pm fire control plan #7 was direct attack - build 7km of line, contain by 10 pm Day 6.
- 8.31pm fire control plan #8 was direct attack - build 6km of line, contain by 10 pm Day 6.

Post-fire Reports from witnesses described a marathon two-day argument between fire ground leadership, Colac HQ and Melbourne HQ, including Minister. Subject of argument – back burn vs, direct attack. New Fire Controller appointed at Colac HQ.

Consequences:

Yesterday's achievement failure caused today's problem.

Today's achievement failure becomes tomorrow's problem.

Midnight summary of fire status: GOING

Fire area 92 ha, perimeter 8km.

Plan was to contain perimeter by 10pm Day 6. Again, they misunderstood the meaning of "contain" the fire. Their Plan really meant to contain the fire's spread ASAP and to black it out by 10pm Day 6.

To contain the fire today, they had only to build 1km of dozer line along the southern fire perimeter. The rest of the perimeter was temporarily well contained (in this mild weather) by wet line and built tracks.

Performance rating against Best Practice forest fire suppression: 0 / 10

It is incomprehensible that the remaining 1km of control line was not built today. It is incomprehensible that the fire control plan changed so many times, and for no apparent reason.

Day 3 12.01 am Day 3 to Midnight Day 3, 21 December 2015

1 What the Primary Sources reported at the time of the fire

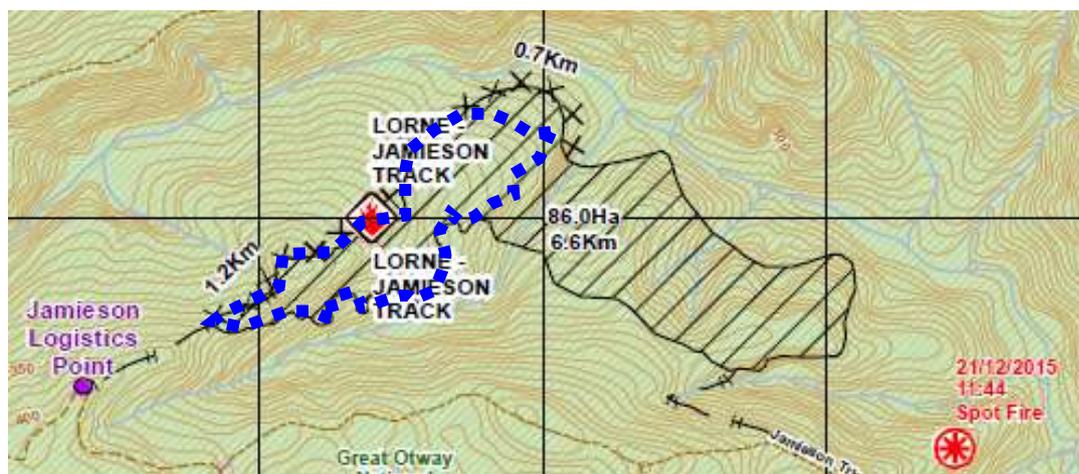
1.1 Fire behaviour related aspects

A Fire Behaviour

The authorities' understanding of fire behaviour is best shown by the maps they produced and the source data they used, in particular, the line scans they organised.

11.30 am Day 3 Mapped fire edge

Map 8 is a DELWP estimate of the 11.44am spot fire location added to Map 6. The spot fire's location indicates that the source was the eastern part of the tongue and that the wind was NW before 11.30 am. But wind today was from SW.



DELWP Map 8 Observation date 11.30am Day 3, 21 Dec 2015

Map produced @ 11.56am Day 3 21 Dec 2015

Map title 20151221_11.58

Notation on map: 86 ha, 6.6 km perimeter

|| --- || ----|| means "machine out-track" = dozer track

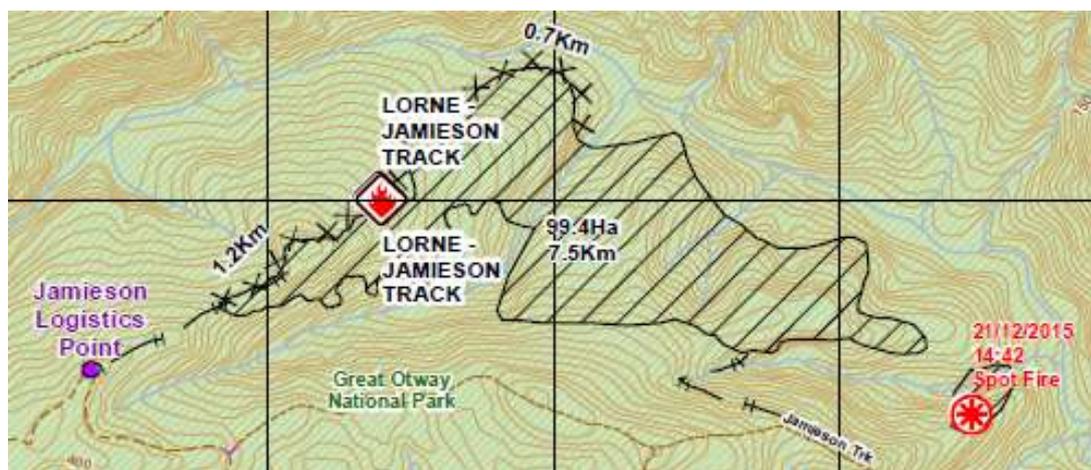
X X X X means completed control line

The blue dots overlay the 11.30am line scan from Day 2.

Comment Spot fire was probably burning unsighted since yesterday's storm, but the Sources clearly pushed a belief that the spot fire occurred today.

2.30 pm Day 3 Mapped fire edge

Map 9 is a DELWP estimate of fire spread at 2.30pm on Day 2. Sit Rep 3,26pm said it was derived from an infrared mapping helicopter. It indicates the map maker believed the southern edge of the fire had started to climb the slope uphill to Jamieson Track to the south, a breakaway had bulged from the SE tongue downhill to the east and the spot fire that was contained has now escaped down slope along the gully.



DELWP Map 9 Observation date 2.30pm Day 3, 21 Dec 2015

Map produced @ 4.18pm Day 3 21 Dec 2015

Map title 20151221_1620

Notation on map: 99.4 ha, 7.5 km perimeter

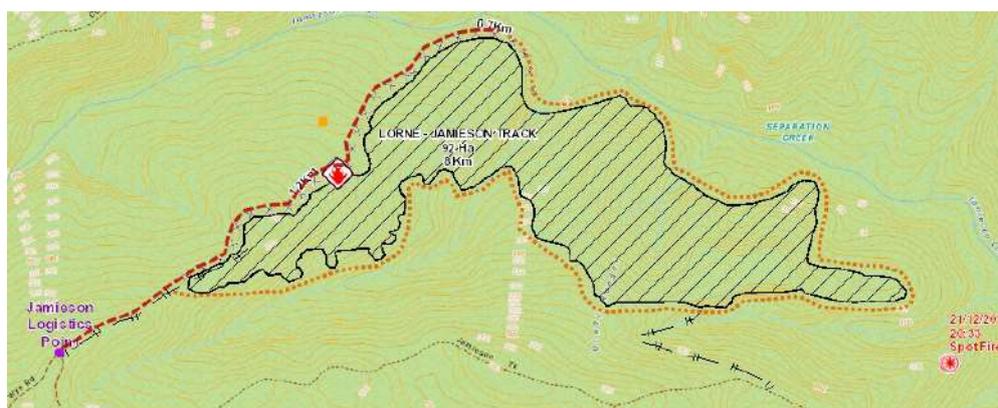
|| --- || --- || means “machine out track” = dozer track

X X X X means completed control line

Comment: By the end of the day, this expansion of the fire was dismissed as was the escape of the spot fire. An argument can be made there was there an ulterior purpose in such reporting, eg, as an argument to support the back-burn strategy.

10.33 pm Day 3 Mapped fire edge

Map 10 probably derived from the 10.33pm line scan. It deleted the southern uphill run and the spot fire expansion in Map 9. [Does this mean they did not occur in the afternoon or did they not reveal themselves on the line scan?]



DELWP Map 10 Observation date 10.33pm Day 3, 21 Dec 2015

Map produced @ 10.51pm Day 3 21 Dec 2015

Map title 2015122_2251 Option 2

Notation on map: 92 ha, 8 km perimeter

|| --- || ----|| means “machine out-track” = dozer track

X X X X means completed control line

IGEM comments about the origin of Map 10. *“By the afternoon of 20 December, the IMT had commenced planning and analysing alternative options for controlling the fire. Records show the IMT produced iterations of options analyses at 1pm on 20 December, 5pm and 10pm on 21 December. The final analysis included the four options. This map is “Option 2 – Establish and/or consolidate containment lines by hand trail supported by dozers where practicable”.*

Summary of fire behaviour notes from Sit Reps:

Sit Rep 11.03am Area = 86 ha, perimeter = 7 km, control line built = 2 km
 Sit Rep 1.59pm Area = 86 ha, perimeter = 7 km, control line built = 2 km, spot fire 30x30m now contained.
 Sit Rep 3.26pm Area = 102 ha, main fire 99 ha, spot fire 3 ha, perimeter = 10km, control line built = 3 km.
 Sit Rep 8.31pm Area = 92 ha, perimeter = 8 km, control line built = 2 km, spot fire 30x30m.

Comments:

(1) The reported increase in fire area and spot fire activity this afternoon was described by the IGEM as the catalyst for a deferral of the fire control deadline by another two days and by the 3.26pm Sit Rep as the catalyst to consider backburning as the fire control plan. However, the expansion of fire area and the escape of the spot fire were subsequently cancelled but the 10 pm Day 3 deadline was not reinstated.

(2) Fake news:

- The spot fire report was proven to be fake news:

Contained at 0.9 ha at 1.59pm, 3 ha at 3.26, and contained at 0.9 ha at 8.31pm.

The IGEM was convinced the spot fire ignited today, but if he examined appropriate evidence, his error would have been revealed.

- The fire expansion was fake:

86 ha at 1.59pm, 102 ha at 3.26, and 92 ha at 8.31pm.

The 2.30pm Map 9 showed perimeter expansion in two places and one significant spot fire escape. Yet the last map of Day 3, Map 10, showed only the 2ha eastern escape. Map 11 of Day 4 repeats the same perimeter spread as Map 10.

It is curious that only a few weeks later, despite full access to all information, the IGEM did not consider this mysterious event worthy of comment or investigation.

(3) This fake news raises more questions:

Why does this fake flurry of increased fire intensity and burnt area have no evidence?

Was it a mistake in interpretation of the infrared scan?

Was it a fabrication of the infrared by Colac HQ to convey to HQ how fire danger “increased” in this forest even though FDI was only 4?

Was Map 9 fabricated by Colac HQ to justify to Melbourne HQ their case for the change of strategy to backburning?

It is curious that the independent IGEM did not consider these questions worthy of examination.

The omission makes sense if the purpose of the IGEM Report was to justify the back burn strategy.

B Weather**Weather notes from Sit Reps**

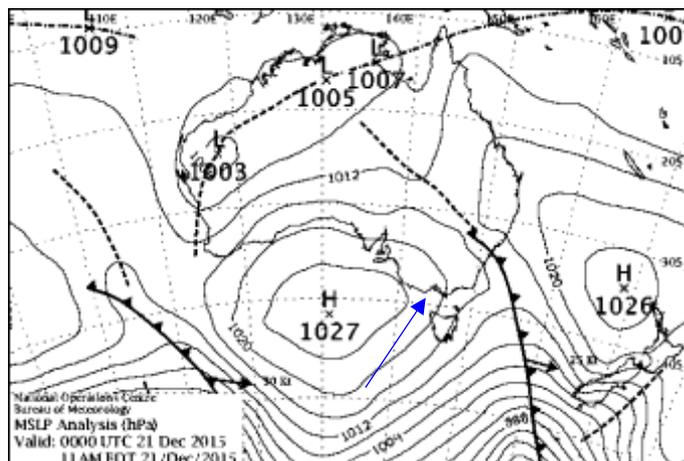
All Sit Reps said “Moderate” spread potential

Sit Rep 11.03am said weather mild

Sit Reps 3.26pm and 8.31pm said wind speed 10 – 19 kph from SW, FDI 4; mentions mild conditions

Bureau of Meteorology

Detailed BOM records for Day 3 were not available at time of writing but the weather map clearly shows a gentle SW air stream across the fire ground at the time of the spot fire detection.



Comment For the spot fire to have ignited today, the source fire would have to be a tall burning tree less than 20m away to the SW of the spot fire site. There was no such tree. As the spot fire was 200m SE of the main fire, the only feasible explanations are that the spot fire ignited in yesterday's cold front turbulence and remained undetected till now, or a person ignited it this morning.

C Forest environment

Sit Repts said "Hazardous trees, dense heavy fuels, access difficulties"

1.2 Fire suppression response (Primary sources)

ISP for 21/12/18 Day 3 prepared 7pm on 20/12 Day 2

[Note: This is the day shift plan]

Jamieson Tk fire Fire size 65 ha

Objective *Contain fire by 10pm on Day 3 (21 Dec)*, construct mineral earth break around fire, patrol and black out, bomb with helitak

Resources 14 fire fighters, 6? dozers

Delaneys Road fire Fire = 6ha,

Objective Continue to construct & consolidate, blackout & patrol

Resources 26 fire fighters, 3? dozers

Total on fire line, day shift both fires 40 personnel, 13 SOU, 2 tankers,

Aircraft based at Gerangamete airbase = 3 – 1 spotter aircraft, 2 helitak

Sit Rep 11.03 pm Day 3

Fire Control Plan Construct mineral earth line around fire, mop up and patrol.

Fire to be contained by 10pm on Day 4.

Line to be built = 5 km.

Resources on line: 70 P, 18 SOU, 3 D, 1 FW, 1 H

Sit Rep 1.59pm Day 3

Fire Control Plan Construct mineral earth line around fire, mop up and patrol,

Fire to be contained by 10pm on Day 4.

Line to be built = 5 km.

Resources on line: 70 P, 18 SOU, 3 D, 1 FW, 1 Helitak

Dozers working on eastern edge

Sit Rep 3.26 pm Day 3

Fire Control Plan Construct mineral earth line around fire, mop up and patrol

“Due to FLIR run results showing increased fire activity and identified hot spot, option of back burning being considered”

Fire to be contained by 10pm on Day 6.

Line to be built = 7 km.

Resources on line: 70 P, 18 SOU, 3 D, 1 FW, 1 Helitak

Sit Rep 8.31 pm Day 3

Fire Control Plan Night crews patrol

Fire to be contained by 10pm on Day 6.

Line to be built = 6 km.

Resources on line: 20 P, 8 SOU, 2 D

Comment: Note the unexplained 11.03am deferral for containment by one day to 10 pm on Day 4 and then the 3.26pm deferral for containment by a further two days to 10 pm on Day 6. Yet no physical or logical reason has been provided that prevented containment by 10pm tonight, Day 3.

Deferral of a fire control plan deadline with a severe day expected on Day 7 is contrary to Best Practice forest fire Best Practice because it lowers priority level and thereby removes the incentive for urgency.

Note the disparity between ISP and Sit Reps regarding fire fighters on the line. The ISP states total fire fighters on both fires was 64, SOU 20, tankers 4. Clearly, Sit Reps combined numbers at both fires and the night shift. This was grossly inaccurate but was repeated by IGEM. Astoundingly, numbers deployed on the 65ha going Jamieson fire were half those on the 6ha contained Delaney fire.

1.3 Eye witness reports

Eye witnesses described that debate raged via conference phone calls over two days in a three way hook up between fire line command, Colac HQ and Melbourne HQ to the highest levels, including a Minister. The debate was about back burning vs. direct attack. It was also heard by local fire stations.

From witness accounts, it can be deduced that:

The driving force behind the back-burn lobby was the fire ground leadership.

The fire grounders wanted the backburn to start on Sunday after the breakaway, but every day of indecision was to them a day wasted and a step closer to suppression failure.

While the debate raged, no work was done on the fire ground by machines or people. Did the fire ground leadership go on strike until they got their way?

The Mexican stand-off led to paralysis. Melbourne HQ appointed a new IC at Colac HQ who developed an options analysis and the back-burn strategy was approved soon after by Melbourne HQ.

Did the IGEM Report masterfully disguised the conflict by describing the new IC appointment as an orderly transition from Level 2 to Level 3 and the back-burn strategy as the outcome of a comprehensive process? See 2.2.1 below.

2 What the authorities said after the fire (Secondary sources)

2.1 Documented fire behaviour related aspects

A IGEM

Fire behaviour

Despite the mild weather, the fire remained active, and spotted to the east of the main fire on 21 December. IGEM described two versions of this spot fire, quoting the Sit Reps:

- *Reports indicate ground crews contained and established a bare earth containment line around the spot fire by 1.59pm.*
- *Crews detected a spot fire 200 m from the main fire during the morning of 21 December. This fire grew rapidly to cover 3 ha by 3.26pm.*

IGEM noted increased fire activity on 21 Dec:

- *Aerial reconnaissance using infrared cameras also identified increased fire activity, with the main fire now 99 ha in area.*
- *Infrared observation on the afternoon of 21 December, resulted in an increase of fire area estimates. ICs noted that imagery from 21 December showed over 1000 hot spots.*

Weather

Forecasters predicted cloudy conditions with westerly winds easing during the day for 21 December.

Forecast for next few days:

Weather on 22 December was moderate, with cloud cover until early afternoon, temperatures below 20 °C, and east-south-east winds of up to nine km/h. Temperatures were expected to increase to mid-20s on 23 December, with winds remaining east south-east and southeast at 10 to 15 km/h. Expectations of considerably increased fire danger on 25 December remained.

Forest environment

Crews reported continuing difficulties in accessing the fire in the dense and heavy forest and steep terrain.

Comment IGEM continued to build the inference of a stubbornly active fire defying all attempts to control it, where access is difficult and worse weather is looming. Was he laying the case for a change of strategy rather than examining why the Best Practice approach of direct attack has been failing?

He said the fire spotted today and grew to 3ha, but he does not say that the spot fire ignited yesterday and that its area was revised later back to 30x30m. He said the infrared mapper

showed more fire activity and increased the fire's area but does not say that the fire's extra area was later deleted.

B EMC

No specific comments

2.2 Fire suppression response (Secondary sources)

2.2.1 Fire control plan

A IGEM

Fire crews continued with a control strategy combining aerial water bombing, and the establishment of bare earth containment lines.

By 21 December, containment was not expected until late 24 December, due to increased fire activity on 21 December, including a spot fire to the east of the main fire.

By the afternoon of 20 December, the IMT had commenced planning and analysing alternative options for controlling the fire. Records show the IMT produced iterations of options analyses at 1pm on 20 December, 5pm and 10pm on 21 December.

Comment The IGEM's unquestioning acceptance of a four day delay in containment deadline due to faked increased fire activity as evidenced by one spot fire is disconcerting. It is cause for even more concern that (1) he did not notice that the spot fire was SW of the fire when the wind that day was from the SW, that (2) he did not suspect or investigate whether the spot fire was ignited the day before during the wind change and was not detected until today, and that (3) he dismissed the significance that the spot fire was controlled at 30 x 30m soon after detection, meaning he dismissed the concept that active suppression can be effective in preventing fire spread and that if any other escapes or hot spots occur during this mild weather they will also be controlled and that the fire will be made safe well before the next burst of severe weather. If IGEM was not an independent body, one might deduce his focus was on building arguments, however specious, to defend the back-burn strategy.

Change of suppression response level

Fires are classified in terms of their complexity and the resources and incident control arrangements required for their management. A Level 2 fire is one that is unlikely to be contained by the first attack and may become more complex. A Level 3 fire is larger and more complex, requiring resources from a number of locations, and more than one agency. Response activities to a Level 3 fire is normally expected to exceed 24 hours in duration. The Wye River – Jamieson Track fire was initially managed as a Level 2 fire and was escalated to Level 3 on 21 December 2015.

For the escalation from Level 2 to a Level 3 incident the Regional Controller (RC) appointed an IC endorsed by the EMC.

The RCs evolving view of the fire's management on 20 and 21 December was that the fire should be managed with a more focussed approach.

Comment Does this mean the previous management had been less focussed? How so?

On the afternoon of 21 December, the RC deployed a Level 3 IC to assess the fire management arrangements and concluded that with extreme fire weather predicted on 25 December, there was significant risk of the fire developing into a major incident. The RC subsequently discussed escalation of the incident with the DELWP Chief Officer, and SRC leading to a decision to upgrade the incident to Level 3. The formal transition of incident control occurred at 4.18pm on 21 December.

Comment: The Sit Reps after 2pm on Day 4 (22/12) upgraded their Level from 2 to 3 and their loss potential from Moderate to High, and classified fuel hazard categories to extreme. The symbolism of urgency. The symptom of failure.

2.2.2 Suppression Response

The descriptions of the primary source and the secondary sources were often very different.

Sit Rep Primary source	IGEM Secondary source	EGM Secondary source
<p>Sit Rep 11.03am said 70P, 1T, 17 SOU, 3 dozers, 2 aircraft, [30 at Colac HQ]</p> <p>Sit Rep 1.39pm said similar, but now 4 dozers. Said dozers were tracking the eastern edge, and hand line construction had begun</p> <p>Sit Rep 3.26pm said similar but only 1 aircraft.</p> <p>Sit Rep 3.26pm said: Due to FLIR run showing increased fire activity and identified hot spot, option of back burning is being considered.</p> <p>Sit Rep 8.31pm said 20P, 7 SOU, 2 dozers, overnight crew</p>	<p>Fire ground personnel numbered 40 and were supported by a further 30 staff in the ICC. Seventeen SOUs were supporting crews working directly on the fires. Milder conditions allowed firefighters to continue building containment lines. <i>Crews had established 2 km of containment line on the fire's 7 km perimeter.</i></p> <p>Aerial bombing with retardant or water was used on 20 and 21 December, with one fixed wing observation aircraft used on both days, and helitacks used on the afternoon of 20 December and morning of 21 December.</p> <p>The initial crew of 9 was increased on 20 December to 30 (8 night crew shared with Delaneys Road) and increased again on 21 December to 41 (10 night crew shared with Delaneys Road). There were four dozers and 17 SOUs on 21 December. Fixed-wing aircraft assisted until late 21 December, and 3 and 2 helitacks respectively for 20 and 21 December.</p>	<p>No specific comments</p>

Comments

1 Despite the extra resources on line and the words declaring work was being done on Day 3, the Sit Reps and the IGEM attest that **no additional control line was built on Day 3**. IGEM summary of Day 2:

Of the six kilometres fire perimeter, crews had established two kilometres of containment by late on 20 December

IGEM summary of Day 3:

Crews had established 2 km of containment line on the fire's 7 km perimeter.

2 The IGEM's uncritical acceptance that no extra control line was built on Day 3 despite extra numbers of fire fighters and extra dozers on the fire ground is of great concern for two reasons, a critical opportunity to black out the fire edge was missed and the non-performing extra resources were an apparent waste of public money.

Perhaps the IGEM knew inactivity was the symptom and the real cause was that indecision about the fire control plan was being played out between fire ground, Colac HQ and Melbourne HQ, ie, direct attack vs back burn. The former (direct attack) was consistent with Best Practice forest fire suppression and the latter was a worrying deviation that would unnecessarily raise the risk of the fire's escape on Day 7.

3 Deduced fire behaviour

This section uses information from primary and secondary sources as references to re-create the fire's behaviour on Day 3.

At 11.44am, a spot fire was observed on a spur between two non-flammable gullies. It did not happen today because the wind was moderate and in the wrong direction from the fire edge. Nevertheless, the spot fire was stopped small by suppression.

Between 11.30am and 2.30pm, a small tongue emerged from the eastern edge, appearing to run 200m down a 10 – 15 degree slope along a spur line. The fire was approx 100m wide and the escape area was 2 ha. The spread rate was 200m in 3 hours = 70m/hr. A bulge also appeared on the southern edge of the fire and the contained spot fire grew from 0.9ha to 3 ha.

At the end of the day, the spot fire strangely returned to its original size, the southern bulge mysteriously disappeared but the eastern tongue remained intact. Thus, contrary to the 2.30pm map, the fire area and perimeter were virtually unchanged from the morning. Was this a genuine mapping mistake or a staged ploy by Colac HQ to win the argument for burning?

4 Deduced fire suppression response

This section uses information from primary and secondary sources as references to re-create actual fire suppression response on Day 3

4.1 Fire Control Plan

At the end of Day 2, the deadline for containment was 10pm on Day 3. The reported fire control plan was to a construct mineral earth line around the fire and then black out, mop up and patrol. It is possible that the urgency of this deadline led to a huge increase in fire ground resources on Day 3.

However the morning's deferral of the deadline to Day 4 and the afternoon's deferral to Day 6 are inexplicable because they undermined the importance and urgency of rapid containment. Tragically, containment and substantial blacking out was achievable by midnight Day 3 due to the vast increase in the today's allocated resources.

4.2 Resources allocated and work done on the ground

Despite descriptions of work done on the fire ground and the increased number of resources, the work done as reported by Sit Reps and conformed by IGEM was effectively zero because it made no measurable progress toward the fire control plan's goal. At the start of the day, two km of control line was constructed and at the end of the day, 2km of control line was constructed. If resources worked on blacking out sections of the gully barriers, the length blacked out was not reported.

The only reported work done was 0.2km of access track towards the escaped tongue.

5 Assess Effectiveness of suppression response

The professional assesses effectiveness by degree of achievement of each fire control plan.

Explanation: Because forest fire suppression is a perimeter exercise, a useful quantifiable indicator of fire control success is a measure of control line to total perimeter. To qualify as an effective control line in a forest fire, several sequential steps have to be ticked off as follows:

Construct containment line to bare earth around fire perimeter → secure containment line against flame spread → prevent fire edge generating short distance spot overs by deep blacking out → continue to patrol the control line diligently with adequate resources to catch flame escapes and spot overs while small.

This is classical Best Practice dry fire fighting in forest.

Success depends on stopping spot fire escapes while small.

If any steps fail. The spot fire will escape, and the cycle has to restart at step 1.

5.1 How effective were Incident Controller's plans and actions in achieving his suppression goals?

Four different fire control plans on Day 3

Four different fire control plans were declared for this day. This is not Best Practice forest fire suppression.

Fortunately for this analysis, their substance was similar, ie, suppression by direct attack and X km of control line to be built by 10pm on Day Y.

The first was declared at 7.40pm on Day 2, where X = 4km and Y = 3.

Later that evening, the fire's area was updated from 65 ha to 86ha. Presumably this was the catalyst to change the fire control plan at 11.03am on Day 3.

The second was declared at 7.40pm on Day 2, where X = 5km and Y = 4.

This plan stood until 3.26pm when the fire's area was said to be 102ha.

The third was declared at 7.40pm on Day 3, where X = 7km and Y = 6.

When this area was later found to be over inflated, the plan was changed slightly again.

The fourth was declared at 8.31pm on Day 3, where X = 6km and Y = 6.

The changes were pedantic and unnecessary and if anything, indicated a sense of confusion or panic or inexperience or conflict at leadership level.

Fortunately, the amendments did not change the number of resources on the fire ground, nor their purpose for the day.

Unfortunately, they had no impact on increasing the defensive work done on the fire line as Section 4.2 shows.

They can be analysed as a group.

Were these plans appropriate (compared to Best Practice) and did resource allocation allow achievement of plans?

Plans were inappropriate: The nominal strategy of direct attack was appropriate but the progressive weakening of resolve by extending their deadline undermined its value. The extension of deadlines for achievement was inappropriate because it sent the message that urgent containment was no longer required. This message belies the urgency that a severe weather was due on Day 7.

The plans revealed they did not understand what containment meant. To contain a forest fire is to stop its spread with a track or a fuel free barrier so that the next and most important step is taken – black out the edge and prevent ember or flame escape. This step takes longer than containment. By deferring containment to Day 6 does not give enough time to make the fire edge safe before Day 7.

Resource allocation allowed achievement of plans: The Sit Reps stated that 70 people were on the fire ground, but IGEM stated that 30 of these were in Colac HQ. Who would know really?

If we assume that 70 were on line and using Figure 7 as a basis, the dozers on site could have constructed the 1 – 1.5km of needed control line and the 72 fire fighters and aerial craft could have made a solid start to deep blacking out of the entire perimeter today, constructed track and natural non-flammable barriers.

To what extent were these fire control plans achieved?

Not at all.

There was no measurable progress toward the fire control plan's goal.

At the start of the day, two km of control line was constructed and at the end of the day, 2km of control line was constructed.

5.2 Comparison of Incident Controller's performance with Best Practice plans and actions

A reasonable process for effective planning and resourcing requires the known scenario and possible escape scenarios to be addressed. Departure from this process can now be identified.

Known scenario The known perimeter of the going fire was static over the next few days at approx 7 - 8 km.

Escape scenario Not identified or enunciated, but three days of mild weather is ahead, meaning escape from blacked out boundaries is preventable by good management

Situation

Figure 8 shows Best Practice forest fire suppression scenario for Day 3

The western and northern sides have 1.8 km of control line.

Jamieson Creek and other gullies are natural flame spread barriers, total length 4 - 5 km, Requisite new control line approx 1 km

Fall back control line is Jamieson Track = 4 km

Three days of mild weather ahead allows ample time for complete blackout and mop up before next severe weather on Friday.

Best Practice plan for Day 3

Build 1 km of new control line Method = dozer track and hand trail

Then, secure and patrol with many extra resources

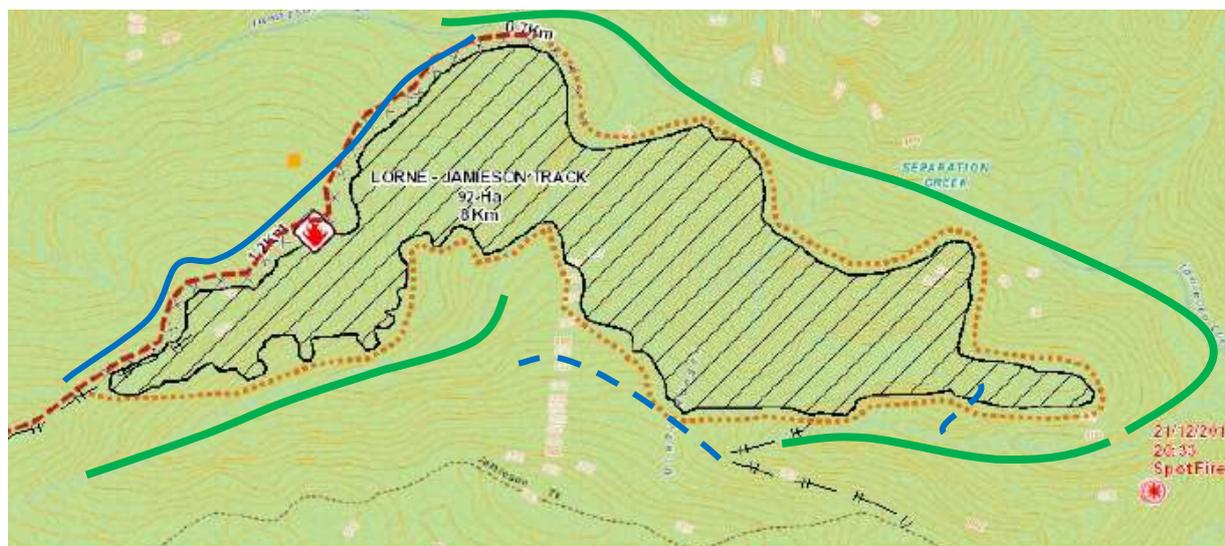


Figure 8 (reproduced) Best Practice fire control plan for Day 3.
 Solid blue line is established control line to be blacked out and patrolled
 Dashed blue line is control line yet to be constructed and then blacked out and patrolled
 Green line is wet control line (= non flammable gully barrier), yet to be blacked out and patrolled

Actual plan:

Nominally, build containment line, secure and patrol by various dates

Verdict **Fail** – constant deferral of deadline in mild weather was not explained

Indicative resourcing

Minimum resources required: Current dozer fleet on site plus one crew of 6 fire fighters to black out and patrol each 500m = 12 crews of 6 fire fighters on the ground.

1 helicopter with infrared and one for precision water bombing.

Actual resources allocated 4 dozers, 12 crews of 6 firefighters, aircraft

Verdict **Success** – healthy numbers of resources were deployed

Outcome that could have been achieved by midnight Day 3

Of total perimeter = 7 - 8 km:

Control line constructed = 3 km (estimated)

Live perimeter yet to be tracked = 0 km

Live perimeter with natural non-flammable barrier yet to be patrolled for hot spots = 0 km

Outcome achieved by midnight: Unchanged since yesterday

Verdict **Fail** – zero extra work was reported on the fire ground since 3pm on Day 2

Overall Verdict Rating against Best Practice was 0 / 10

5.3 Conclusion

Headline: **Suppression response was zero on Day 3 - zero reported defensive work was done on the perimeter despite large numbers of fire fighters and equipment on-site.**

Resource numbers on-site had the potential to achieve effective suppression, but produced no measurable progress

Days 4, 5 and 6 12.01 am Day 4 (22/12) to Midnight Day 6 (24 / 12)

Summary of Day 4 Mild weather

What should have happened according to Best Practice forest fire suppression principles:

Being faithful to the fire control plan objective of containment by 10pm on Day 6, the fire leader would complete the 1 km control line to fully contain the now stationary and placid fire perimeter and ensured adequate aerial and ground resources are on site to black out the constructed line and the wet line well before the Day 6 deadline.

The fire escape from the southern edge that ran up to Jamieson Track between 9 and 10am would not have happened if the 1 km control line had been installed and was patrolled. The flanks of the narrow (50m wide) tongue would have been contained by rakehoe lines before midday, but with the new burn-out strategy immanent, they watched it expand to 500m wide by 1pm.

The direct attack strategy was superseded by the burn out strategy. The burn out strategy was unnecessary and ill-advised for this fire and broke the rules of Best Practice forest fire suppression principles.

What happened:

Resources 80 fire fighters were deployed in early morning to Jamieson Track specifically for back burning. They had to wait for approval from Melbourne HQ, which occurred around 1pm.

Meanwhile, between 9 and 10am, a 50m wide fire tongue escaped from the southern edge of the fire where the yet-to-be-constructed control line should have been. It ran almost up to Jamieson Track and stopped. No suppression action was taken to prevent lateral expansion of its east and west flanks, so that by 1pm, it had spread 0.5km along the Jamieson Track fall back line.

At 2.26pm, fire control plan #9 was all about back burning - build 6km of control line by burning out, contain by 10 pm Day 8. The Sit Rep note included this reference to wet lines.

“Burning operations approved and about to commence. Resource levels increased to facilitate burning operations including aircraft to assist with suppression as required. Reliance on wet fuels and Jamieson Creek to the north due to terrain and difficult access issues”

Their aim was to prevent spread of original fire with a burnt out area.

Consequences:

Yesterday’s achievement failure caused today’s problem.

Today’s achievement failure becomes tomorrow’s problem.

Midnight summary of fire status: CONTAINED (technically)

Fire area 180 ha, perimeter 11.5km.

Plan was to contain fire by 6pm Day 8. Again, they misunderstood the meaning of “contain” the fire. Their Plan really meant to contain the fire’s spread with a burnt-out area ASAP and to black it out by 6pm Day 8.

Performance rating against Best Practice forest fire suppression: 0 / 10

The back burn strategy was the wrong choice for this fire. Their intention was to stop the spread of the original fire with a burnt-out area, but they should have continued their direct attack works. Instead, they chose a higher cost, higher risk strategy for no good reason, although it did resolve an argument.

Summary of Day 5 and 6 Mild weather

What should have happened according to Best Practice forest fire suppression principles:

The new goal for Days 4, 5 and 6 was to do a good back burn, and daily progress was assessed against that goal.

In reality, there were two goals in the collective mind of the control team - the immediate fire control plan and the underlying plan

- The immediate goal was to do a successful back burn
- The underlying goal was that the back burn will prevent the original fire escaping through the backburn area

According to Best Practice forest fire suppression, application of a burning-out strategy has at least three main objectives, the fire must not be allowed to escape when conducting the burn, it must be blacked out for sufficient width to prevent short distance ember escapes in future windy weather, and it must not escape across the control line on subsequent hot windy days.

Best Practice in this fire requires urgent planning, preparation and resourcing to achieve these two goals in the hot windy weather of Day 7.

- Prevent fire escape from the Jamieson Track control line
- Protect and defend the towns if the control line breached

An example of Best Practice analysis, preparation and resourcing is given in Section 5.2. This fire calls for a specialist team of over 200 highly trained and coordinated rapid responders and aircraft to be on site all day, and comments that such a team does not exist in Victoria. If the approvers of the back burn had considered appropriate things, they would have known such a team does not exist and would have dismissed the back burn request as rubbish, saying – lock this fire up small and strengthen Jamieson Track as a fall back.

What happened:

Back burning and blacking out continued.

They believed their task (repeated by IGEM) was to prevent the original fire escaping with the burnt-out area, the implication being the back burn was not an escape risk.

In regard to preventing a breach across Jamieson Track, they dealt with it cursorily with their strong belief, now all but enshrined in government policy (see Addendum), that the back burn will not escape.

But they had a bet each way. They dealt with the town protection issue by planning town evacuations to protect the people, but there were no defence plans to protect the houses.

Consequences

The IGEM supported the Day 4 back burn decision saying the 1000 hotspots in the original fire area were an escape danger. Now on the eve of Day 7, the original fire was bereft of hot spots and there were many thousands of hotspots 300 m deep along all four kilometres of Jamieson Track, and there had been no serious planning to prevent an escape or prepare for consequences of an escape.

Midnight summary of fire status: CONTAINED (technically)

At midnight on Day 6, fire area 271 ha, perimeter 14km.

Plan was to contain fire by 6pm on Day 8. Again, they misunderstood the meaning of “contain” the fire. Their Plan really meant to black it out by 6pm Day 8 because it was already contained.

Performance rating against Best Practice forest fire suppression: 0 / 10

There was no serious planning and preparations to prevent breaching of the Jamieson Track control line. Over the following weeks, the IGEM and EMC and Ministers would have us believe that the back burn’s job was to prevent the original fire escaping, and that the back burn itself could not escape. Perhaps, the Control team also believed this.

Days 4, 5 and 6 12.01 am Day 4 (22/12) to Midnight Day 6 (24 / 12)

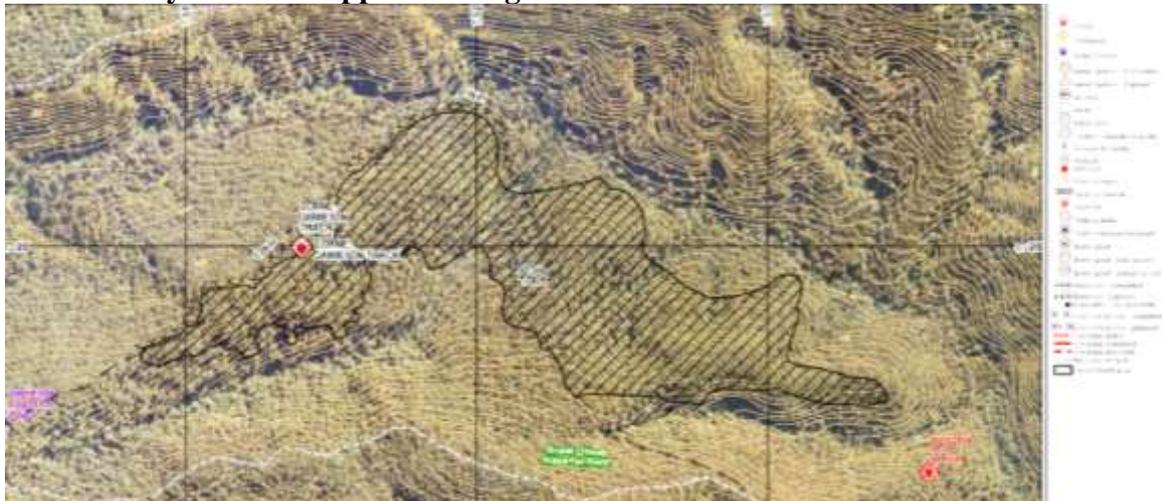
1 What the Primary Sources reported at the time of the fire

1.1 Fire behaviour related aspects

A Fire Behaviour

The authorities' understanding of fire behaviour is best shown by the maps they produced and the source data they used, in particular, the line scans they organised.

8.58 am Day 4 Mapped fire edge



DELWP Map 11 Observation date 8.58am Day 4, 22 Dec 2015

Map produced @ 9 – 10am Day 2 22 Dec 2015

Map title Situation Overview 09.00 22/12/2015

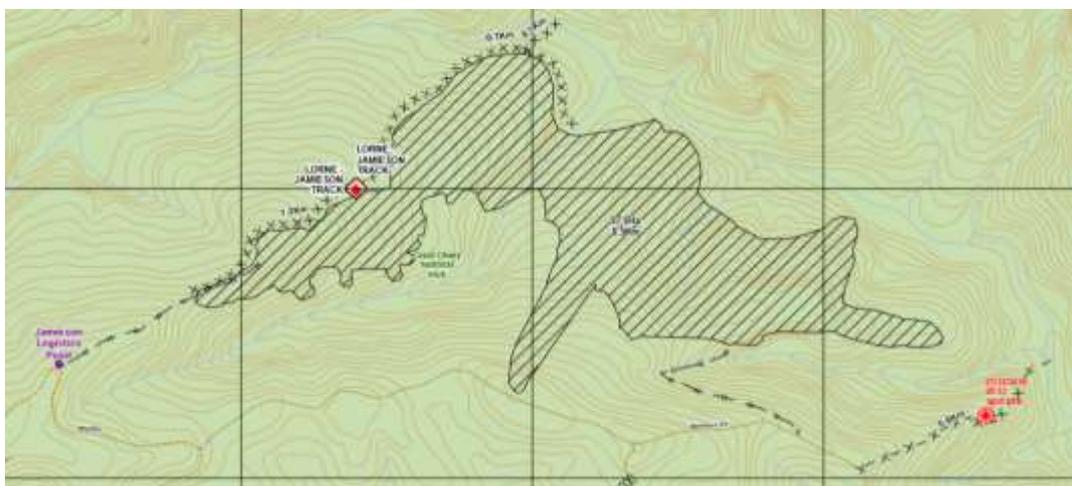
Notation on map: 92 ha, 7.7 km perimeter

|| --- || ---||
X X X X

means “machine out-track” = dozer track
means completed control line

10am Day 4 Mapped fire edge

Fire escaped between 9 and 10am, ran upslope and stopped at Jamieson Track.



DELWP Map 12 Observation date 10am Day 4, 22 Dec 2015

Map produced @ 10.20am Day 2 22 Dec 2015

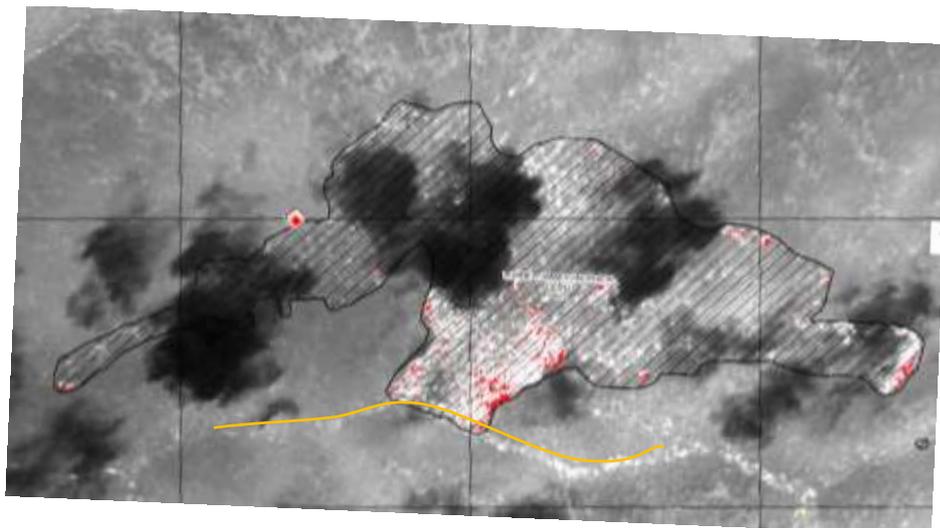
Map title Jamieson Track Situation Overview 22/12/2015 10.30

Notation on map: 99 ha, 8.5 km perimeter

|| --- || ---|| means “machine out-track” = dozer track
X - X - X - X means planned control line
X X X X means completed control line

1.55 pm Day 4 Line scan

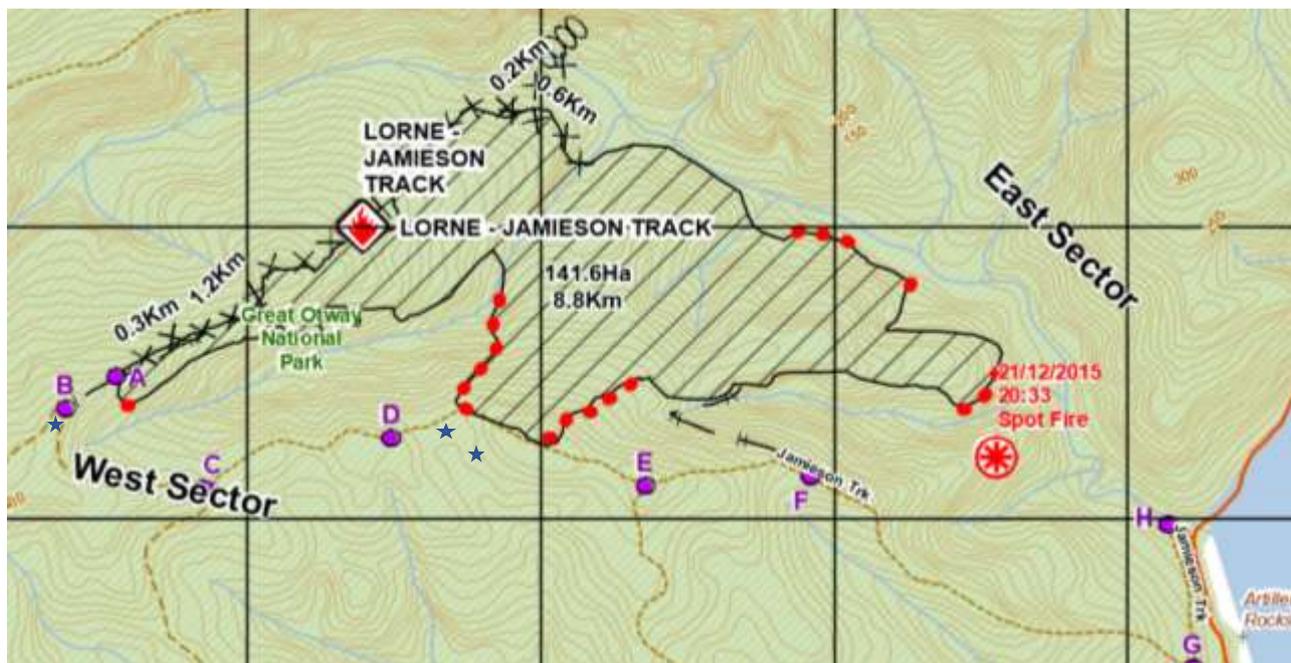
Escaped tongue in Map 10 was allowed to expand laterally both sides without suppression.



DELWP Map 13 Observation date **1.55pm Day 4, 22 Dec 2015**

Map produced @ 2.47pm Day 2 22 Dec 2015
 Map title Jamieson Track Line scan 22/12/2015 13.55
 Notation on map: 141 ha, 9 km perimeter

4.29 pm Day 4 Mapped fire edge

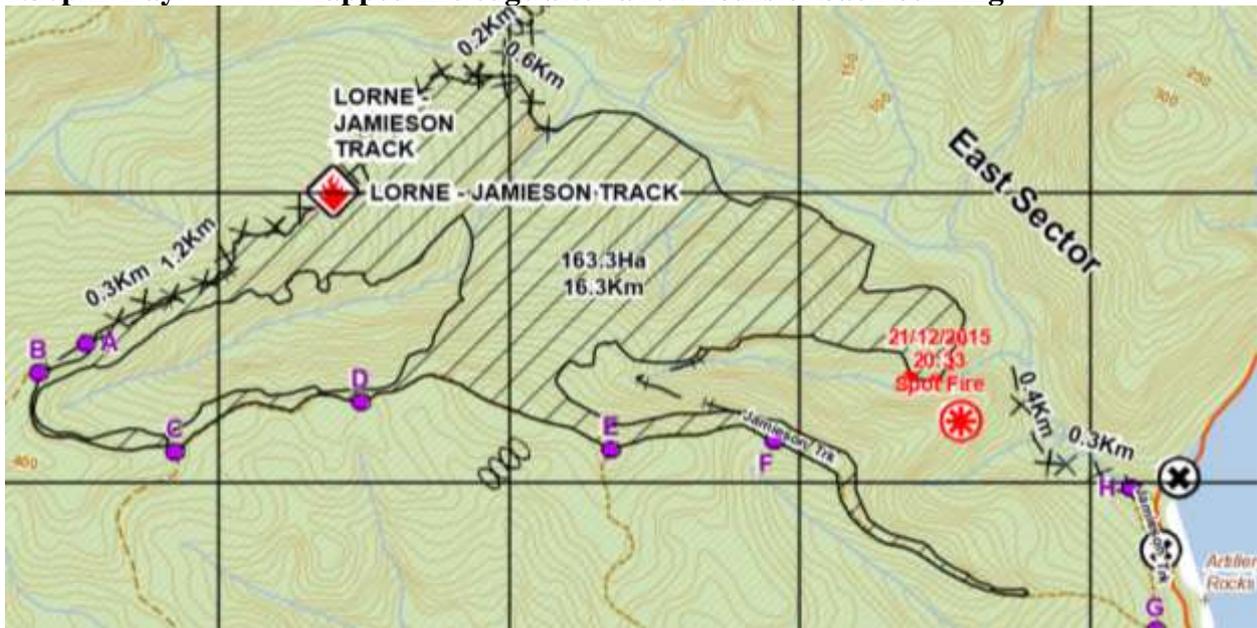


DELWP Map 14 Observation date **4pm Day 4, 22 Dec 2015**

Map produced @ 4.29pm Day 2 22 Dec 2015
 Map title Jamieson Track Situation Overview 22/12/2015 16.28
 Notation on map: 141 ha, 8.8 km perimeter

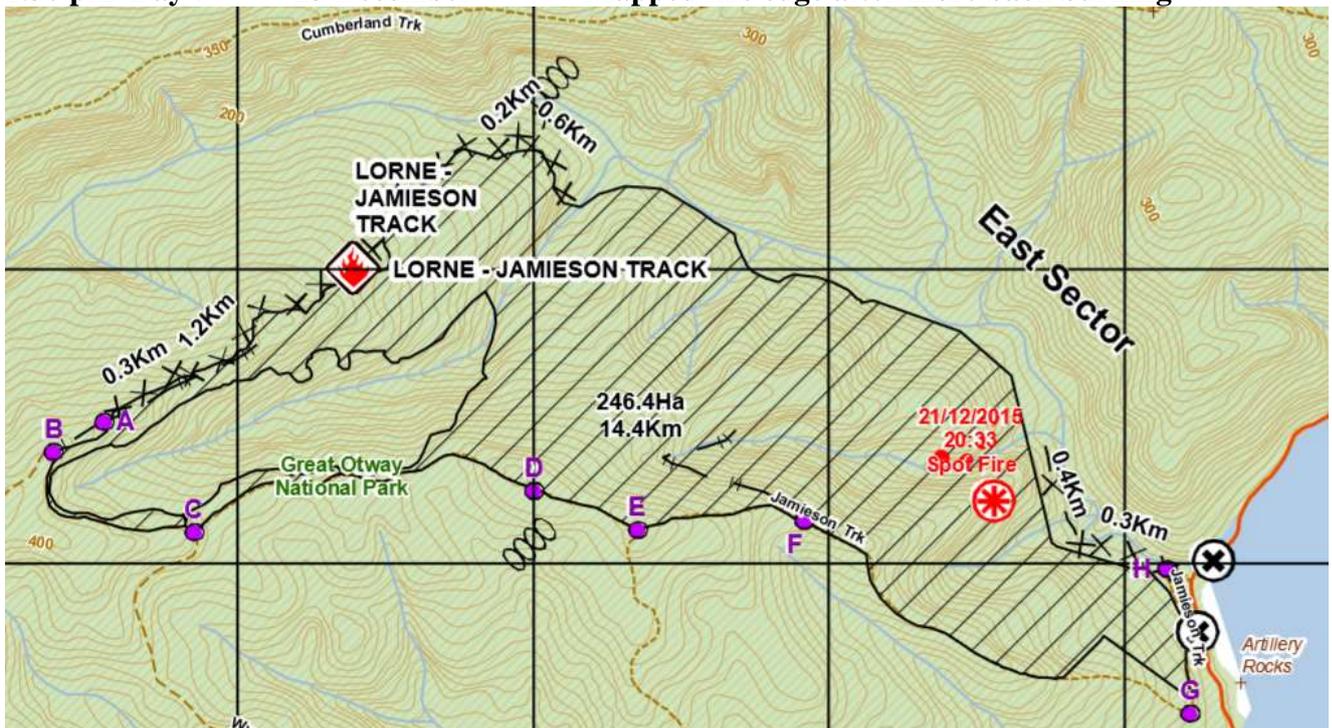
|| --- || ----|| means "machine out-track" = dozer track
 X X X X means completed control line

7.30pm Day 4 Mapped fire edge after a few hours of back burning



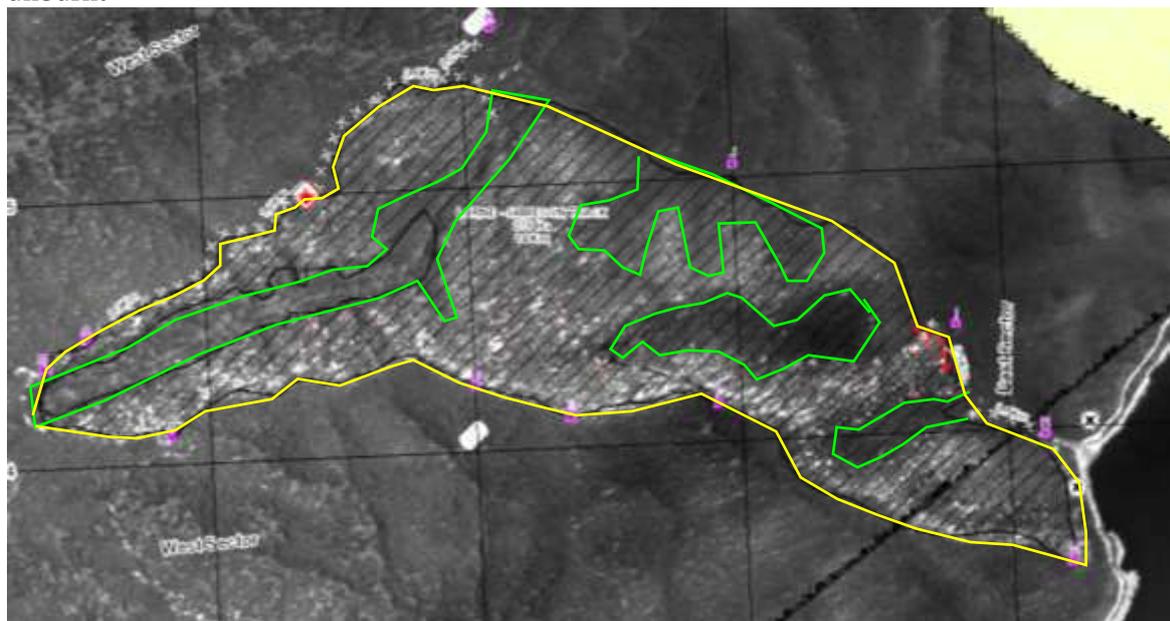
DELWP Map 15 Observation date **7.30pm Day 4, 22 Dec 2015**
 Map produced @ 7.30pm Day 2 22 Dec 2015
 Map title Jamieson Track Situation Overview 22/12/2015 20.15
 Notation on map: 163 ha, 16.3 km perimeter
 || --- || ---|| means “machine out-track” = dozer track
 X X X X means completed control line

1.30 pm Day 5 23 December Mapped fire edge after more back burning



DELWP Map 16 Observation date **1.30pm Day 5, 23 Dec 2015**
 Map produced @ 3.31pm Day 2 23 Dec 2015
 Map title Jamieson Track Situation Overview 23/12/2015 15.30
 Notation on map: 246 ha, 14.4 km perimeter
 || --- || ---|| means “machine out-track” = dozer track X X X X means completed control line

10.30 am Day 6 24 December Line scan after third day of back burn strategy
 Some areas resisted attempts to burn. Deep sheltered gullies and sheltered slopes remain unburnt



DELWP Map 17 Observation date **10.30am Day 6, 24 Dec 2015**

Map produced @ 12.17pm Day 6 24 Dec 2015
 Map title Lorne Jamieson Track Line scan 24/12/2015 10.30
 Notation on map: 278 ha, 14 km perimeter

Green outlines the non-flammable areas that resisted ignition by the original fire and the back burn

|| --- || ---|| means "machine out-track" = dozer track
 X X X X means completed control line

Summary of fire behaviour notes from Sit Reps:

Sit Rep 2.26pm Day 4	Area = 141 ha, perimeter = 8 km, control line built = 2 km
Sit Rep 5.55pm Day 4	Area = 180 ha, perimeter = 11.5 km, control line built = 2 km
Sit Rep 10.55pm Day 5	Area = 246 ha, perimeter = 14 km, control line built = 14 km
Sit Rep 10.49pm Day 6	Area = 271 ha, perimeter = 14 km, control line built = 13 km

Comment: The reported figures are strategically meaningless because the area bound by Jamieson Track, Wye Road, western perimeter track and Jamieson Creek had become the perimeter of the expanded fire.

Tomorrow's Northerly will put the focus squarely on the one control line across which spot fire ignition downwind must be prevented, ie, the 4 km length of Jamieson Track and Wye Road.

B Weather

Weather notes from Sit Reps

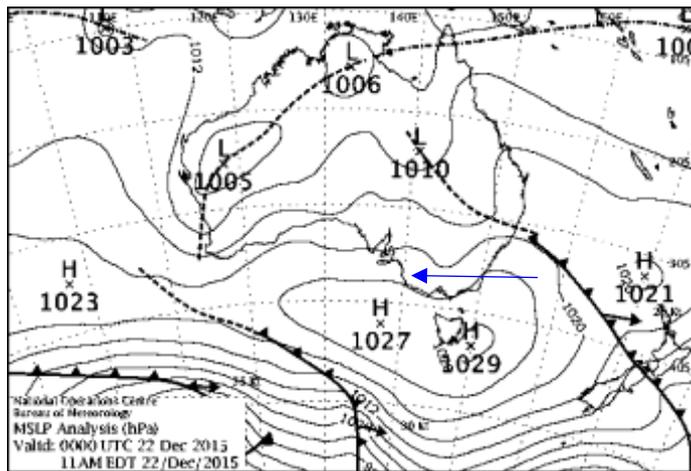
All Sit Reps said "High" spread potential, yet the weather was very mild.

Sit Reps 2.26pm and 5.55pm said winds from ESE, 0 – 9 kph, FDI 3

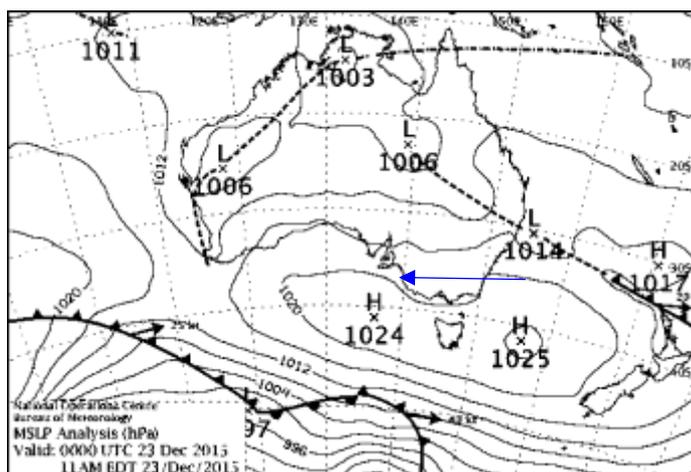
Weather and winds will continue to be favourable for burning into tomorrow

Bureau of Meteorology

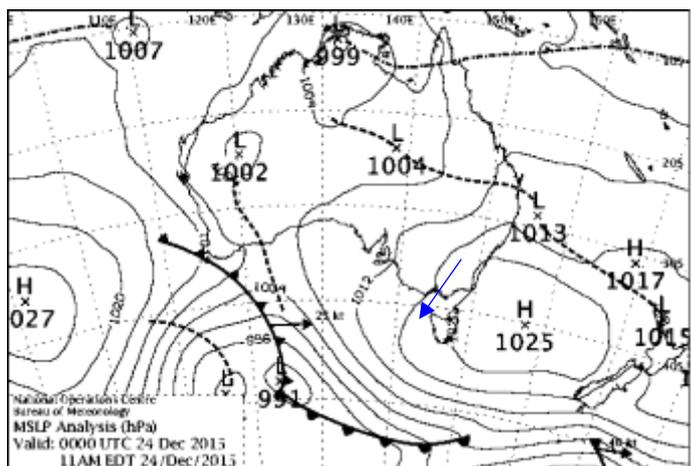
BOM weather chart shows light Easterly winds (blue arrow) over the fire ground for Days 4 and 5 and light Northerlies to NE on Day 6.



Day 4, 11am



Day 5, 11am



Day 6, 11am

1.2 Fire suppression response (Primary sources)

ISP prepared 7am on 22/12 Day 4 for 22/12/18 Day 4

[Note: This is the day shift plan.]

Jamieson Tk fire Helitak and LATS have attacked the fire. And dozer lines are being constructed. New dozer track 1.5 km long has been built from Jamieson Tk
Fire size 102 ha

Burning out operations Jamieson Tk has been split into east and west sectors. After extensive options analysis, State approval was sought to undertake burning out operations. Appropriate resourcing has been placed and crews are ready to commence burning out operations along 5.5 km of line

Objective ***Contain fire by 10pm on Day 6 (24 Dec)***, commence burning out operations along 5.5km of line, patrol and black out.

Resources 41 fire fighters along Jamieson West, 40 firefighters along Jamieson East. 3 dozers, shift times, 8.30 am to 8.30pm

Crews to be briefed before going on line

Later 20 CFA fire fighters

Delaneys Road fire Fire = 6ha

Objective under control by 8pm on Day 4 (22 Dec)

Resources 21 fire fighters, 1 dozer

Total on fire line, both fires 126 personnel, 54 SOU, 9 tankers,

Aircraft based at Gerangamete airbase = 3 – 1 spotter aircraft, 2 helitak

Comment: The ISP makes it clear that the Jamieson fire ground was being resourced-up from early morning with plans to do the burning operations, but they had to wait for approval from Melbourne HQ. Extra resourcing was pre-approved and pre-provided via Melbourne HQ, meaning it was agreed to during previous afternoon or evening = 21/12, Day 3.

Ominously, this ISP listed for the first time that assets at risk included the townships of Separation Creek, Wye River, Kennett River and Lorne. Each subsequent ISP listed them.

Sit Rep 2.26 pm Day 4

Fire escaped upslope to Jamieson Track. Detailed options analysis developed. Melbourne HQ briefed on preferred option of back burning on southern and south east sides of fire.

Fire Control Plan changed: Back burn strategy - Construct burnt edge, mop up and patrol.

Fire to be contained by 6pm on Day 8 (26 Dec).

Line to be built = 6 km.

Resources on line Day 4: 113 P, 56 SOU, 6 D, 0 FW, 3 H

“Burning operations approved and about to commence. Resource levels increased to facilitate burning operations including aircraft to assist with suppression as required

Reliance on wet fuels and Jamieson Creek to the north due to terrain and difficult access issues

Drier fuels on northerly aspect abutting Wye Road and Jamieson Track

Consequence of failure is a much larger fire and potential threat to assets longer term”.

Comment: The blue highlighted comment was understood by the Age reporters (see Addendum) to suggest the controller was putting these towns at risk by back burning.

The next map shows the proposed burn out area in red outline was south of the Day 2 escaped fire perimeter. It must have been drafted after the Map 12 escaped tongue and before the Map 13 line scan. The control line to the north was the Jamieson Creek wet line.



DELWP Map, KMZ File “Lorne Jamieson Track Proposed Burn 20151222”, overlain with location of knob and fire origin 4.10pm.

Comments

1 Perhaps the original intention for the backburn was to contain the spread of the fire to the south, presumably because control lines had been unable to do so far. Two ISP’s mention the strategy was to burn out in areas south and south east “of the fire out to Wye Rd and Jamieson Track”

There was some evidence of internal concern about failure of the back-burn strategy in the blue highlighted comment above. Failure was never defined in the Sit Reps. It could be interpreted as the original fire breaking through the back-burn area or the back burn itself escaping. Technically, the difference is irrelevant because the outcome is the same - spot fires escape and run southwards. Best Practice professionals would have considered consequences of and prevention of both options.

The IGEM’s interpretation of the “back burn failure” comment was steadfastly the former: *if the back-burn failed to contain the fire, the outcome would be a much larger fire and potential threat to assets over the longer term.*

Although the distinction is puerile, and although the onus on the back burner is to prevent its escape, the IGEM remained consistent with his comments in the Interim Report, ie, that the original fire escaped and that the back burn cannot be blamed for the escape.

Presumably, the authorities envisaged that if the back-burn strategy failed, it would be because the original fire escaped through the back-burn area. As we see in ADDENDUM, the concept that the back burn itself could escape was not acceptable to the authorities, and it appears to be a government policy position. The IGEM, the EMC and Ministers vehemently denied accusations that the back-burn’s escape was the cause of the destruction of Separation Creek and Wye River.

INSET

The underlying belief of the leadership was that a successful backburn will prevent the fire escaping.

The devil’s advocate may ask:

What fire are they wanting to stop?

The original fire. The original fire that sent a tongue of flame up to Jamieson Track on Day 4.

But it stopped at Jamieson Track and no other escapes occurred from the original fire.

They would have escaped in Friday’s weather, and the back burn has now removed the fuel, making sure none escape.

That is true, but the hot spot density in the back-burn area on Friday (Day 7) (see Figure 9) resembles the hot spot density in the original fire area on Day 4, meaning you have moved the hot spots from the sheltered slopes to the exposed slopes along Jamieson Track ridgetop.

We know what we are doing, the leadership would say.

Government policy or not, subsequent evidence in this report shows the whole western half of the backburn escaped from its control line after abandonment, and this led to the destruction in Separation Creek and Wye River.

2 Note the change in deadline for containment was now Day 8, Boxing Day. If the “Best Practice” definition of containment was understood and applied, they were really saying the fire would be out of control on Christmas Day. But they did not understand definitions. Figures 7 and 8 show that the fire edge was virtually contained on Day 2 and 3 using a combination of constructed tracks and wet lines (= non-flammable gullies). Containment means the fire’s edge has been stopped from spreading, and the next urgent tasks are to black out the live edges to an adequate depth and patrol the edges to prevent escapes.

3 The change of strategy from [direct attack around the fire perimeter and retain Jamieson Track as a fall-back line](#) to [back burn from Jamieson Track and not prepare another fall-back line](#) was approved. It changed the fire from a moderate cost / moderate level resources / manageable risk scenario to high cost / high level resources / high risk of escape (note the highlighted comment on the Sit Rep.).

4 Ironically, instead of a leadership focus on preventing the spread of the original fire, the focus now became how well the new burn was progressing. The goal of stopping the fire’s spread by constructed control lines and wet (in-gully) lines was superseded by the goal of achieving a good back-burn. Thus the tactic became the goal, and the quality of the burn became the measure of success for the next few days.

Sit Rep 5.55pm Day 4

Fire Control Plan Back burn strategy - Construct burnt edge along the currently uncontained fire, mop up and patrol.

Fire to be contained by 6pm on Day 8 (26 Dec).

Line to be built = 6 km.

Resources on line: 176 P, 78 SOU, 8 D, 0 FW, 3 H plus 20 CFA firefighters

“Fall-back lines have been assessed by ground crews and works being scheduled”

“Burning operations progressing well. Flame heights 1 – 1.5m. Good backing fires.

Sectors A to B depth 30m, B to C 10m depth, East sector 50m depth”

Comment Note the reference to fall back lines which never eventuated.

Note that performance reporting has changed to how well the back burn is progressing.

ISP prepared 5.30pm on 22/12 Day 4 for 22/12/18 Day 4

[Note: This is the swing shift plan = evening / night shift].]

Jamieson Tk fire Crews commenced burning out at 2pm today and will continue overnight

Fire size 141 ha

Objective ***Contain fire by 6pm on Day 8 (26 Dec),***

Resources DELWP 44 fire fighters along Jamieson West, 68 firefighters along Jamieson East. 4 dozers

Resources CFA 24

Delaneys Road fire Fire = 6ha

Objective under control by 8pm on Day 4 (22 Dec)

Resources 10 fire fighters, 1 dozer

Total on fire line, both fires 176 personnel, 61 SOU, 17 tankers,
Aircraft based at Gerangamete airbase = 3 – 1 spotter aircraft, 2 helitak

ISP prepared 00.08am on 23/12 Day 5 for 23/12/18 Day 5

[Note: This is the day shift plan.]

Jamieson Tk fire Fire size 163 ha

Objective **Contain fire by 6pm on Day 8 (26 Dec)**, crews to monitor and patrol Jamieson Track for erratic fire activity

Resources 44 fire fighters along Jamieson West, 27 firefighters along Jamieson East, 3 dozers

Delaneys Road fire Fire size 13ha

Objective under control by 10pm on Day 7 (25 Dec)

Resources 15 fire fighters, 2 dozer

Total on fire line, both fires 86 personnel, 22 SOU, 6 tankers,
Aircraft based at Gerangamete airbase = 4 – 2 spotter aircraft, 2 helitak

Sit Reps Day 5

Resources on line: 70 P, 27 SOU, 8 D, 0 FW, 3 H

Evacuation planning has been undertaken for local communities

ISP prepared 7.05pm on 23/12 Day 5 for 23/12/18 Day 5

[Note: This is the swing shift plan = 4pm to 2am, 7pm to 7am)

Jamieson Tk fire Fire size 163 ha

Objective **Contain fire by 6pm on Day 8 (26 Dec)**,

Resources DELWP 4 fire fighters along Jamieson West, 7 firefighters along Jamieson East.

Delaneys Road fire Fire = 13ha

Objective under control by 8pm on Day 4 (22 Dec)

Resources 1 fire fighter

Total on fire line, both fires 63 personnel, includes CFA 51 fire fighters

ISP prepared 7am on 23/12 Day 6 for 24/12/18 Day 6

[Note: This is the day shift plan.]

Jamieson Tk fire Fire size 246 ha

Objective **Contain fire by 6pm on Day 8 (26 Dec)**,

“Should the fire spot out in two spaces, activate LATS

Should two loads of water on a single spot not succeed, activate LATS“

Resources 23 fire fighters along Jamieson West, 58 firefighters along Jamieson East. 1 dozer

Delaneys Road fire Fire = 10ha

Objective under control by 6pm on Day 8 (26 Dec)

Resources 22 fire fighters, 1 dozer

Total on fire line, both fires 105 personnel, 24 SOU, 9 tankers,
Aircraft based at Gerangamete airbase = 4 – 2 spotter aircraft, 2 helitak

Sit Repts Day 6

Resources on line: 81 P, 22 SOU, 4 D, 3 FW, 1 H

Evacuation planning has been undertaken for local communities

ISP prepared 5.20pm on 24/12 Day 6 for 24/12/18 Day 6

[Note: This is the swing shift plan = 4pm to 2am, 7pm to 7am)

Jamieson Tk fire Fire size 278 ha

Objective **Contain fire by 6pm on Day 8 (26 Dec),**

Resources DELWP 4 fire fighters along Jamieson West, 7 firefighters along Jamieson East.

Delaneys Road fire Fire = 9ha

Objective under control by 10pm on Day 7 (25 Dec)

Resources 1 fire fighter

Total on fire line, both fires 63 personnel, includes CFA 51 fire fighters

Comment Note the instruction highlighted in red. It is a reasonable response to escaping spot fires in mild weather. Activating the LATS has a lead time of at least a half hour, depending where they are based, and assuming immediate availability.

EMV Media Releases

POSTED: 22 December 2015

Jamieson Track fire is located north of Jamieson track in the Great Otway National Park, 8kms west of Lorne. Fire ignition was due to a lightning strike on Saturday 19 December 2015. The fire has burned approximately 104 hectares.

Firefighters continue to work on the fire to construct a fire break. Favourable weather conditions over the next few days will assist fire-fighting activities; expected high danger fire weather later in the week is of concern.

Delaney's Road fire is located South of Delaney's Road and Callahan Falls within the Barwon Downs area in the Great Otway National Park, 12 kms north of Lorne. Fire ignition was due to a lightning strike on Saturday 19 December 2015. The fire has burned approximately 6ha hectares.

Currently there are a total of 94 personnel, 28 firefighting appliances, 7 dozers and 4 aircraft working on both fires. Crews and Dozers will continue to black out, and will continue to monitor the fire activity for the next few days

POSTED: 23 December 2015

*Incident Controller, Alistair Drayton, said the main focus was to bring the Lorne Jamieson Track fire under control, located 8 km south west of Lorne in the Great Otway National Park, with **burning out activity** leading to increased smoke.*

"Today crews are taking advantage of milder conditions burning out an area that will strengthen containment lines and remove fuel loads within the fire perimeter before hot and windy conditions return tomorrow.

POSTED: 24 December 2015

Fire fighters continue to work around the clock on the Lorne fires ahead of hot and windy conditions expected on Christmas day.

Incident Controller, Alistair Drayton, said crews had been working tirelessly since last Saturday when the fires started due to lightning.

*"Crews have done an exceptional job on the Jamieson Track fire 8km south west of Lorne over the past few days in difficult terrain. **Our burning out operations have been very successful to strengthen containment lines.***

“We are continuing to pour resources into the job so we can bring the fire under control as quickly as possible. We have over 150 fire fighters, six aerial water bombing aircraft, seven dozers, two excavators, two water trucks, along with an Incident Management Team of 40. We will also have the two Large Air Tankers (LATs) RJ and Hercules on stand by to lend a hand tomorrow.

“I want to reassure the public this fire is being well managed, with all emergency service agencies and the local community working together,” he said.

Comment Can we take a reassurance from the Government to the bank? It is not clear which fire was well managed - the original fire or the back burn. The original fire was virtually out (see Figure 9 below) but we would have to agree that the back burn was well managed. Unfortunately, assurances about a well managed Government fire and everybody working together were not enough to prevent the tragic events of tomorrow.

2 What the authorities said after the fire (Secondary sources)

2.1 Fire behaviour related aspects

A IGEM

Fire behaviour

Day 4

IGEM stated that *during the night, the fire burnt to within 10 m of Jamieson Track.*

Comment: This contradicts DELWP’s Map 11 at 9am Day 4 where no night-time escape was recorded. A narrow tongue that ran uphill to Jamieson Track is shown on DELWP Map 12 at 10am. This suggests the escape occurred between 9 and 10am. Escape was not mentioned in Sit Reps.

IGEM said this about the back-burn: *By late 22 December, reports indicate that the back-burn was progressing well, with flame heights of 1–1.5 m.*

Weather

The IC anticipated the favourable conditions would last until the night of 23 December, providing two days for the back-burn operation. The IC was aware that temperatures were expected to increase and winds to strengthen later in the week.

Forest environment

No specific comment

B EMC

No specific comments

2.2 Fire suppression response (Secondary sources)

2.2.1 Fire control plan

A IGEM

Under *“the initial strategy of direct attack ... the fire continued to grow in size and was spotting. Construction of containment lines was slow in the difficult terrain, with reports indicating little progress between 19–22 December”.*

“As the measures to contain the fire had not proven effective the options favouring back burning were preferred”

Comment: His argument is as follows:

Strategy of direct attack required line construction to stop spread of fire perimeter

Line construction was slow in difficult terrain

Fire perimeter spread faster than line construction rate

Therefore strategy of direct attack failed to stop spread of fire and a new strategy (the back burn strategy) was required.

But that argument only holds up if (1) line construction rate cannot be increased with increased resources, or if (2) fire perimeter spread can only be stopped by line construction. Because neither of these statements is true, the IGEM’s argument in support of a new strategy has no logical basis. (1) Line construction rate can readily be increased with extra resources and (2) line construction is one of many mechanisms that prevent perimeter spread. Also see Section 6.1 below.

In this terrain, perimeter spread by flame is stopped by constructed lines and wet control lines (= high moisture gullies and sheltered slopes) and perimeter spread by embers is stopped by blacking out the hot spots along the live fire edge and stopping the spread of escaping spot fires. Thus, the IGEM’s argument in support of a new strategy was specious and not derived from independent assessment of evidence.

For example, blaming terrain for slow line construction rate between 19 and 22 December was contrary to the facts uncovered by the IGEM. He confirmed that some 2 km of control line was built on the western spur line in very steep terrain within a few hours on 20 December by two dozers and a few fire fighters, and that none was built between 20 and 22 December despite more dozers and more firefighters on site. This should have alerted him to search for reasons other than terrain and resourcing. He would have discovered, as I did, that action on site was frozen by indecision and the three-way argument between leadership levels on the fire line, in Colac HQ and in Melbourne HQ.

The IGEM report indicated acceptance of the new strategy:

The window of opportunity for back-burning was favourable. The required containment lines were in place and back-burning offered the greatest potential to reduce the risk to communities and assets.

Comment The IGEM’s statement that back burning offered greatest risk reduction potential has no basis because simply repeating what interviewees told him is no substitute for an independent assessment of what they said and did.

The reason direct attack failed to date was a compounding litany of strategic level errors that breached Best Practice forest fire suppression principles plus under-resourcing. The symptom was ever-changing fire control plans. These failures were never questioned by IGEM or noted for “learnings”. It will be seen that the fire escaped from Jamieson Track control line on Day 7 for these very same reasons.

IGEM indicated risks were addressed adequately by planning:

Incident planners had identified a much larger fire and risk to assets as the consequence of the back-burn strategy failing. Reflecting these significant consequences and their significant implications for communities, the IC initiated planning for community

engagement and safety strategies for communities to the north, and south of the fire, and for the Great Ocean Road.

*The IC was aware on 22 December that, in the context of unfavourable weather conditions on 25 December, that **if the back-burn failed to contain the fire**, the outcome would be a much larger fire and potential threat to assets over the longer term. The IC's considerations for community safety from 22 December recognised the need for community safety actions to be ready, and commensurate with these risks to communities. From 22 December planning for community engagement, traffic management, and evacuation, including resourcing, were underway, and were completed by late 23 December.*

Comment One inference is that the act of planning for failure is an adequate response to failure. This is unacceptable, because professional threat management protocol considers the consequences of failure and takes steps to mitigate each.

The IGEM's acceptance of their limited response to failure is of great concern. He accepts that a failed back burn strategy will be dealt with by "safety strategies for communities", ie, evacuations and traffic management. He makes no reference to their obvious and tragic omissions - suppression of escaping spot fires from the back-burn control line and suppression of ember attack within the evacuated towns to protect houses.

Who made the decision to back burn?

*The (SRC) **State Response Controller** made the decision at 1 pm on 22 December after a discussion via teleconference by state, regional and incident controllers that morning. The decision was then circulated to the Chief Officers of DELWP and CFA.*

Comment This is a rather interesting comment. It suggests these Fire Chiefs were not included in the decision-making process.

The Coroner quoted IGEM: *On the morning of 22 December 2015, the SCC, RC and IC conferred via a teleconference, to discuss the best way to approach the incident. The back-burning strategy which formed Option 4 was formally approved at 1.00pm on 22 December 2015 by the SRC, comprising incident, region and state levels of control.*

Comment: The inference is that the EMC was not directly involved in the decision to back burn.

Compare to this media comment:

*Mr Lapsley confirmed a controlled burn-out took place from December 22. He said the fire was in deep, inaccessible country and it could not be extinguished. **He said a decision was made by the incident controller, with support from the regional controller and himself and his team to conduct a burn-out when conditions were milder.***

Source Nick McKenzie, Richard Baker and Tammy Mills
escape The Age on line January 13, 2016 - 8:36PM

Backburn may have caused Wye River fire to
See Addendum

Here is a summary of the EMC's heavily bureaucratic structure for this fire, based on the explanation in the IGEM report. It is multi layered.

It starts with **Emergency Management Commissioner** at the top

EMC has overall responsibility for coordination before during and after major event

There is a **State Control Team** which operates out of **State Control Centre**. The SCT kept minutes.

Comment:

1 A planned fall-back line is not helpful unless it has been built before it is needed.

2 In regard to the extra resources on the fire ground today, the IGEM expressed no concerns about the huge number on line, in contrast to his earlier statement on Day 2 that *“the terrain precluded more resources being deployed”*.

3 Deduced fire behaviour

This section uses information from primary and secondary sources as references to re-create the fire's behaviour on Day 4.

Fire behaviour Day 4

At 9am, the mapped fire area on Map 11 matched the perimeter of the previous night.

The 10 am map (Map 12) showed a narrow tongue of 100m width had run up the steep slope for 500m to Jamieson Track. This shape is indicative, but as drawn, it suggests it began as a 100m wide front. It is more likely it began as a point source (perhaps a burning tree fell into a litter bed) and fanned out as it climbed the hill.

If it began at 9am, rate of spread was 0.5 kph. If it began at 9.30am, its rate of spread was 1 kph. If it began at 9.45am, its rate of spread was 2 kph. This range of moderate spread rate would be expected during Day 4's mild weather.

Its progress was halted at the fuel-free Jamieson Track verge, probably without need for active suppression. The line scan around 2pm shows that the tongue expanded laterally in both directions, probably by a similar mechanism as illustrated in the INSET (see Day 2), although much slower because there was no parallel wind to enliven the flanks.

We can estimate the lateral rate of spread was 25 to 30 m per hour. The 100m wide tongue expanded 100 to 150m in both lateral directions over 4 hours.

The lateral spread occurred in two main ways - lateral spread along the contour for the full 500m flank or individual upslope runs from the base of the slope or combination. For example, say the first tree fell and ignited the litter bed and the flame ran up slope. Its flank then spread slowly along the contour until it lit another dry patch and this new flame then ran up hill. The observer on Jamieson Track would therefore see a succession of narrow fire fronts hitting the road in turn, each one a bit further away from the previous one.

Apart from this lateral spread along Jamieson Track, there was no further escape from the fire edge on Day 4.

The path of this escaped fire would have been stopped at the base of the slope by the Best Practice control line shown in Figure 8. That section of the fire edge was manifestly the most likely to escape and the failure of the control team on Day 2 to construct a control line, black it out and patrol it was a serious omission.

The escape of this fire and its stopping at Jamieson Track highlights the value of retaining Jamieson Track as a fall-back line. Unfortunately, it remained a lesson that has not been learnt.

Hot spots The escape fire ran up slope for 500m, growing in intensity as it rose. It exposed that slope to a high intensity fire. High intensity fires burn much heavier fuel than low intensity burns and therefore generate higher hot spot density and longer lasting hot spots after the flash flame is gone. In contrast, the back burn operation was a low intensity backing fire when lit from the control line. However, there was a good chance that many aerial incendiaries that peppered the slopes ignited and ran up slope with higher intensity. This also generated higher hot spot density and longer lasting hot spots. Visual inspection of Figure 9 shows no apparent difference in hot spot density for the full length of Jamieson Track.

Fire behaviour of the original fire on Days 5 and 6

Figure 9 shows that most of the hot spots went out. They were not suppressed by the fire fighters because their full-blooded focus was on lighting up the unburnt buffer area between the original fire and Jamieson Track.

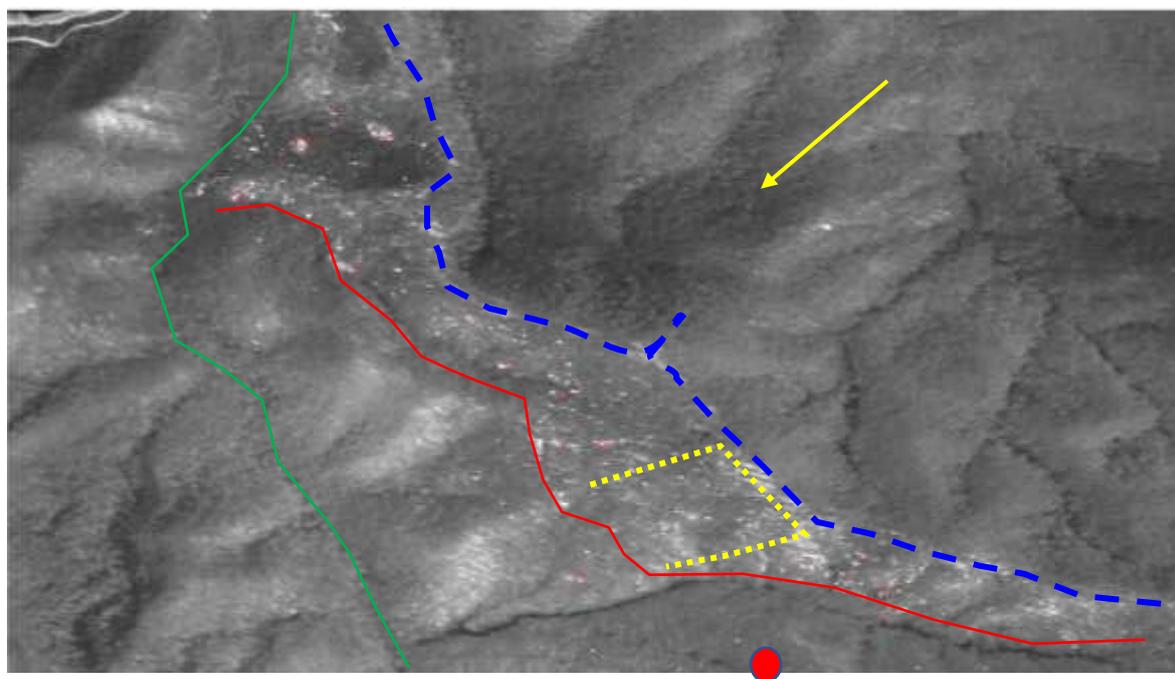


Figure 9 This line scan at 6pm on Day 6, 24 December looks from the fire origin (red dot) up the page and eastward toward the coastline. The blue dash line is Jamieson Track showing where Godfrey Track starts, and the green line is Jamieson Creek. The yellow arrow is approx North. The yellow dotted line is the approx. area burnt on morning of Day 4 (2pm line scan, Map 13) Left of the red line is the area burnt on Days 1 and 2 and on the right is the area burnt from Day 4 to Day 6.

Figure 9 indicates that in the original fire area, now five days since a moderate intensity fire in a bone-dry forest, the density of hot-spots was low whereas in the back-burn area, now one to three days after a low intensity fire in the same bone-dry forest, the density of hot spots was very high. It shows the highest density of red and white hot-spots now ran alongside the full length of Jamieson Track, surely a concerning situation for Best Practice fire fighters when a strong hot northerly wind was expected the following day.

4 Deduced fire suppression response

This section uses information from primary and secondary sources as references to re-create actual fire suppression response on Day 4

4.1 Fire Control Plan, Days 4, 5 and 6

If Map 12 is accurate, the escape on Day 4 occurred before 10am. The 2pm line scan shows that there was no will by the numerous resources on site to curtail its lateral spread. This suggests the fire ground leadership knew the change of strategy to back burn was a done deal, and this escape would save them a bit of work.

There were two plans in the collective mind of the control team - the immediate fire control plan and the underlying plan

- The immediate plan was to do a successful back burn, and this became the focus of activity on the fire ground on Days 4, 5 and 6.
- The underlying plan was that the back burn will prevent the original fire escaping through the backburn area

4.2 Resources allocated and work done on the ground

Immediate fire control plan

A large number of resources were deployed and the area was progressively burnt out between Jamieson Track and Jamieson Creek, and then blacked out along Jamieson Track and Wye Road on Days 4, 5 and 6.

The underlying fire control plan for Day 7

Because the back burn will prevent the original fire escaping, fewer resources were required for suppression on Friday, Day 7.

5 Assess Effectiveness of suppression response

The professional assesses effectiveness by degree of achievement of each fire control plan.

Explanation: Because forest fire suppression is a perimeter exercise, a useful quantifiable indicator of fire control success is a measure of control line to total perimeter. To qualify as an effective control line in a forest fire, several sequential steps have to be ticked off as follows:

Construct containment line to bare earth around fire perimeter → secure containment line against flame spread → prevent fire edge generating short distance spot overs by deep blacking out → continue to patrol the control line diligently with adequate resources to catch flame escapes and spot overs while small.

This is classical Best Practice dry fire fighting in forest.

Success depends on stopping spot fire escapes while small.

If any steps fail. The spot fire will escape, and the cycle has to restart at step 1.

5.1 How effective were Incident Controller's plans and actions in achieving his suppression objectives?

The Day 4, 5 and 6 plan was to do a successful back burn.

The inferred plan for Day 7 was that the back burn will prevent the fire escape from the original fire area

A Fire control plan for Days 4, 5 and 6 The back burn will be successful

Was this plan appropriate (compared to Best Practice) and did resource allocation allow achievement of plan?

Plan was partially appropriate:

If the plan's intention is taken as "complete the back burn and black it out to suitable depth before Christmas Day = Day 7", the plan was appropriate.

But the plan aimed for containment by December 26, Day 8. This target was inappropriate because Best Practice forest fire suppression defines containment as when the combination of built control lines, wet lines and natural barriers prevents expansion of the fire edge. The more appropriate plan would have been "containment" by end of Day 4 and full "control" (= black out in depth) by end of Day 6.

Resource allocation allowed achievement of the appropriate plan:

The Sit Reps confirmed that ample resources were provided and achieved "containment" by end of Day 4 and "control" by end of Day 6.

To what extent was the appropriate fire control plan achieved?

Mostly. If judged by its reported escapes in the hot windy weather of Day 7, it breached in only a few locations. Therefore, the quality of the back-burn effort was high. The problem was that hot spots in the back burn itself caused escapes across the Jamieson Track control line, an event that was apparently not anticipated, judging by how sparingly the defence effort was applied to prevent spotovers when most needed.

B The inferred Day 7 Plan The back burn will prevent fire escaping from the original fire area

Was this plan appropriate (compared to Best Practice) and did resource allocation allow achievement of plan?

Plan was inappropriate:

The original fire was not an escape risk on Day 6 or Day 7. It may have been an escape risk on Day 4 when it ran up to Jamieson Track, but since then, the slopes up to Jamieson Track were burnt and partially blacked out.

This underlying plan reflected the leadership's original rationale for the back burn – to prevent the original fire attacking the Jamieson Track - Wye Road control line. In their minds, there were two fires – the back burn and "the fire", meaning the original fire. The concept of two separate fires was unrealistic and indicated remarkable ignorance of forest fire behaviour and Best Practice forest fire suppression. However, the IGEM presented the original belief as still relevant on Day 6 and 7. Consider these quotes:

- *The fire control strategy adopted from 22 December involved **removal of fuel from an unburnt area by back-burning the south side of the existing fire.***
- *Reports indicate the back-burn progressed as planned, implementing the strategy of **protecting against fire spreading with northerly winds forecast for 25 December.***
- *This strategy was successful in reducing fuels and potential fire intensity (infrared mapping had previously identified 1000 hot spots in the original fire).*

- *Due to high fire danger conditions forecast for 25 December, the fire control strategy focussed on containing **the fire** within containment lines. Crews monitored **the fire** into the morning of 25 December. With the northerly wind, any fire not quickly controlled could expand and run to the south. The strategy was for aircraft to immediately attack any spotting that occurred.*
- *With the **back-burn providing protection against spread of the fire to the south**, crews prepared containment lines on the northern side*
- *Reports from 24 December indicate **the fire** was quiet throughout the day and remained within the existing containment lines. By 24 December, crews were finalising the backburn.*
- *By 10pm on 24 December, the dozer had progressed ... to a point half-way along **the fire's** northern boundary.*
- *IGEM was quoted by the Coroner: **With the back burning providing protection against the spread of the fire to the south ...***

The IGEM's heroic attempts to separate "the original fire" from the "back burn" won the hearts and support of government leaders and Ministers.

Resource allocation matched their underlying plan:

Presumably, resource allocation was based on their belief that the back burn would do its job and prevent the original fire escaping, and therefore they needed few resources.

To what extent was this fire control plan achieved?

Fully. There were no escapes from the original fire area into the backburn area.

C1 The missing fire control plan for Day 7

Prevent the back-burn escaping across Jamieson Track and Wye Road during the northerly wind phase

C2 The missing back up fire control plan

If the back-burn escaped across Jamieson Track and Wye Road during the northerly wind phase, prevent life and house loss in Separation Creek and Wye River

They should have developed a separate plan to deal with each contingency, but no such planning was done. This omission was irresponsible.

Despite strident government denials of the back-burn escaping, Colac HQ as early as Day 4, considered a fire could escape and run to the towns. Yet they did no serious planning to stop the escaping spot fires when small. Nor did they do serious planning to assess the type of attack the towns would suffer or how to defend against it. Instead, they planned evacuations and traffic control.

In regard to C1, failing to plan for suppression of escaped spot fires south of the control line indicated they foolishly believed a good back burn will not escape. They grossly underestimated the chance of escape and the consequences of not preparing to stop the spot fires when small. They grossly underestimated the resources they would need. See 5.2 below.

In regard to C2, reasonable understanding of forest fire behaviour would have informed them that the running flame would stop at the town edge and the bushfire attack would be embers, probably sporadic, but possibly a mass ember attack. Reasonable understanding of forest fire

suppression would have told them that protecting houses against ember attack and small spot fires requires a tanker for every 2 to 3 houses or less if assisted by defending residents. So, three hundred houses would require 100 tankers at least.

Instead, the extent of their planning for community protection was evacuation and traffic management. It can be paraphrased as – if spotting crosses the control line, we will not catch the spot fires on their way to the unprotected towns, so we will have to evacuate the towns.

Section 5.2 indicates how Best Practice principles could have been applied to prevent a breach of the Jamieson Track control line.

5.2 Comparison of Incident Controller’s performance with Best Practice plans and actions

Unlike analysis of other Days, Day 7 has no documented suppression record that can be assessed against Best Practice. Therefore, this section applies to Best Practice planning for suppression, ie, **to prevent breach of the Jamieson Track control line**.

It can be noted that no matter how comprehensive and laudable the IGEM regarded the decision making process, none of the considerations below was documented or referred to by Colac HQ, Melbourne HQ or IGEM or Coroner.

A reasonable process for effective planning and resourcing requires the known scenario and possible escape scenarios to be addressed. Departure from this process can now be identified.

<i>Known scenario</i>	The northerlies on Day 7 would enliven hot spots in the back burn area and make the whole 4 km control line vulnerable to spot overs.
<i>Escape scenario</i>	Not identified or enunciated. Spot fires that ignited south of the control line were the major threat. No fall back control line was prepared.

Situation The Jamieson Tk – Wye Rd control line has no fine fuel along its northern verge because presumably, it had been blacked out for at least 50m depth (meaning no running flame can reach the road). As a refuge for fire fighters, it would therefore be very safe. The control line is on a prominent E – W ridge line perpendicular to tomorrow’s wind flow, which will generate an uplift of air flow over it and low air pressure cells above it, both of which will stimulate ember generation.

Lowest wind speed will be at the base of the slope and the highest wind speed will occur at the control line, with channelling through the saddles.

High wind speeds will enliven hot spots on the entire hot spot hill side (see Figure 11) and ember throw will be up to 200+m down wind. This means many will cross the 50m blacked out verge. Most will fall into southern sheltered slopes, but Figures 10 and 11 show there are a few exposed drier areas just south of the control line where spot fires will run with the wind before reaching a steep downslope. These are the highest vulnerability areas for the fire fighter, and spot fires within them must be stopped rapidly.

Vulnerable areas: If these areas have not been prepared to provide vehicle access and fuel bed discontinuity, spot fires will take hold in these areas and run with the strong wind. They will generate many embers and throw them from elevated hilltops, meaning longer distances.

Change of wind direction will enliven hot spots and generate a new flush of embers in a different direction.

Fortunately, large areas between Jamieson Track and the southern towns are non-flammable or low flammability forests that can be used as wet control lines.

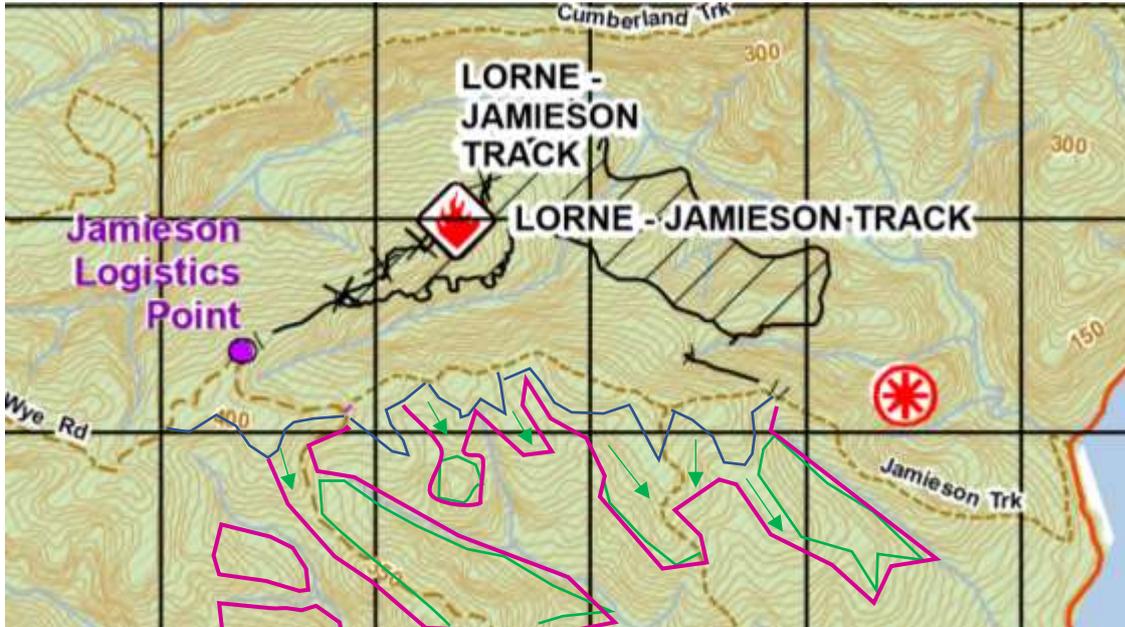


Figure 10 Vulnerable areas. Blue outline areas immediately south of Jamieson Trk and Wye Rd are where a short distance spot fire would run S – SE uphill or along the contour when driven by a N to NW wind. A spot fire that ignited north of the blue line would run S – SE to the blue line with the wind and then back slowly downhill.

A spot fire that ignited immediately south of the blue line would be in a sheltered lee gully and would burn uphill to the north unless it was within a purple outline area.

If a medium distance ember ignited within the purple outline area (which includes the flat spurs and contour runs where the green arrows and the green outline areas are) a spot fire would be driven by a N to NW wind and run S – SE uphill or along the contour.



Figure 11 Oblique view looking SE towards Wye River across the fire's origin (red dot) and the back-burn area (red outline of the hot spot area lit up on Days 4, 5 and 6)

Blue arrow is average alignment of Godfrey Track ridgeline (NNW – SSE)

Yellow arrow is average alignment of Wye Road ridgeline (NW – SE)

Orange dash line is non-flammable wet gully complex that remained largely unburnt
 Yellow S is a prominent saddle, and yellow s is a shallow saddle (Saddles have highest wind speeds due to channelling)
 Purple outlines the vulnerable areas, copied from Figure 10

Best Practice fire control plan for Day 7

Active aggressive suppression of spot fires south of control line that will endanger southern towns

- Identify the vulnerable areas for short and medium distance spotting south of the control line where spot fire runs might start. These areas would have been fuel reduced and tracked during the back-burn program.
- Station well trained mobile defence resources within them.
- Spot fire suppression teams must be on standby for continuous detection and rapid attack on fires that might run towards towns.

Actual plan: Apart from the ISP urging vigorous attack on spot fires and calling for LATS after spot fires had two water drops, there was no coordinated plan to prepare the control line for defence or strategically locate rapid response teams to prevent spot fires escaping to the south.

<i>Verdict</i> <i>Fail - Incompetent for not planning for the obvious</i>

Note:

(1) The IGEM parroted the leadership, stating “*the strategy was for aircraft to immediately attack any spotting that occurred. Incident reports indicate aircraft were water bombing the fire on the morning of 25 December. This is not recorded in the incident documentation*”.

But this statement fails to understand water bombing does not qualify as an effective strategy in forest fires because water drops without on-ground troops to secure the line is a wasted exercise and contrary to Best Practice. It is possible that some helitaks were over the fire area in the morning, but if one or more had been deployed on these spot fires upon detection, the fires would have been halted because the turnaround time for refill was only 5 minutes. Something went wrong.

(2) Paradoxically, there was a serious plan for one action if the back-burn strategy failed – **a breakaway was the trigger for evacuation of the towns**. The IGEM explained how seriously they implemented this plan:

Victoria Police conducted door knocks in the areas at risk on 24 December to prepare residents of Wye River and Separation Creek for a potential evacuation on 25 December (which ultimately occurred).

By 11.30am on 25 December, the fire had broken containment lines, with the expectation of it expanding south in the strengthening northerly wind. The IC was monitoring the preestablished triggers for evacuations and indicated that a call for the evacuation of Wye River and Separation Creek would be by 11.50am.

Evacuations of Wye River and Separation Creek commenced at 11.57am on 25 December.

This means the control team contemplated that a serious breakaway could occur, and to save lives, they would evacuate the towns to protect the people from potential death. But they made no plan to save the vacant houses.

Indicative resourcing

Minimum resources required on site at fire ground to stop spot fires when small:

Current dozer fleet on site plus one crew of 6 fire fighters to black out and patrol each 100m = 40 crews of 6 fire fighters on the ground = 240 fire fighters plus tankers and SOU's .

One infrared detecting aircraft constantly patrolling the line = 1

Two helitankers per km of control line, to fill up from sea = 8.

Actual resources allocated Refer ISP, 25/12 83 fire fighters, 16 SOU, 7 tankers, 4 dozers, 3 helitaks at Colac, LATS on call.

<i>Verdict</i> Fail - incompetent – the control line was grossly under-resourced

Outcome expected by midnight Day 7

With preparation of vulnerable areas and adequate coordinated resources at the fire ground on Day 7, escaped spot fires will be stopped when small. Towns will be spared.

Outcome achieved by midnight:

Four spot fires breached the control line, but only two reached the towns. The first one did no damage. The second one destroyed 116 houses.

<i>Verdict</i> Fail – gross incompetence to prevent escape of spot fires

Overall Verdict

Rating against Best Practice was 0 / 10

Suppression failed because Best Practice analysis of the true threats was not done. With no knowledge of true threats, plans for their mitigation or elimination were not done. Eg, it was possible to prevent escape spot fires, but it required preparation and correct resources on the Day.

Breach of the control line on Day 7 occurred because the expected threats were not identified and therefore there was no planning to manage those threats.

5.3 Conclusion

Headline: The back burn's designer purpose was to prevent spread of the original fire. The leadership, endorsed by IGEM, assumed the back burn itself will not escape and did not make plans accordingly.

Their assumption was contrary to Best Practice, which holds that back burns obey the same fire behaviour rules as original fires. Accordingly, a prerequisite for application of back burns is that their escape must be planned for and prevented. The back burn extends the area of the original fire and therefore is the same fire.

The IGEM confirmed the back burn was approved after an exhaustive process that the IGEM approved of. As good as the back burn was, the leadership and the approvers should have planned to prevent its escape across Jamieson Track and Wye Road. But there was no evidence that they did. Instead, they maintained their naïve belief that the back burn was their protection and would not escape.

Failure to contemplate that the back burn area could escape defies basic understanding of bushfire behaviour.

Failure to contemplate that the back burn area could escape was incomprehensible, but that was what happened.

Failure of the approvers to contemplate that the back burn area could escape and destroy the towns was naïve, but that was what happened.

Such failures cast doubt on the independence of the IGEM statement quoted by the Coroner: *With the back burning providing protection against the spread of the fire to the south ...*

The IGEM, endorsed by Coroner, that found no fault in the decisions or the decision making process by the leadership of this bushfire. Their role must now be revisited to check for independence and credibility and assess whether justice has been done or not done to the people of the destroyed towns, and instigate a process for suitable remedy.

A Best Practice requirement to properly protect these unprotected towns from bushfire attack is that all escaped spot fires that ignite and threaten the towns must be stopped. To achieve this over a 4 km strip of fresh hot spots requires careful coordination of rapid detection, rapid suppression and blackout. If such resources cannot be supplied, approval is denied.

6 Supplementary concerns

6.1 Cryptic messages in the Sit Reps

Strangely, the Sit Reps from 23 Dec (10.55pm) to 24 Dec (11.19am) said these things:

- “Extensive planning has been undertaken for escapes ahead of predicted spike in weather on Friday”
- “Resource requests have been made but yet to be filled”.

They were not repeated in the 10.49pm Sit Rep of 24 Dec. We can presume the escapes they referred to were breaches of the Jamieson Track control line. We can presume that the requested resources were fulfilled on 25 December. Or can we?

The significance of both statements was not explored by IGEM.

6.2 The decision to back burn was flawed

Measured against Best Practice bushfire suppression principles, back burning was a very poor choice on the Jamieson Track fire. Yet the decision-making process was praised by the IGEM, as was the decision to back burn.

The Colac IMT adjusted the fire control strategy when good situational awareness identified the failure of the first attack strategy to contain the fire. Using rigorous and extensive process the fire control strategy moved to one of control by fuel removal in strategic areas with back-burning procedures. IGEM notes that an extensive and exhaustive options analysis was a key part of control strategy planning.

How then did the decision-making process arrive at the wrong decision?

Best Practice principles for a going forest fire:

- Forest fire fighting is a perimeter exercise whose progress is measured by length of controlled line (includes tracked edge and wet line) against length of fire perimeter,

and logically the fire is controlled when control line length equals fire perimeter and is secured to prevent flame and ember escape.

- Each work shift has a strong goal that is quantifiable and achievable on the fire ground by adequate committed resources within a nominated period.
- The goal is based on mitigating or eliminating each identified threat (potential of flame and ember spread to cause damage) along each section of fire perimeter and control line perimeter within reasonable time.

This means:

A In this bone-dry forest in early summer, Best Practice was to keep the fire small by direct attack and control it rapidly. This would eliminate the threat of spotovers on next severe weather day and reduce cost to public purse.

B Delaying the control deadline extended exposure of threats of going fire to surrounding forest and assets, increased chance of more damage, reduced chance of successful (= rapid, lasting, low cost) suppression, and increased cost to public purse

Commentary: Indirect attack by burning out from the control line is a common Best Practice forest fire suppression tool. Its effectiveness relies on removing surface fuel ahead of the approaching fire. It needs two criteria for success (1) the ability to light up the forest between the control line and the advancing fire and (2) the ability to prevent spotting across the control line by either the advancing fire or the burn out area.

It was a high-risk strategy in this dry forest location so early in the fire season, but the approvers should have insisted on those two criteria as a condition of approval.

Lessons forgotten: On Day 2, this fire ground had already shown its propensity for apparently dormant hot spots in a bone-dry forest to revive under turbulent wind on whole hillsides and send embers downwind.

Lessons yet to be learned: Lighting up on Days 4 and 5 when Day 7 was a known severe day was unwise because it would expose a 4 km long forest full of dormant hot spots on a northerly aspect to sustained N winds. (We will see, however, that not many spotted across the line)

Arguments of the back-burning lobby

For unknown reasons, a strong belief developed within the leadership team after the escape on Day 2 that a constructed control line was no longer an acceptable strategy. Was it seen as too hard and too costly to doze a track and black it out to prevent spot overs, even though the same difficulty would also apply to blacking out along Jamieson Tk? Or was track construction frowned on by National Parks as environmental vandalism?

Direct attack strategy had failed

The back-burner lobby argued that the direct attack strategy had repeatedly failed to contain the fire, so it was time to change strategy. But they ignored the fact that the fire's non-containment was not the fault of the strategy, but due to control team incompetence:

- The fire was containable on the night of Day 1 by direct attack but it failed due to late arrival of fire fighters and night time work embargo, and unawareness of true fire size that precluded appropriate resource allocation.
- The fire was containable on early morning of Day 2 by direct attack but it failed due to under resourcing on the fire line, late starting crews, and unawareness of true fire size.
- The fire was containable on the evening of Day 2 by direct attack and use of wet control line but it failed due to under resourcing and non-commitment to direct attack.

In the then weather conditions, the entire fire perimeter was virtually contained by high moisture content fuel on Days 2 and 3. Some parts needed earth works for spread prevention and access, but they were not done**.

- The fire was containable on the evening of Day 3 by direct attack and use of wet line but it failed due to under resourcing and non-commitment to direct attack.
- The fire was containable by direct attack on the morning of Day 4 after the narrow escape up to Jamieson Track but it failed due to under resourcing and non-commitment to direct attack because the allocated fire fighters were deployed for back burning.

**Figure 8 shows that the combination of existing tracks, wet line and constructed lines effectively contained expansion of the original fire by Day 3 while blacking out could readily occur over the next few days of mild weather. On Days 3 and 4, there were adequate dozers on site for rapid direct attack and completion of the final 1 - 1.5km of track construction and their subsequent use in blacking out and preparing Jamieson Track as the fall-back line.

Thus, an independent observer can see that up to Day 4, the direct attack approach had failed to contain the perimeter, not because of the strategy or terrain or inaccessibility, but due to under-resourcing, poor communication and intelligence sharing between fire ground and HQ, and HQ indecision as indicated by multiple changes of fire plan deadlines. Changing strategy would not improve these managerial deficiencies, so the control team took them to the next strategy, and similar deficiencies continued.

Back burn will prevent spread of original fire

The back burners' scenario was that the original fire will escape into unburnt forest, run up to Jamieson Track and then escape. They argued that the back burn will stop the spread of the original fire. This logic was confirmed by the IGEM in 5.1B (above).

A Best Practice professional would have asked them to rationally define where or how the original fire would escape and determined whether this threat was real and if so and determined how it could be mitigated or eliminated. And would have reminded them that the back burn along Jamieson Track removes its benefit as a fall-back control line, makes it the last line of defence and because a back burn with fresh hotspots can itself escape, seriously increases the risk of escape that has to be matched with increased suppression resources, meaning a much higher cost to the public purse.

Comprehensive decision-making process

The IGEM described how HQ embarked on a comprehensive process to choose between back burning and direct attack. IGEM stated: "*The IC, together with team leaders of the IMT, identified Option 4 (the back-burn option) as the approach that had the greatest chance of succeeding in containing the fire.*"

[Remember, in the back burners' minds on Day 4, SUCCESS meant containing the **original** fire, not containing the back burn edge along Jamieson Track. A good back burn will be deeply blacked out, they would argue, so it will prevent any run to Jamieson Track. They assumed a good back burn has no fuel, therefore cannot be a source of concern. What fire was the IGEM referring to, the original fire, the back burn fire or any breach of Jamieson Track?]

The IGEM highlighted three key reasons for supporting their decision –

- the window of opportunity for back-burning was favourable,

- the required containment lines were in place and
- back-burning offered the greatest potential to reduce the risk to communities and assets.

The first two are practical facts, although the wet line along Jamieson Creek was not yet tracked. The third is rather vague – “potential to reduce risk”.

IGEM listed what they analysed:

- Cost estimates
- Resource requirements
- Probability of success [ranged from 20%, 50% for direct attack, 80% for the part back burn and 80 – 90% for the full backburn]
- Consequence of failure
- Risks to public, local economy and government

They also considered:

- Condition of tracks
- Fire behaviour prediction Phoenix
- FMC
- Fall back and escape routes
- Vehicle access
- Effectiveness of aerial bombing
- Time available to conduct burn before bad weather

The forest fire professional sees them as a grab bag of undefined terms of little relevance for the choice between direct attack and back burning.

Eg,

- Cost of what?

Pre suppression? Cost of the 5 km back burn plus blacking out vs cost of 1 km control line plus blacking out (eg, back burn needs 3 days of 80 fire fighters to light and black out, vs, 3 days of 20-30 fire fighters to black out Day 2 fire edge)

Suppression? Cost of spot fire suppression on and downwind of the control line Day 7

- Resource requirements for what?

Pre suppression?

Suppression?

- Probability of success?

They seem to have used a calculated chance of success as the guide to their decision.

That is not Best Practice for forest fire suppression which uses the threat management model. In the threat management model, we make a strong goal, eg, the original fire **will not escape** and ensure **100%** chance of success by eliminating all threats – threat of ember generation and threat of spot fire escaping the containment line. We don't need to know risks to local economy, consequence of failure, etc.

They gave direct control a 50% chance of success and back burning an 80-90% chance. How they calculated this % is a mystery whose criteria should be exposed and scrutinised.

Presumably the IGEM was quoting from a document that should now be made public.

Nevertheless, they chose a strategy that had a less than 100% chance of success.

Decision making in a bushfire by risk calculations is arrant but dangerous nonsense. The INSERT looks at two real risk they did not consider.

INSERT

1 These simple calculations were not done

The back burn resulted in extra line, extra cost, extra black out area, 4 times the control line for vehicle patrols but because the control line was next to extensive untracked forest, and there was no fall back line, there was a requirement for immediate rapid response spot fire catching team along 4 km on Day 7.

Instead of a 2 km strip of several day old hot spots along a control line 300m+ away from the Jamieson Track fall back line, we have a 4km strip of fresh hot spots along Jamieson Track control line that is 300m deep and only the closest 50m has been cleared of most hot spots.

Thus, the risk of escape across Jamieson Track was magnified many times by choosing the back burn strategy

2 Fresh burns in dry forests have hot spots that last for weeks

Explanation: A burn in very dry forest certainly removes fine fuel, but hot spots last for weeks, and hot spots generate embers on the next hot windy day

Direct attack control lines and wet lines have to be blacked out 50m plus from control lines.

Control lines are patrolled by vehicle

Wet lines can be patrolled by infrared helicopter, wetted by chopper and secured / monitored by fire fighters.

They are only a problem if close to edge and wind blows sparks across wet line.

Direct attack strategy On Day 2 and 3, the perimeter of the direct attack strategy was 3 km of control line and 4 km of wet line = 7 km total. If they persisted with this strategy, this would have been the scenario on Day 7.

When the wind was Northerly, 2 km along southern edge was at risk of escape

There was 1 km of control line and 1 km of wet line backed by the new entrance track.

Jamieson Track was the fall-back control line

The breach scenario was either an ember throw onto the up slope and a spot fire runs up to Jamieson Track or a perimeter breach on the control line and a narrow fire runs up hill to Jamieson Track. Ember throw could occur singly or in multiples anywhere long the 1 km of track at any time.

Any of these breaches could be stopped at Jamieson Track.

Back burn strategy The perimeter of the back burn strategy on Day 4 was 6 km of control line and 3 km of wet line = 9 km total, and they tracked along Jamieson River, so on Day 7 the perimeter was 8 km of control line and 1 km of wet line = 9 km total.

When the wind was Northerly, 4 km along southern edge was at risk of escape

There was 4 km of control line and zero km of wet line

There was no fall back line

The breach scenario was an ember throw across Jamieson Track and if not suppressed, the spot fire runs southwards. The ember could occur singly or in multiples anywhere long the 4km of track at any time.

If the new spot fire is allowed to expand to a 30 - 50m wide front, its spread is unstoppable.

Thus, the risk of escape across Jamieson Track was magnified many times by choosing the back burn strategy

- Consequence of failure?

What was their definition of failure?

Original fire escaping? Back fire escaping? Town destruction?

- Risks to public

Presumably what is risk if original fire escapes? Back fire escapes? Town destroyed?

Or what is risk to loss of life, property and discomfort?

- Fire behaviour prediction Phoenix

Let's examine Phoenix predictions:

The Phoenix predictions at that time showed the original fire escaping from the eastern half of Jamieson Track on Day 7 under a moderate Northerly.

Prediction A Prepared on Day 4 (22 Dec at 9.25am) for 2 pm on Christmas Day when the predicted wind was for many hours under Northerlies of 25 – 30kph.



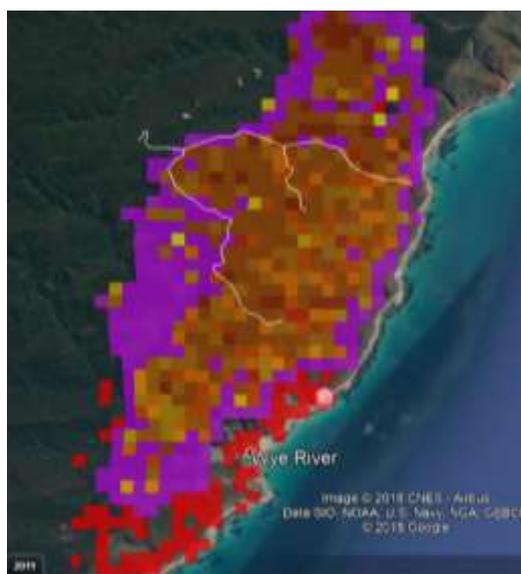
The purple squares are “went out” = low flame height

The red squares depict spotting ahead of the fire front.



Lorne Jamiesons
20151225_1400.kmz

Prediction B Prepared on Day 5 (23 Dec at 11am) for 1 pm on Christmas Day when the predicted wind was for many hours under Northerlies of 25 – 30 kph. This time the entire back burn area escaped.



The purple squares are “went out” = low flame height

The red squares depict spotting ahead of the fire front.



Jamieson Esc
Scen_20151225_1300.kmz

The Phoenix predictions must have buoyed the decision makers because the whole perimeter “went out” well away from the towns. Why they would believe these predictions for Day 7 when Phoenix predictions for Days 1 and 2 were so wrong is a mystery.

We can wonder if they saw two genuine threats on display (1) that the fire could escape from the entire back burn length and (2) that spot fires peppered the two towns.

We can presume that they did not take these observations as a warning because they did not make preparations to mitigate either.

Nevertheless, after the approvers analysed all these undefined criteria, they chose the back-burn option. Colac HQ then then diverted their resources over the next three days from blacking out the non-expanding original fire and fortifying the Jamieson Track control line with a back-burn strip that they knew will never escape.

What the approvers should have considered under Best Practice principles:

Test their assumptions:

- Test the back burn proponent's assumption that all the spot overs from the original fire will fall within the back burn area.
- Test the proponent's assumption the back-burn area will not become a new source of spotovers

Require answers to these questions (correct answers are provided):

Q Will a 2 – 3 day old back burn area have greater ember generation volume on Day 7 compared to 5 to 6 day old direct attack area?

A Yes. Also consider high hot spot density on a steep upslope, air up-lift over ridge, blacked out for 50m, but width of hot spot burn is 300m.

Q Does larger back burn area increase difficulty of suppression on Day 7 compared to smaller direct attack area?

A Yes. Longer line, recent hot spots, wind-exposed ridge, no vehicle access southwards, no fall back.

Q Does back burn strategy increase need for suppression resources compared to direct attack strategy?

A Yes

(a) *Back burn has 4km long exposure on Jamieson Track*

Will need aerial IR detection and on site heli-tanker fleet backed up by multiple fire fighters and dozers to secure water drops.

Will also need practiced coordination – but there was no time to practice.

(b) *Original fire has 0.5 km long exposure on Jamieson Track on Day 4*

Wet lines are deep gullies. Will need approx 1/4 of (a)'s resources because most of Jamieson Track can be fortified against uphill spot fire runs.

Q Can these extra resources be assured on Day 7, will they be cost effective?

A No

Q Is risk of spot fire escape from a 4 km long recently burnt control line eight times higher than a 0.5 km long recently burnt control line?

A Yes

Q What are the liability issues if a government back burn escapes and causes destruction?

A Full liability

Conclusion

The IGEM praised the decision-making process to change from direct attack to back burn but the process was disingenuous because it ignored Best Practice forest fire suppression principles, thereby failing to identify key threats and mitigating them.

The relevant question that the Best Practice professional asks is not - should we use direct attack or back burning, but this – what are the compelling reasons to change from the Best Practice approach? There were none. The opposite was true.

It is deduced from the two days of zero suppression work on the fire ground and the change of fire Controller that the aim of the process was to resolve a dispute between the on-site

leadership and HQ, [or was it between Colac HQ and Melbourne HQ?]. The aim of the Controller on Sunday (Day 2) should have been to keep this fire as small as possible. He knew that the Day 2 runaway fire was a few km north of unprotected towns and in five days another hot dry northerly was forecast. His task was to take advantage of a few days of mild weather to kill the fire edge and thereby protect the towns from fire escape. The plan should have been - "Prevent escape of spot fires that ignite south of Jamieson Track and Wye Road, particularly those with potential to attack the towns". If the on site control team sabotaged this plan, they should have been replaced by leaders that supported the Best Practice plan.

The outcome of the process was that the Best Practice principle of "keep it small and hit it hard" was overlooked, and they decided to make it a bigger wider fire.

Hindsight

In hindsight, both strategies could have succeeded.

The back burn could have succeeded, even though it was much more expensive than direct attack on the original fire and raised the risk of escape to much higher levels. It failed for the same reason the original fire escaped on Day 1 and Day 2. It was under resourced. Day 7's much higher risk of escape could not be neutralised by a suitable suppression force, ie, it needed a large enough highly coordinated, rapid response, spot fire suppression team that could stop all spot fire escapes within 50 – 100m downwind of Jamieson Track, but there were no such resources, and there was no time to train them in sufficient numbers. This fact, plus the fact that the towns were unprotected by infrastructure, and the probability that the fire might escape from a government run fire on government land should have rung loud alarm bells with the approvers and led to disapproval of the back burn.

The direct attack strategy would have succeeded at a cheaper cost and a less risky method. The changes of escape from the original fire were lower and the escaping spot fires would be caught at or before the Jamieson Track fall back line.

Figure 9 highlights the inanity of the back burn plan. The back burn was supposedly done to stop the original fire area (which IGEM said had 1000 hot spots on Day 3 or 4) from crossing the control line. Figure 9 shows that on Day 6, the original fire on Day 6 had very few hotspots and the freshly burnt back burn area designed to protect its escape had thousands of hot spots. The new hot spot area was 4km long by approx. 300m width on a steep northerly slope during a day of prolonged hot northerly winds.

Basic understanding of forest fire behaviour, specifically ember generation in a freshly burnt area in a bone-dry forest, should have warned the leadership away from this plan. The back burn strip averaged 300m width and was 4 km long. The teams tried to remove hot spots from a 50m or so verge along Jamieson Tk, but the other 250m was unreachable.

Therefore, the predictable events on Day 7 were (1) embers WILL jump across the control line and (2) embers will ignite as spot fires, and (3) spot fires will escape, unless there are enough highly coordinated well provisioned spot fire suppression teams on Day 7, and run southward.

Day 7 12.01 am Day 7 to Midnight Day 7, 25 December 2015

Summary of Day 7 State-wide Total Fire Ban Day

What should have happened according to Best Practice forest fire suppression principles:

1 Acknowledging that Jamieson Track environs had not been prepared to facilitate spot fire suppression, they must now prevent escape from Jamieson Track by deploying enough resources to detect troublesome hotspots north of the line and deal with them and deploying enough resources to detect escaped spot fires and suppress them when small.

2 To defend the town from ember attack, deploy 1 fire truck per 2 to 3 houses, ie, minimum 100 fire trucks, complete with firefighters trained to detect and suppress spot fires and to support self-defending residents.

What happened:

(1) Escape from Jamieson Track control line

Resources allocated were well below the level required by Best Practice forest fire suppression standards. Best Practice standards required identification and preparation of most likely and most risky escape sites and appropriate deployment of resources to detect and rapidly suppress spot fire ignitions. Such an analysis, preparations and deployment were not done.

These resources deployed were: 51 fire fighters, 10 SOU, 4 tankers, 2 dozers along Jamieson West and 32 fire fighters, 6 SOU, 3 tankers, 2 dozers along Jamieson East.

[IGEM quoted 37 fire fighters from Sit Reps sources, which was inaccurate.]

Aircraft based at Gerangamete airbase and elsewhere were 3 spotter aircraft and 3 helitaks

There was no mention of deploying an infrared detecting aircraft, to identify potential trouble spots, but one appeared in the towns at 3pm well after the escape.

ISP Instructions called for an aggressive response:

“Direct attack with line construction where appropriate. Aggressive aerial bombing of hot spots, running edge and spotovers, and follow up ground support where appropriate.”

“Should the fire spot out in two spaces, activate LATS

Should two loads of water on a single spot not succeed, activate LATS“

A control line breach was reported at around 11am within 100m of Track. Theoretically, there were sufficient resources to stop its spread, but their influence was strangely helpless. The fire escaped to the coast.

At 11.29am and thereafter, fire control plan #10 was all about asset protection – *“aircraft focused on asset protection in Separation Creek and Wye River”*

After this announcement, the control team made scant further reference to this control line other than a spot over at 2pm on the western end of the back burn area and abandonment of the line at 2pm. But this was only part of the story. In the half hour before 2pm a Northerly blew embers from the western end of the back burn area for 1 km southward into the National Park Wye Road forest NW of the towns. By 2.30pm, the entire western half of the back burn line was fully ablaze, having already sent embers and spot fires across the control line and toward the forest NW of the towns before 2pm. At 2pm, the NW wind resumed and blew embers and spot fires from these forests toward the towns.

(2) Defence of towns

The towns were evacuated by a pre-arranged trigger - when the Jamieson Track fire line breaches, send out the evacuation order. There is some evidence however, that the local fire captain issued the evacuation order before the Controller's order when a Watch and Act Message went out. Perhaps he overheard something the CFA radio earlier.

We can deduce there was another trigger - when the control line breaches, defend the towns with aircraft. Aircraft was the only resource referred to in the 11.29am Sit Rep and thereafter. The exception was 1 strike team. At 11.29am, the Colac Controller sent one strike team of 5 tankers to the towns. Its purpose is unclear because it was inadequate for defence of some 300 vacated houses. There is evidence of ten or more helitaks and fixed wings bombing the town before the ember attack began around 3pm in Separation Creek and in Wye River after 4pm. No evidence is available of their numbers after the spot fire attack finished, after 6pm or so.

The strike team tried to save houses and extinguish spot fires in the towns, but the local commander or captain declared the towns unsafe (probably around 4 pm) and fire fighters were withdrawn to protect the town's four major premises, lifesaving club, CFA station, Big 4 camping ground and pub in more safety for the next several hours until daylight, the period during which over 100 houses were destroyed by ember attack and scattered spot fires less than half a metre tall. By late afternoon, on Day 7, ISP reports suggest about 4 strike teams had arrived at the town, but they watched the houses burn from their assigned posts.

Consequences

116 houses destroyed, hundreds damaged, insurance payout \$120M+, estimated government costs \$50M+, government policy of blaming the original fire (ie, Mother Nature) for the escape rather than the government's back burn, despite the original fire having already escaped four times from the fire fighters due to mis-management.

Midnight summary of fire status: GOING

At midnight on Day 7, fire area 1,750 ha, perimeter indeterminate.

Performance rating against Best Practice forest fire suppression: 0 / 10 on both counts:

- Resourcing the Jamieson Track control line was inadequate and just when the western half of the back burn line was becoming active, the whole line was abandoned. This western half was the major source of embers that destroyed the towns.
- Resourcing the towns' protection was grossly inadequate. Evacuating the town's residents from an ember attack when their property maintenance ensured embers could not ignite removed potential self-defenders was premature and ill considered, particularly when there was no plan to send in the 100 or so tankers needed to defend 300 vacant houses from ember attack.

Day 7 12.01 am Day 7 to Midnight Day 7, 25 December, 2015

Day 7 was declared a TOTAL FIRE BAN DAY by fire authorities

1 What the Primary Sources reported at the time of the fire

1.1 Fire behaviour related aspects

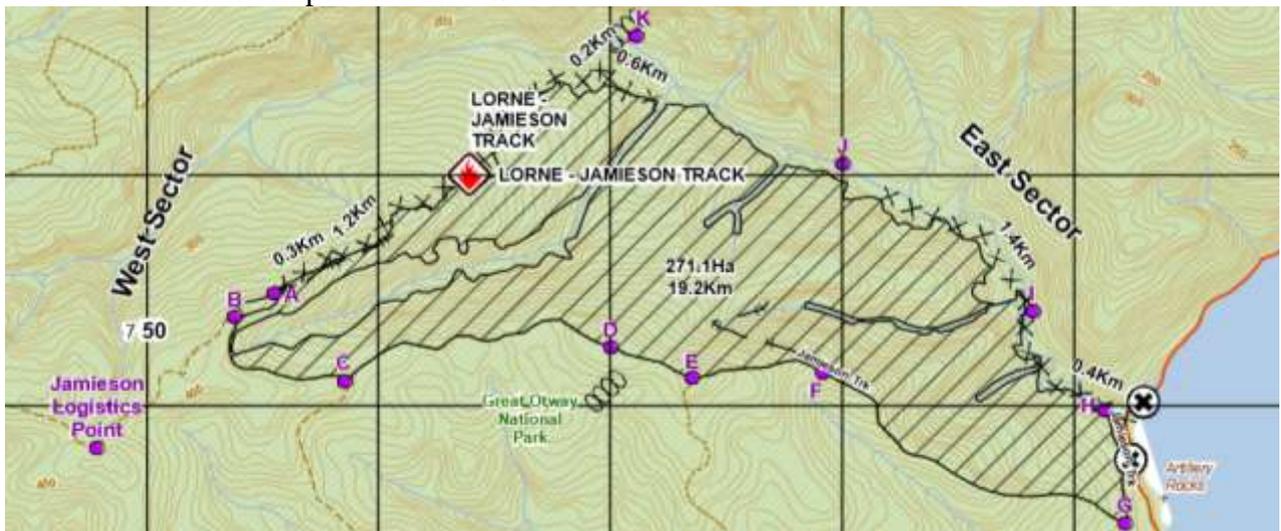
A Fire behaviour

A succession of published maps is the clearest way to understand the progression of this fire

11 am Day 7 Fire area of Day 6 remained unchanged until 11am Day 7

Reported fire behaviour before 11am:

Sit Rep 5.35am reported that two flare ups along Jamieson Track were dealt with at 2am when the wind and temperature increased.



DELWP Map 18 Observation date - 6pm Day 6, 24 Dec 2015 Gridlines are 1km x 1km

Map produced @ 8.07pm Day 6 24 Dec 2015

Map title Jamieson Track Situation Overview 24/12/2015

Notation on map: 271 ha, 19.2 km perimeter

|| --- || ----|| means "machine out-track" = dozer track

X X X X means completed control line

11.13 am line scan No spot fires detected yet

Estimated wind direction at the fire ground: From N until 10.40am and from NNW between 10.40 and 11.00am and from N between 11am and midday



Source: DELWP
YouTube series

The line scans will be kept at the same scale to show progress of escaped fire

Are those red spots all hot spots?

Sit Rep 11.29 am

“Reported fire behaviour: Fire activity increased this morning
 Spot fires at 517243 and 100m to SE of that (shown on Figure 12)
 Not confident of containment – LATS deployed. No machine access.
 Likely to push towards and over Godfreys Track, given current weather conditions, strong and gusty winds”.

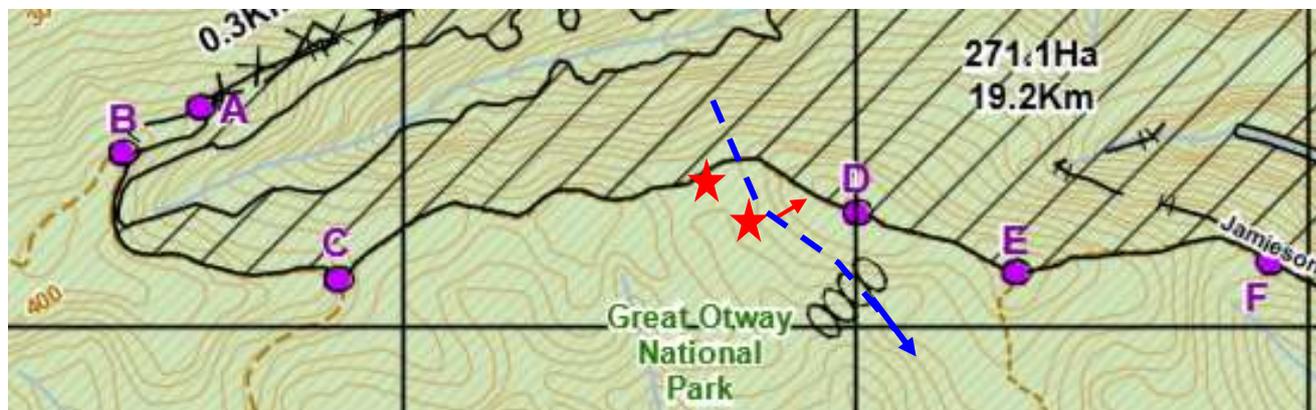


Figure 12 Red stars are at the reported location of the two spot fires, one adjacent to the road in the flat of the saddle, and one 100m away to SE along the contour. Compare spot fire location and expected runs with Figures 10 and 11.

If the grid references were accurate, the spot fire adjacent to the road in the flat of the saddle would have been accessible from the track. The one 100m away to SE was on a steep side slope. At ground level, it would have been protected by the tall tree canopy from the strong winds, meaning it would have run up slope to the NE, or on a vector towards D. Both sites were accessible for troops or dozer from the Track to secure after precision water drops, if indeed dozer, troops or water bombing occurred.

Estimated wind direction at the fire ground: From NNW between 10.40 and 11.00am, from N between 11 and 12, and from NNW between 12 and 1.30pm. It is possible that the wind through the saddle wrapped around the peak at D as the dashed blue arrow shows in Figure 12, whether the wind was N or NNW.

Timing of ignition of spot fire is imprecise because line scans were infrequent and local intelligence was not passed on via Sit Reps. If the ember was thrown across the track before 11am, the wind was a Northerly, suggesting there were two ember source areas north of the control line. If the embers were thrown across the track after 11am, the wind was from NNW and it is likely their alignment with wind direction suggests they came from one ember source.

The following Secondary Source accounts (which were presumably sourced after interviews with fire fighters) are quoted here to highlight that they do not match what the Sit Rep said or what the Figure 12 contour map shows:

Coroner quoted EMC *At about 11.00am, the Division Commander became aware of a flare up reported north of the Jamieson Track, in a steep gully downslope from the track. There was heavy material, likely from previously fallen tree limbs, which had caught alight and flared up. A slip on unit was directly working on this flare up and had called for tanker support as they were experiencing difficulty controlling the flare up.*

Summary of EMC Narrative, so far: Ember from a hot spot ignited dead leaves of fallen branches and flared up north of track in a steep gully.

(Comment: Flare up would have been surrounded by burnt out ground. Steepness begins at least 50m from track. Why would patrollers be concerned enough to wet this down?)

The Division Commander was then advised that spotting had occurred across the Jamieson track. The fire spotover is reported to have been started by a tree falling in an area that had previously been well burnt. As the tree fell, it provided additional, unburnt fuel which caught fire and started throwing embers as a result of the extremely hot and windy conditions.

The spotover event included embers being thrown into a large stringybark tree. From this elevated position, further spotting quickly occurred in the area immediately to the south of the Jamieson Track, which comprised a steep gully system. Due to the proximity of water bombing aircraft at that time, water bombing operations on this spot fire occurred within minutes of it being reported.

The Division Commander also called in a large bulldozer to support fire fighting operations, but due to the steepness of the terrain in which the spotover had occurred, there was no possibility of the spot fire being accessed by the bulldozer or on ground crews.

Despite best efforts, it quickly became obvious that the aircraft were not going to be effective in controlling the breakout.

Summary of EMC Narrative: Tree fell in a burnt area, its foliage burnt and flame threw embers into a large stringybark which ignited and threw more embers across the track, igniting as a spot fire immediately south of the track where it was steep and inaccessible. Aircraft water bombed it within minutes, but neither dozer or fire fighters could access it and aircraft could not control it.

Comment – Seems to be unrelated to first flare up. If a tree fell in a burnt area and leaves caught fire, the leaves must have been very dry and must have fallen onto a hot spot which had naked flame, because it is impossible to light a dry leaf in bed of hot coals. But all hot spots were mopped up within at 50m of the Track, and so it must have fallen a longer distance away. But then this burning leaf mass threw embers into a stringybark, which ignited and ran up to the tree tops and threw embers immediately south of the track where it was steep and inaccessible.

Implausible story in a mopped up area, however, such detail means that fire fighters watched this happen, so they will be able to point out the exact tree and the exact ignition points on the ground and on a map. This can readily be done by site inspection. It did not happen where the reported spot fire occurred, so someone is wrong.

IGEM *By 11.30am spot fires were burning outside containment lines. The fire spot over is reported to have been started by a tree falling from an area that had been previously well burnt. As the tree fell it provided additional unburnt fuel which caught fire and started throwing embers as a result of the hot and extremely windy conditions. These embers resulted in spot overs and breach of the containment line.*

Summary of IGEM Narrative: Tree fell from a burnt area, its foliage somehow caught fire in a mopped-up area and its flame threw embers across the track.

Comment: Less detail, but leaves of fallen tree must have been dry and must have fallen onto a naked flame. Implausible story in a mopped up area. The witness will have to verify whether the fallen tree had green or dead leaves, locations, ignition points, etc.



Figure 13 Jamieson Track near the spot fire escape point around midday, looking south across the back burn area and Jamieson Track. Many smokes are seen within the blackened back burn area. Many fresh smokes were south of the Track. Absent from view are firefighters, tankers, dozers or aircraft.

Caution: Perhaps, the Colac HQ Sit Rep people were not told or were not telling the full story. These were the first two reported spot fires since the high winds began at 2am. They occurred in the most prominent saddle on the Track where the highest winds were expected. The troops at that location should have reached them quickly, if indeed there were troops and resources there. The Figure 13 media shot indicates there were many more than two spot fires at this time. It also indicates an absence of fire fighter resources.

12.04 pm line scan Red flaming area is approx 5 ha, 4 new spot fires are visible.

Estimated wind direction at the fire ground was from N between 11 and 12, and from NNW between 12 and 1.30pm.

This line scan suggests the four spot fires were caused by a NNW wind. Maybe the NNW wind change at the fire ground occurred at 10 to midday, ie, 20 minutes before recorded at Aireys Inlet. It is possible that the wind through the saddle wrapped around the peak at D as the dashed blue arrow shows in Figure 12, whether the wind was N or NNW.



Source: DELWP
YouTube series

The line scans will be kept at the same scale to show progress of escaped fire

Note the numerous red hot spots within the back burn area

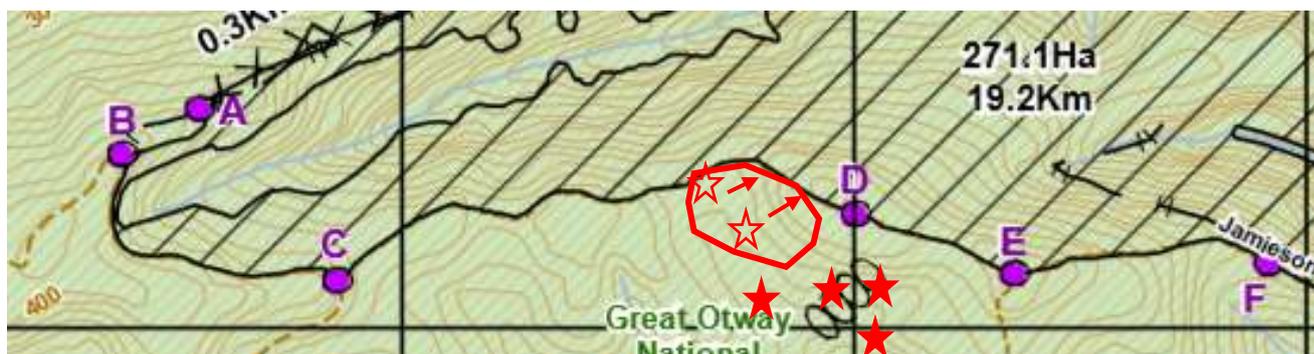


Figure 14 Fire extent at 12.04pm.

Red outline stars = original spot fires, probably 11.15am ignitions that initially ran upslope and were soon driven by NNW wind.

Red line plus 4 solid red star spot fires at 12.04pm

Presumably, the two reported spot fires grew without impediment to 5 ha. Both initially ran upslope for 100 to 150m and then the prevailing wind led their NE flanks towards the SE so that and after 30 to 45 minutes, the flank became a 100m wide front running along the contour. The line scan showed the front was 250m from Jamieson Track, and had just thrown embers to the SE that ignited as 4 spot fires, 50 to 200m ahead of the front.

1.22pm CFA map This map stayed public until as late as 1.22 PM.



1.22 PM CFA web site

Sit Rep 12.45 pm Day 7

“Spot fire has increased to over 30 ha and crossed Godfrey Track and Wye Road”

Spotting was reported on the Great Ocean Road at GR 535213, “2.6km from spot, numerous spots in between”.

GR 535213 is shown as yellow dot on 12.52 line scan below

12.52 pm line scan Elongated NW - SE spot fire run reached the coast

Estimated wind direction at the fire ground: From NNW between 12 and 1.30pm.

The “tongue” grew to approx. 3 km long and 0.5 km wide, area = 150 ha in 50 minutes.



The elongated fire spread along Godfrey Track, which is a step downhill spur line. It spread by leap frogging short distance spot fires as follows. The wind threw the embers to the SE and if they ignited, they ran upslope or if exposed to the wind, they ran diagonally across slope.

The two southern spot fires were examples of this pattern. The ember jumped 500m to spot fire A and spot fire A threw an ember another 400m, where spot fire B ignited. Both spot fires then ran uphill.

12.58 pm line scan Elongated NW - SE spot fire run reached the coast

Estimated wind direction at the fire ground: From NNW between 12 and 1.30pm.

The hot air blast went 1.5 km offshore almost perpendicular to the coast. and the fire seemed to spread towards the south, but Figure 23 explains that the embers simply leap frogged downhill with the wind and spot fires ran back upslope and up trees with flammable bark.



Source: DELWP
YouTube series

The line scans will be kept at the same scale to show progress of escaped fire

The red circle shows hot spots developing north of the Track. Note the red hot-spots in the western part.

Green outlines extent of 12.04pm fire and spot fires.

Blue dash outlines extent of 12.52pm fire

The next photo shows what this line scan looked like from the air, looking northwards.



Figure 15 This media picture was taken around 1.30pm. It looks north across Separation Creek. The red arrow points to the vigorous billowing smoke of spot fires running uphill near the coast. The yellow arrow points to the original fire escape near Jamieson Track. The wispy white smoke in between is the spot fire run down the Godfrey Track spur.

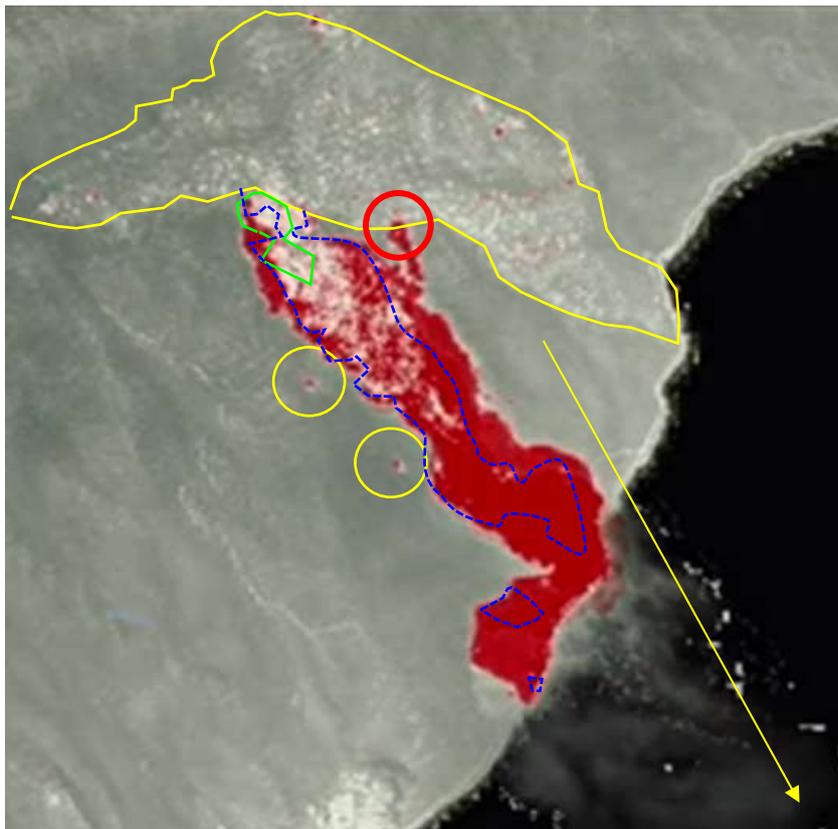
The black arrow points to a line of orange fire retardant drop to the north of Separation Creek by a very expensive large plane. According to Best Practice forest fire suppression, its location and timing were worthless for town protection.

1.24 pm line scan **Slow lateral spread after another 1/2 hour**

Estimated wind direction at the fire ground: From NNW between 12 and 1.30pm and then from N between 1.30 and 2pm.

The two spot fires encircled yellow show the wind may have swung to a Northerly, just before 1.24pm. Maybe the NNW wind change at the fire ground occurred at 1.20pm, ie, 20 minutes before recorded at Aireys Inlet.

The red circle shows a second breach of the control line running into the long breakaway.



Source: DELWP
YouTube series

The line scans will be kept at the same scale to show progress of escaped fire

Note the second breach of the control line within the red circle probably at 1pm.

The prevailing wind at this time was from NNW, consistent with the direction of the hot air blast offshore.

Green outlines extent of 12.04pm fire and spot fires.

Blue dash outlines extent of 12.52pm fire

The next photo shows the aerial view of these line scans looking southwards.



Figure 16 This media photo was taken at a similar time to Figure 15, approx 1.30pm. The photo is looking South across Jamieson Track, with a foreground showing the lightning strike location (red circle) and the scorched canopies of the escape on Day 2. Red arrow is reported location of the 11am spot over. The central smoke (black arrow) is the rear of the escaped spot fires and the smokes on the right (yellow circle) are the developing fires near the junction of Wye Rd and Jamieson Track. The yellow arrow is the gully between Jamieson Track and the spur where the lightning strike occurred (red circle). Within an hour, the blue double arrow section will be fully ablaze, see Figure 20.

1.45pm CFA map



Figure 17 1.45 PM CFA web site

The southern tip continued to creep toward Separation Creek along the coast. Expansion was slow because the prevailing wind after 2pm was NNW meaning the flank was extending laterally. The lateral coastal spread could not develop into a fire front because the wind blew into the water. If ever a section of flame ran upslope, a mini fire front occurred but the spread towards the town was always done by a flank fire.

Around 3pm, the flame ran up the hill overlooking NE Separation Creek (Figure 18), meaning the average spread rate of the flank fire along the coast was around 0.7 kph. The fire ran up the hill with a tall flame and threw up a lot of smoke and embers, but the NNW wind carried everything out to sea. When it reached the top of the hill, flame height plummeted and it trickled downhill.



Figure 18 Here is the coastal fire running up the hill NE of Separation Creek about 3 pm, taken by Tom Jacobs. The dense smoke pall of the second bushfire attack is on the left. It came from the NW.

The next section shows that by 3pm, Separation Creek had a far more serious fire on its NW doorstep as we will now see.

After 2pm

Sit Rep 2.07pm Day 7

“Spot fires broken away at Point B, 50m south of Wye Road”

Jamieson Track control line abandoned “for safety” reasons.

Fire on coast is 700m from Separation Creek.

Figure 16 shows a developing spot fire south of the Point B spot over, indicating the spot over at B occurred soon after the 1.24pm line scan.



Figure 19 Red star is approx location of reported 2.07pm spot fire escape

The absence of line scans between 1.24pm and 3.57pm is intriguing, because this is when the most damaging spot fire escapes and spot fire runs occurred. Fortunately, media photos help fill in the gaps and explain how the 3.47pm line scan developed.

The Figure 20 aerial picture was taken at 2.45pm by a plane that approached the fire from the NW. Its location is confirmed on Google Earth in the Figure 20 series, and it provides the missing link between 1.24 and 3.47pm and explains how the flame approached the towns from the NNW.



Figure 20A View to the SE at 2.45pm across the fire origin (red blotch). The three white circles are scorched hill tops. Blue circle is Separation Creek village. White lines are wispy smokes to the east of the fire origin, yellow line is wispy smoke from the site of the 11 am spot overs, purple line is dense smoke from a vigorous burn along the western half of Jamieson Track and Wye Rd, red line is the very vigorous smoke from a major fire west of Wye Rd. Photo Mathew Lynn, The Age



Figure 20B The Google Earth view of Figure 20, at higher elevation than photo to show lay of the land a little clearer. Colours and symbols correspond with Fig 20A photo. The white lines are roads and tracks. Blue circle is Separation Creek village.



Figure 20C Shows location of edges of colour coded smoke pall bases in plan view, showing location of townships and Jamieson Tk, Godfrey Tk and Wye Rd. White circles are scorched hilltops, fire origin is the 4.10pm flame symbol. Blue circle is Separation Creek village.

Comment: The Sit Rep stated that the Jamieson Track control line was abandoned at 2.07pm. Figure 20A clearly shows there was a vigorous fire along the entire purple area of Jamieson Track and Wye River by 2.45pm that was still actively throwing embers downwind into the S area (see 3.47pm line scan and Fig 21). The only possible source of fire in the purple area was the western part of the back burn.

Could the purple area of fire have been prevented if Best Practice forest fire suppression strategy was applied with adequate patrolling resources?

Sit Rep 3.10 pm Day 7

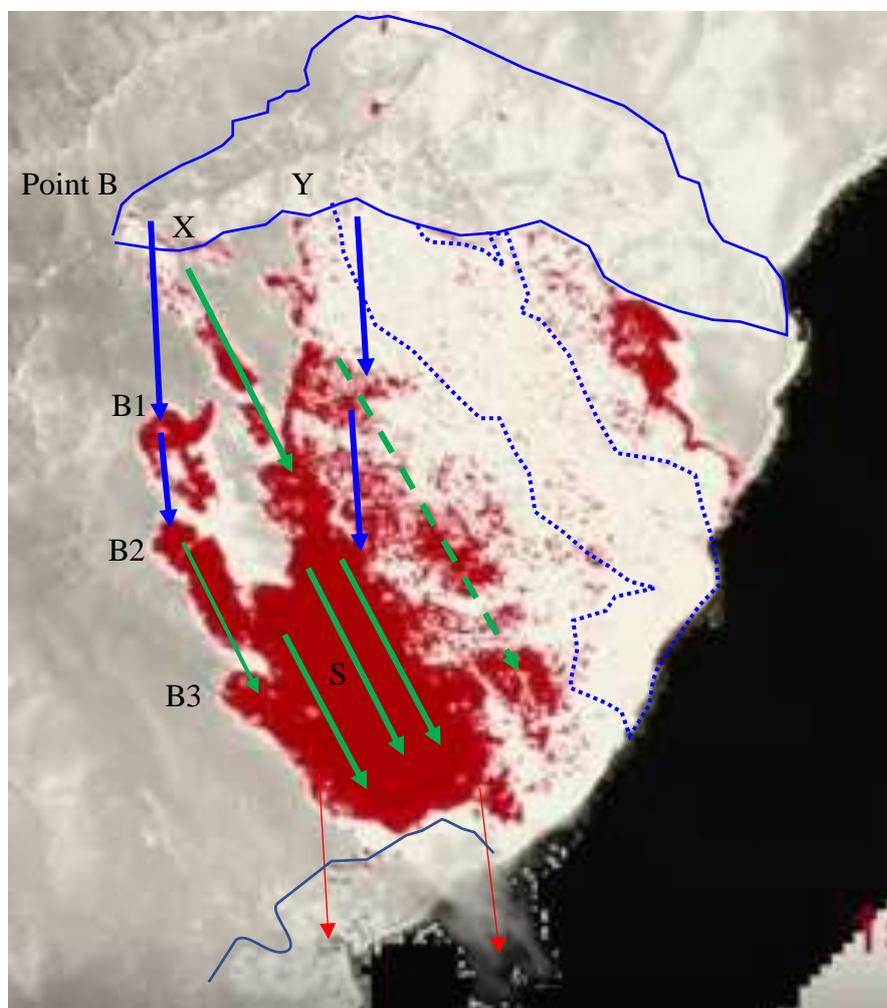
Houses being impacted (by embers) in Mitchell Grove, Separation Creek

3.47 pm line scan

Fires escaped from western part of back burn area
There was no line scan between 1.24pm and 3.47pm, so we have to deduce what ignited, where and when.

Estimated wind direction at the fire ground:

- From N between 1.30 and 2pm
- From NNW between 2 and 3.30pm
- After 3.30pm from N



Source: DELWP YouTube series

The line scans will be kept at the same scale to show progress of escaped fire

Note the third breach of the control line is at X and the final one is also at X.

Total = 4.

The N-S red signature at Y is the western expansion of the blue dotted 1.24pm line scan

The prevailing winds were from N (blue arrows) and NNW (green), but wind channelling in the Separation Creek valley may have influenced the direction of the hot air blast offshore.

Blue line encircles Separation Creek and Wye River townships

Reconstruct fire spread south of Jamieson Track control line

Criteria

The line scans have a heat signature that can be estimated with repeatability.
 The degree of red shading can be used to estimate duration since fire activity:
 Red has been at flame heat within the past 30 minutes or so.
 Blotchy red was flame 30 to 60 minutes ago
 Pinky-white was flame 60 to 90 minutes ago
 White was flame 90 to 120 minutes ago

Figure 21 shows the locations and approximate times of the four breaches of the Jamieson Track – Wye Road control line:

1	11.15am to 3.30pm	Jamieson Track saddle, western flank expanded west
2	1 – 1.30pm	Jamieson Track's steep rise east of Godfrey Tk
3	2pm	Wye Road, south of spur track into fire origin
4	3pm	Jamieson Track near Wye Rd

Breach 1 descended the Godfrey Track spur, reaching the coast with an average speed of 3 kph, and then spread laterally along the coast at 0.7 kph.

Breach 1 also continued to expand westerly along and south of Jamieson Track without suppression effort until after 3.30pm. Between 1.30 and 2pm, its flank and body were the sources of ember throw to the south, and after 2pm were the sources of ember throw to the SSE. By 3.45pm, it had almost reached the eastern flank of Breach 3.

Breach 2 ran into the eastern flank of Breach 1 fire

Breach 3 was major contributor to destruction of the southern towns.

Between 1.30 and 2pm, Breach 3 embers leapfrogged to 1 km southwards by medium distance across discontinuous fuel beds (eg, wet gullies).

After the 2pm wind changed back to NNW, multiple fires ran in tandem.

- The southernmost source ran through the Separation Creek valley towards Wye River, the valley funnelling the wind.
- The northernmost end at the Breach 3 location ran SSE, traversing the long Wye Road ridge line by short distance spotting (eg, up to 200m) through continuous forest towards Separation Creek. The Breach 3 fire travelled 4 km from the Wye Rd – Jamieson Tk junction to shower Separation Creek with embers in 1 hour = average speed 4 kph in average winds of 30 kph.
- In between the northern and southern sources, other fires were pushed to the SE-SSE in tandem.

Breach 4 expired after running 100m or so south of Jamieson Track

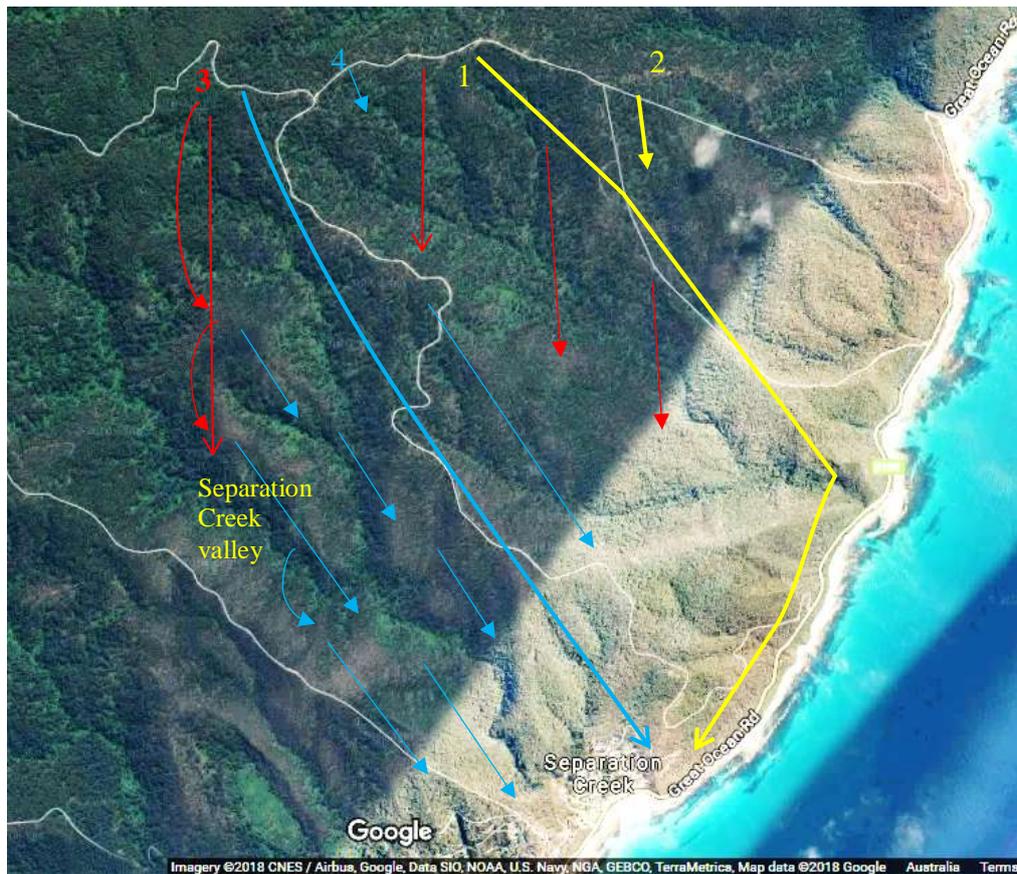


Figure 21 Indicative directions of leading spot fires south of the back burn line up to 4pm. Yellow arrows indicate Breaches before 1.30pm on the NNW-NW wind. At the coastline, the flank of the leading right-hand spot fire spread southerly along the coast at an angle to the Northerly and NW winds. Red arrows are Breaches and ember throws to the south during the Northerly wind period. The western flank of Breach 1 which had spread westerly along Jamieson Track since 11am, threw embers southward. Breach 3 generated leap frog spot fires 1 km southward. Blue arrows are the Breaches and ember throws to the SE-SSE. The Separation Creek valley narrows towards Wye River between Wye Rd and Old Coach Rd, which funnels a parallel wind.

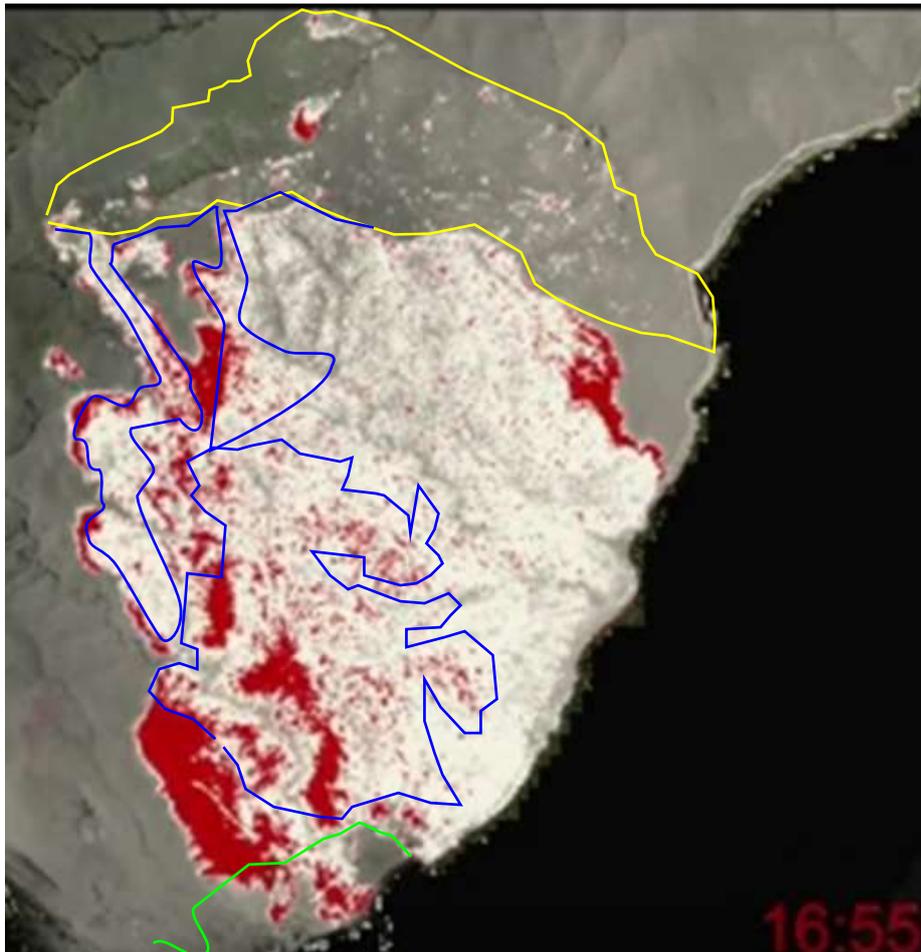
4.17 pm Sit Rep

Houses have been lost

4.55 pm line scan

Estimated wind direction at the fire ground:

After 3.30pm from N



Source: DELWP
YouTube series

The line scans will be kept at the same scale to show progress of escaped fire

The prevailing wind at this time was from N. Southern fire boundary has been pushed 500m further south uphill to Old Coach Road ridgeline and 200 – 300m downslope.

Blue outlines extent of 3.47pm fire

Green outlines Separation Creek and Wye River townships

8.05pm line scan

Estimated wind direction at the fire ground:

After 3.30pm from N



Source: DELWP
YouTube series

The line scans will be kept at the same scale to show progress of escaped fire

The prevailing wind at this time was from N

Blue outlines extent of 3.47pm fire

B Weather

Aireys Inlet Weather Station is 25 km from the fire ground to north east. Therefore, with the weather system moving along the coast at around 40 kph, the fire ground received Aireys Inlet weather approx. 30 minutes beforehand.

Aireys Inlet Weather Station 25 km north east of the fire ground

Aireys time	10 am	11 am	12 pm	1 pm	2 pm	3pm	4 pm	5 pm
Fire ground time	9.30	10.30	11.30	12.30	1.30	2.30	3.30	4.30
N	30	28 33			32		28 30	26 24
NNW		32	30 30 28		28	22 24		

Each column is an hour block and the start of each hour is listed. The wind direction was blue from the N and red from the NNW for the duration of the blue and red lines respectively. The numbers are average wind speeds

in kph. Eg, in the hour starting at 11.30am on the fire ground, the wind was from the N at 33kph until 12.04pm then from NNW until 1.30pm, initially at 30 kph then falling to 28kph.

Summary of approx. wind direction at the fire ground:

	From	From
Before 10.40 am	N	
10.40 am to 11 am		NNW
11 am to 12 pm	N	
12 pm to 1.30 pm		NNW
1.30 pm to 2 pm	N	
2 pm to 3.30 pm		NNW
After 3.30 pm	N	

Although the wind changed direction frequently, the average wind speed remained steady around 30 kph, with gusts up to 50 kph.

1.2 Fire suppression response (Primary sources)

0.27 am and 5.33 am Sit Reps:

Control strategy - ***direct attack to contain fire within current boundaries***

37 fire fighters

The burn on Tuesday and Wednesday has been successful.

Fire remains within boundaries.

Flare up at 2 am contained.

A breakout may impact local towns, but evacuation planning has been done

ISP prepared 4am on 25/12 Day 7 for 25/12/18 Day 7

[Note: This is the day shift plan.]

Jamieson Tk fire Fire size 278 ha

Objective ***Contain fire by 6pm on Day 8 (26 Dec)***

“Should the fire spot out in two spaces, activate LATS

Should two loads of water on a single spot not succeed, activate LATS”

Direct attack with line construction where appropriate. Aggressive aerial bombing of hot spots, running edge and spot overs, and follow up ground support where appropriate.

Resources 51 fire fighters, 10 SOU, 4 tankers, 2 dozers along Jamieson West, 32 fire fighters, 6 SOU, 3 tankers, 2 dozers along Jamieson East.

Delaneys Road fire Fire = 9ha

Objective under control by 6pm on Day 8 (26 Dec)

Resources 23 fire fighters, 2 dozer

Total on fire line, both fires 112 personnel, 24 SOU, 9 tankers,

Aircraft based at Gerangamete airbase and elsewhere = 6 – 3 spotter aircraft, 3 helitak

Comment: This ISP shows escape spot fires were expected and would be vigorously suppressed.

The “activate LATS” strategy in today’s very high fire danger is unacceptable because the lead time will allow escapes to spread too far.

11.29 am Sit Rep

Control strategy: ***air attack to slow spread and asset protection at Wye River***

Send strike team to Wye River and additional Divisional Commander
 Evacuate Wye River at 11.50am, close Great Ocean Road
 Fire activity increased this morning,
 2 spot fires, “Not confident of containment, LATS deployed, no machine access. Likely to push towards and over Godfrey Track”

12.45pm Sit Rep

Control strategy: ***aircraft focused on asset protection in Sep and Wye***
 Evacuation underway
 “Spot fire has increased to over 30ha and crossed Godfrey Track and Wye Road”, meaning Wye Rd exit on Great Ocean Road.

2.07pm Sit Rep

Control strategy: ***aircraft focused on asset protection in Sep and Wye***
 Evacuation completed
 Crews pulled off Jamieson Track control line for safety

4.17 pm Sit Rep

Power has been cut to both towns

ISP prepared at approx 6pm on 25/12 Day 7 for 25/12/18 Day 7

[Note: This is the night shift plan.]

Jamieson Tk fire Fire size 1750 ha

Control line abandoned at 2.07pm

Resources were dispersed to Delaney fire or asset protection at Wye River

Delaneys Road fire Fire = 9ha

Objective under control by 6pm on Day 8 (26 Dec)

Resources 20 fire fighters, 2 dozer, includes 14 CFA fire fighters

Jamieson South sector

Objective Asset protection

Resources 18 fire fighters, includes 13 CFA fire fighters

Separation Sector

Objective Asset protection

Resources 7 fire fighters, includes 13 CFA fire fighters

Wye Sector

Objective Asset protection

Resources 0 fire fighters

Total on fire line, all fires 46 personnel, 2 SOU, 7 tankers,

Aircraft based anywhere zero

Comment: There were two fire grounds – the Jamieson Track area and the townships.

A Defence of the Jamieson Track control line

From my perspective as a Best Practice professional, the control objective referred to an escape from the control line, because that was the most vulnerable area. But on closer inspection, it said contain fire within current boundaries, meaning there is no reference to escaping spot overs. It seems to refer to escapes from the original fire, running through the back burn area. If so, their naivety was profound.

The fire suppression response by the 83 fire fighters on the Jamieson Track control line was remarkably ineffective when considering that only one spot over location was reported around 11am within 100m of the control line in a flat saddle. If helitankers were not present

on the control line when the spot fire ignited, and if the troops and dozer were not acting in coordination, the fire ground leaders made a serious error of judgement. Also, where was the infrared detecting aircraft to detect potential trouble spots?

There was no further description of deployed resources. What did these 83 fire fighters do? Without further evidence, we must conclude that the defence of the Jamieson Track – Wye Road control line was non-existent.

After 11.29am, there was no further interest by the Sit Reps in suppression response on this control line, and it was formally abandoned at 2.07pm, just before the western half of the back burn breached unhindered, to reach the southern towns an hour or so later.

B Defence of the towns

After 11.29am, a new fire ground was established at Wye River and they allocated 1 strike team of 5 tankers for 300 evacuated houses that will soon be lashed by embers. It also directed aircraft for asset protection, suggesting both deployments were a trigger for a breach of the line.

By 5 or 6pm the ISP indicated there were 4 strike teams.

Media and locals report many helitaks water bombing in the towns before the town's sky darkened at 3 – 3.15pm. These may have been organised by Melbourne HQ, because Colac HQ did not refer to them by numbers. It is likely they were not coordinated nor air space controlled. Media aircraft remarked how freely they flew around the area. A few helicopters and a few fire fighters is grossly insufficient resourcing for mass ember onto 300 evacuated houses, even though helicopters saved many houses. It may demonstrate how inept the leadership was in not pre-planning the towns' defence.

Colac HQ apparently continued a monitoring / reporting function for the township fire ground, but there was no formal announcement of lines of command, specifically, who was the local fire commander?

Documented eye witness accounts:

Jamieson Track control line

B was working alongside the Divisional Commander on Christmas day, liaising with the Incident Management Team in Colac, on the Jamieson Track control line.

“On Christmas Day I started at 8am because we needed all our resources on deck. It was full-on. We usually do a situational report every hour but from 11am when that first spot went over the line, we were liaising with Colac every 20 minutes and then at 2pm we started evacuations,” she said.

“To see the fire come over the hill and into Separation Creek and see those houses disappear and all the animals coming out; it was intense.

An inside look at the Wye River fire

Friday 12 February, 2016

<http://parkweb.vic.gov.au/about-us/news/an-inside-look-at-the-wye-river-fire2>

Wye River CFA station

The Sit Reps would have us believe that IC Drayton ordered the evacuation at 11.50 am. But it is slightly different to what C from the local CFA described on 28 Dec:

On Christmas morning, Wye River Fire Brigade Captain Roy Moriarty held a meeting to review and confirm the town's fire plan. Soon after, Roy was on the blower calling Wye River CFA volunteers to inform them that a Watch & Act message was in place and the town should evacuate. Swinging into action, the brigade's Auxiliary members ... singlehandedly coordinated the evacuation, managing traffic flow out of the town.

“I was telling them – there is a fire, do you have water? Do you have blankets? You need to leave now and go to Apollo Bay.”

Once the town was successfully evacuated just after lunch, they moved into the Surf Life-saving Club with 10 other people, where they were told by emergency services to bunker down and wait.

Wye Sep Connect May 2016

CSIRO report to CFA dated April 2016

Excellent report, I could have helped with detailed information on ground crew suppression as I was the Strike Team Leader for 0730 which was the Strike Team operating in Wye River during the period 25/12/15 to noon 26/12/15. We saved structures on the Boulevard and all adjacent streets. We were the only active crews in the main Wye River township area from the Fire Station up.

Simon Mooney on May 10, 2016 at 10:27 pm

<http://wyeseconnect.info/csiro-report-released/>

EMV Media Releases

POSTED: 25 December

Title: Town evacuations in and around Lorne

Withdrawn from web site

POSTED: 25 December

“An emergency warning remains in place for Wye River and Separation Creek and evacuation of both towns has taken place.”

“At this stage we are not able to confirm how many houses in those areas have been lost.”

“We are strongly recommending that people in Kennett River and Grey River evacuate

“A recommendation to evacuate has also been issued for Lorne, Allenvale, North Lorne and Cumberland River.”

Jamieson Track Lorne fire now more than 2000 hectares.

POSTED: 28 December 2015

On Christmas morning, Wye River Fire Brigade Captain Roy Moriarty held a meeting to review and confirm the town’s fire plan – a plan developed by locals that would eventually save the lives of hundreds of community members and visitors to the area.

Soon after, with a fire in the landscape and with conditions rapidly changing, Roy was on the blower calling Wye River CFA volunteers to inform them that a Watch & Act message was in place and the town should evacuate.

Swinging into action, the brigade’s Auxiliary members ... singlehandedly coordinated the evacuation, managing traffic flow out of the town.

“Everyone was so calm and patient,” said Christine. “Most of the locals knew about the fire danger already through the FireReady App so they were ready to go, but we also had to help visitors and tourists that were trying to come into the area.

“So many visitors and campers knew that we were on fire alert, thanks to the emergency services that visited the campground and spoke with everyone a few days earlier,” said Katrina.

“I was telling them – there is a fire, do you have water? Do you have blankets? You need to leave now and go to Apollo Bay.”

Thanks to the efforts of Christine and Katrina, the evacuation went seamlessly, and everybody made it out to safety in time.

Once the town was successfully evacuated just after lunch, Christine and Katrina moved into the Surf Life-saving Club with 10 other people, where they were told by emergency services to bunker down and wait.

“The police and firefighters told us to stay in the surf-life saving club, and they checked on us regularly,” said Christine.

“At no point did we feel unsafe. We knew our CFA volunteers were protecting the club and campground and thanks to their amazing efforts the whole area didn’t go up in flames.” Safe in the clubrooms, Christine and Katrina watched as the fire tore through Wye River, destroying homes.

“The helicopters were amazing, but when the sun set and the wind picked up, things suddenly got very intense,” said Katrina.

“There was nothing we could do, the wind just threw the fire around the town and once it jumped the river we thought it didn’t look good.”

Relief arrived close to 3am when the rain passed over the area, bringing some reprieve for the firefighters.

POSTED: 29 December 2015

Prime Minister Malcolm Turnbull has praised Victoria’s response to the Wye River fire while visiting the Surf Coast today.

*Mr Turnbull spoke with Emergency Management Commissioner Craig Lapsley and Wye River Fire Brigade Captain Roy Moriarty who detailed the **extensive planning that went into protecting the lives and properties of local community members.***

Emergency services knew the risks and put in place the appropriate arrangements, Mr Turnbull said afterwards. “Above all, there was no loss of life. This is a case study for other communities.”

Mr Turnbull was greeted by the Victorian Premier Daniel Andrews and Sarah Henderson, MP for Corangamite.

Mr Turnbull commended the leadership displayed during the fire, which has burnt approximately 3,000 hectares and destroyed 116 houses. He expressed his sympathy to all of those who lost their homes.

POSTED: 30 December 2015

A Recommendation to Evacuate will be enacted on Thursday 31 December at 10am for Kennett River, Grey River and Wongarra due to the hot and windy forecast that could impact the current Lorne fires.

Incident Controller, Alistair Drayton, said emergency services were taking no risk ahead of worsening conditions.

“With significant fire still in the landscape, community safety is at the forefront of our planning. We are doing this as a precautionary measure as a result of several hotspots in the Jamieson Track fire that could flare up.

***“On Christmas Day we saw this fire take on a life of its own due to Mother Nature. There is potential the fire could run again and we don’t want to take any risk having our community members in these areas. So far, we have escaped any loss of life and this remains my number one priority,”** he said.*

Police Commander at the Colac Incident Control Centre, Peter Seel, said it was important for all community members to be aware of the evacuation and what this means.

“Today Victoria Police are door knocking these communities to advise the evacuation is going to happen tomorrow so they have forewarning. Police will be present and patrolling in the areas that are evacuated to make sure it is a smooth process and the community feel 100% supported.

“If the forecast conditions do not eventuate tomorrow, residents will only be evacuated for 12 hours and be able to return at 10pm that night,” he said.

Drayton said the loss of 116 properties in Wye River and Separation Creek on Christmas Day due to the fire was devastating but could have been a lot worse.

***“Last time the fire ran, we asked the community to leave and I have no hesitation doing this again. Many houses burned, but everyone was safe. This was proof of successful planning with emergency services and the community working together,”** he said.*

POSTED: 2 January 2016

Incident Controller, Alistair Drayton, said the result would determine whether it is safe for property owners, residents and campers from the fire affected area could return.

“We are doing everything we can to get property owners and residents back in and also allow campers to collect their equipment, but so far it hasn't been safe,” Mr Drayton said.

POSTED: 21 January 2016

The Wye River-Jamieson Creek Track Fire Incident Controller Alistair Drayton has determined that the fire is contained.

Containment means ‘the spread of the fire is halted’. This is a significant achievement, however there will be hot spots and smoke from within the fire area.

“We have worked over 34 days to achieve containment and will continue our efforts to secure this fire.”



Figure 22 This photo was taken through the SLSC window mid afternoon. The spot flames are low and spot fires are well separated. The white streaks are falling embers, some probably live. Estimated time 4 to 4.30pm.

Verbal accounts of eye witnesses in the towns:

The feedback given to me by local fire fighters confirmed that fire fighter activity during the fire attack of the towns was sparse compared to house numbers under threat:

One advised me that there were several aircraft water drops before and after 3pm, and that shortly after 3pm, a few CFA units were attending spot fires in parts of Separation Creek, some in open defiance of local chiefs, who declared the area unsafe.

Another reported that just after 4pm, there were two CFA units in Separation Creek. One was extinguishing spot fires and the other was stationed at the creek with a pump.

A strike team told Wye Sep Connect he saved several houses from spot fires in the Boulevard area of Wye River.

Another told me that during and after the ember storm, fire fighters were banned from asset protection and posted at the major assets overnight, ie, the Pub, Big 4, SRLC, CFA station. Meanwhile houses continued to burn down as the uncontrolled flame trickled around.

Who was in charge?

2 What the authorities said after the fire (Secondary sources)

2.1 Fire behaviour related aspects

The several versions of the spot fire escape accused of running into the towns:

IGEM

From Interim Report:

According to Mr Pearce, ... The spot fire that resulted in the major fire that hit the Wye and Separation Creek townships most likely came from the embers of the original fire, or from the collapse of a tree across the containment line from inside the original fire burn area.

Victorian bushfires: Backburning not to blame for Wye River fire, investigation finds Farrah Tomazin January 23, 2016 Age on line

From Final Report

The fire spot over is reported to have been started by a tree falling from an area that had been previously well burnt. As the tree fell it provided additional unburnt fuel which caught fire and started throwing embers as a result of the hot and extremely windy conditions. These embers resulted in spot overs and breach of the containment line.

EMC

The Division Commander became aware of a flare up reported north of the Jamieson Track, in a steep gully downslope from the track. There was heavy material, likely from previously fallen tree limbs, which had caught alight and flared up. A slip on unit was directly working on this flare up and had called for tanker support as they were experiencing difficulty controlling the flare up. The Division Commander was then advised that spotting had occurred across the Jamieson track.

The spot over event included embers being thrown into a large stringybark tree. From this elevated position, further spotting quickly occurred in the area immediately to the south of the Jamieson Track, which comprised a steep gully system.

Comment: Presumably the spot over event was described to the IGEM and EMC separately by on-site witnesses at different times. However, the narrative of each appears so fabricated and unlikely that their veracity must now be tested in three ways before they can be given any credibility – verbal interview with witnesses, accurately location said events on a map, accurately locate said events on a site inspection.

Based on strident declarations to the media by EMC, IGEM and Minister (see Addendum), the IGEM and EMC reports aim to reinforce the idea that the source of the spot over was the original fire, and not the back burn. Why? Perhaps they have been advised there is a lower level of liability for the controller or fire agencies if the original fire threw the source ember. Such an effort however is irrelevant on two counts:

- 1 They are both admitting that a spot over escaped across the control line that was on one part of the 4 km control line that was allegedly patrolled to prevent escape. How it escaped is irrelevant. The fact is it escaped, meaning control line defence was inadequate.
- 2 This spot over did not cause any damage to the towns. It expired on the NE edge of Separation Creek. The spot over at Point B some two hours later was the cause of the towns' destruction. The IGEM investigation would have known this because it had access to the same documentation I did but chose not to document the fact. This spot fire also escaped before the control line was abandoned, again because control line defence was inadequate.

2.2 Fire suppression response (Secondary sources)

2.2.1 Fire control plan

A IGEM

Due to high fire danger conditions forecast for 25 December, the fire control strategy focussed on containing the fire within containment lines. The strategy was for aircraft to immediately attack any spotting that occurred.

When the fire breached containment lines the IC initiated community safety plans in response to the escalating risk caused by the rapid southward spread of the fire. Crews were withdrawn from the fire ground, and CFA resources readied in Wye River and Separation Creek to give direct protection to houses. The IC established an additional divisional command to support this effort.

Emergency warnings and evacuation – Evacuation plans indicate the trigger for evacuation of Wye River and Separation Creek as the breaking of containment lines. The decision to issue an emergency warning on 25 December was based on knowledge that approximately 400 people were in Wye River and the expectation that the fire would reach the township by 3pm. Evacuations of Wye River and Separation Creek commenced at 11.57am on 25 December.

Comment The IGEM's description of events is masterly defence of IC actions and non-actions. When the first breach occurred, crews were withdrawn from the fire ground (redeployed to where? – few went to the towns), CFA was readied in the towns to protect houses (only 1 strike team was sent, but town was soon declared too dangerous), evacuation was done at 11.59am because IC knew the fire would reach town by 3pm (Nobody knew this fire escape would expire before reaching the town, nobody knew another fire escape between 1.30 and 2 would attack the town).

The statement that IC knew any fire escape would quickly cross Godfrey Track was nonsensical because the control line was 4km long. For example, the escape from Point B at 2pm did not cross Godfrey Track. Supposed IC anticipation of a spot over across the control line contradicts the firm IC and IGEM belief that the back burn will not escape over the control line.

With community safety strategies implemented, records show that the IC moved to prepare for the change of wind to the southwest, expected in the evening between 7pm and 9pm.

The IGEM praised the fire control team for their procedural response:

Incident records show readiness for the events of 25 December, and a rapid turn to protecting the safety of crews and communities, and assets in the townships to the south.

Comment: Sadly (1), this praise seems detached from the actual outcome of the decisions of the fire control team, namely, that the fire escaped control lines and caused the destruction of over 100 houses.

B EMC

The Division Commander reported increasing winds by mid-morning, and crews were actively deployed along the Jamieson Track in a concerted effort to deal with hotspots and flare ups. Aircraft were water bombing the fire on the morning of 25 December 2015

2.2.2 Suppression Response

A IGEM

IGEM, presumably after investigation, repeated these Sit Rep fire ground numbers. *“Thirty-seven DELWP firefighters were available for most of the day, with an additional 90 CFA personnel in the evening. Crews monitored the fire into the morning of 25 December. Incident reports indicate aircraft were water bombing the fire on the morning of 25 December. This is not recorded in the incident documentation.*

The spotover event - *The breach of the containment line prompted an immediate response by the IC. Aircraft were used to drop water on the spot fires as there was no possibility of on-ground crews or dozers accessing the fires.*

The IC had expected any fire spilling over containment lines would quickly move south over Godfrey’s Track. By 12.45pm the fire had crossed both Godfrey Track and Wye Road

Coroner repeated this: *As part of its planning for this contingency, the IC had expected that any fire spilling over containment lines would quickly move south over Godfrey Track.*

Compare this version to the IGEM Interim Report:

According to Mr Pearce, the initial fire was “immediately and vigorously attacked” by ground resources and aerial support but later spotted and became inaccessible. Victorian bushfires: Backburning not to blame for Wye River fire, investigation finds Farrah Tomazin January 23, 2016 Age on line

And the Sit Rep of 11.29am

“LATS deployed, no machine access”.

The IGEM praised the fire control team for their procedural response:

IGEM recognises the appropriately scaled approach to control and resource allocation throughout this fire. The effectiveness of strategy planning and implementation were highly likely to have contributed to the successful outcome of preserving life and minimising further losses.

Comment: The IGEM investigation sometimes stretches credibility, eg, resources list was grossly inaccurate, yet it had access to the ISP’s; quoting incident reports that were not on incident documentation.

Sadly (2), this praise for the scaled approach and planning effectiveness seems detached from the actual outcome of the decisions of the fire control team, namely, that the fire escaped control lines and caused the destruction of over 100 houses.

B EMC

The Division Commander reported increasing winds by mid-morning, and crews were actively deployed along the Jamieson Track in a concerted effort to deal with hotspots and flare ups. Aircraft were water bombing the fire on the morning of 25 December 2015

The spotover event - *Due to the proximity of water bombing aircraft at that time, water bombing operations on this spot fire occurred within minutes of it being reported.*

The Division Commander also called in a large bulldozer to support fire fighting operations, but due to the steepness of the terrain in which the spotover had occurred, there was no possibility of the spot fire being accessed by the bulldozer or on-ground crews.

Despite best efforts, it quickly became obvious that the aircraft were not going to be effective in controlling the breakout

Comment The EMC description of the site, eg, steepness, does not match the flat terrain at the reported spot fires sites.

With such conflicting advice, how can the Coroner decide what to believe? – IGEM said *Aircraft were used to drop water on the spot fires*, EMC said *Aircraft were not going to be effective*

3 Deduced fire behaviour

Explanation of how the Breach 1 fire spread down the Godfrey Track spur

The developing spot fires were initially sheltered by the tree canopy, so they ran up hill. As the flame generated embers, the wind threw the embers downwind, and the same cycle continued – spot fires ignited, ran up hill and generated more embers. The upslopes on Figure 23 were to the right of the yellow wind arrow, coincidentally in direct alignment with the Godfrey Track spur. The wet gully to the left of the wind arrow prevented westerly spread.

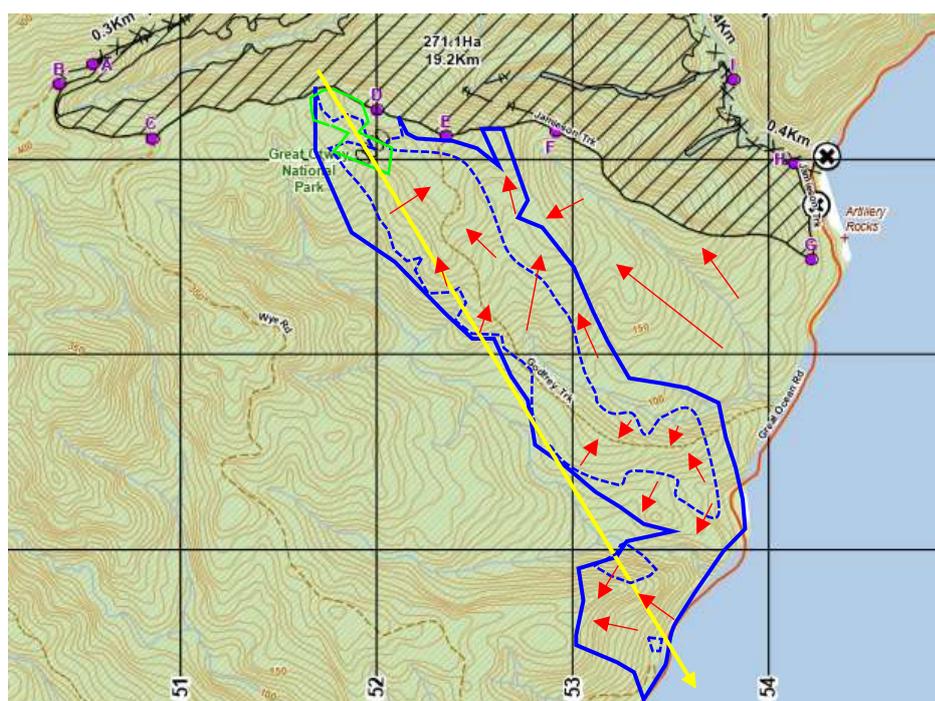


Figure 23 Summary of known escapes across Jamieson Track before 2pm = TWO
 Green outlines extent of 12.04pm fire and spot fires.
 Blue dash outlines extent of 12.52pm line scan
 Blue line outlines extent of 1.24pm line scan
 Red arrows show upslope runs by spot fires.
 The yellow arrow was the prevailing NNW wind that drove the embers downwind.

During the short periods of Northerly wind (11 to midday and 1.30 – 2pm), the Godfrey Track embers jumped short distances into the wet gully to the west where they self-extinguished. Thus, the fire spread where the spot fires could burn upslope.

The fire expanded down the Godfrey Track spur at a surprisingly rapid rate of 2.5 km in 50 minutes = 3 kph. Yet this is a downhill run to the SE. Coincidentally, the wind was from NNW-NW, meaning it carried embers to the SSE. When embers land on a slope beneath tree cover, the air flow tends to be calm and the flame runs upslope, rising up flammable tree trunks and throwing embers high into the NW wind, throwing embers further down slope. If there was a high proportion of stringybarks and peppermints on the spur line, there would have been many more embers than if it was a high proportion of blue gum.

When the Godfrey spur spot fire fronts hit the coast at 1pm, they were 1.5 km from Separation Creek. The head fire dissipated at the coast and the flank fires spread laterally, the southern one reaching Separation Creek at 3pm. This was an average spread rate of 0.75 kph. The predominant vegetation along the coast was heathy scrub with short trees. If a fire front ran with the wind in this vegetation, an expected spread rate would be 10 to 15% of wind speed at fuel level, ie, 2 – 3 kph. This flank fire was crabbing perpendicular to the wind direction, so 0.75 kph, about 1/4 of head fire rate, is within expectations.

Explanation of the three-way fire spread from Jamieson Track control line to the towns.

Figure 24 transcribes Figure 21 and two line-scans onto a contour map so that terrain can be better seen. The three pathways are shown in purple.

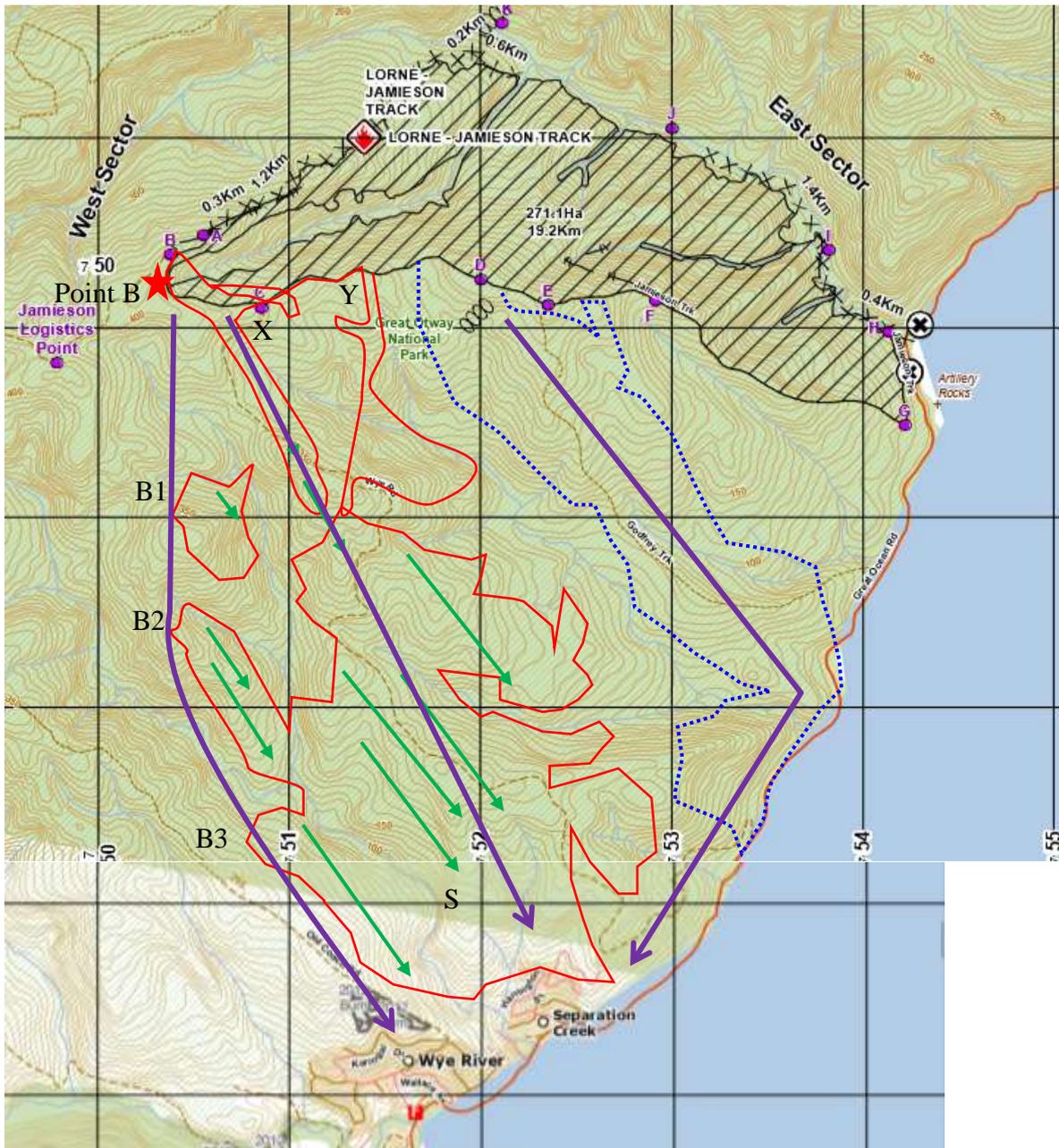


Figure 24 Red star is at the reported location of the 2pm spot fire, Point B on the flat hill top. Green arrows are potential run lengths that a NNW wind would generate along ridgelines or along a slope parallel to the wind. Blue dotted line is location of 1.24pm line scan, Red outline is extent of fire area at 3.47pm.

The three breaches of the control line and their spread pathways are shown in purple.

- The first breach occurred during a NNW wind at 11am or thereabouts and the pathway ran SSE to the coast and then crabbed its way along the coast, reaching Separation Creek around 3pm.
- The next breach occurred during a N wind around 1.30pm, sending longer distance embers up to 1 km away within half an hour. The wind then changed to NNW and the pathway of the most distant spot fires within the Separation Creek valley headed inexorably SSE, rising uphill to the Old Coach Road ridgeline and blasting eastern Wye River with embers from around 4pm.
- The third breach occurred during the NNW wind after 2pm and its pathway ran directly along the Wye Road ridgeline through continuous forest, throwing embers into Separation Creek from 3pm.

Notes:

1 There were three fires that originated due south of Point B. They can only have occurred by ember jumps on a Northerly wind. Eg, ember throw from B-X vicinity to B1 and B2 or throw to B1 which threw to B2. B2 then threw onto B3 as the NNW wind returned.

2 After the NNW wind change, B1 may have had no further influence on the afternoon, unless the NNW wind enlivened its NE slope and sent embers to the SE. B2 was very active. If it was not curtailed by the right-angle bend in Separation Creek valley, its climb up the steep wall would have thrown embers into Separation Creek town.

3 B2 also generated B3, which pushed flame and short distance spot fires across the old coach road into Wye River.

4 After 3.30pm, the wind changed to a Northerly, the southern flank of B3 spread south and area S remained a potential medium distance source of embers that landed on Separation Creek and Wye River for the next few hours.

5 Separation Creek town is at the bottom of a southerly basin that rises for 1 km up to Wye Road. This means an approaching fire has to back downhill, which helps to take the sting out of a bushfire attack and is a good natural fire protection feature.

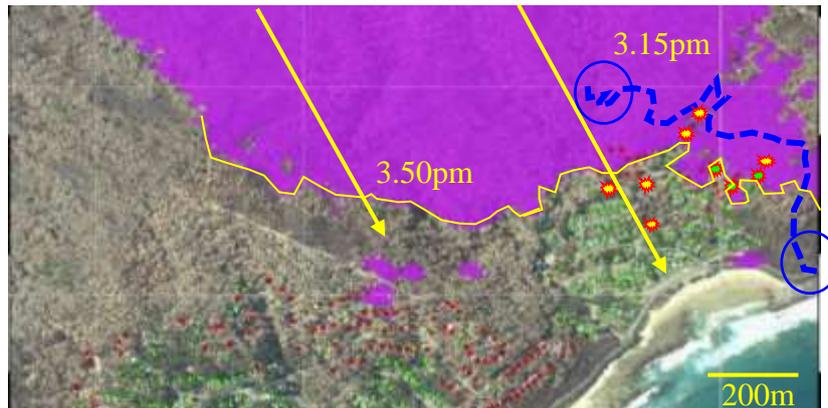
6 The north Wye River town is also within a southerly basin, but the rim is low and very close to houses. This fire climbed up the slope to Old Coach Road gaining momentum and intensity as it did. The flames generally stopped along the ridge line but they threw a mass of short distance embers down wind. They would have been thrown only 150 to 200m ahead of the flame, but the closest houses endured a downburst. The ember rain was deadly on vacated undefended houses. The highest house loss rate (90%+) occurred within 200m or so from the ridge line. Beyond say 250m, house loss rate peaked at 20%.

7 Because the ridge was at an angle to the fire direction, the ember rain would have been a prolonged spray rather than a mass dump. When spot fires ignited, they ran uphill as narrow fronts, separately, not simultaneously.

Ember throw into the towns (1)

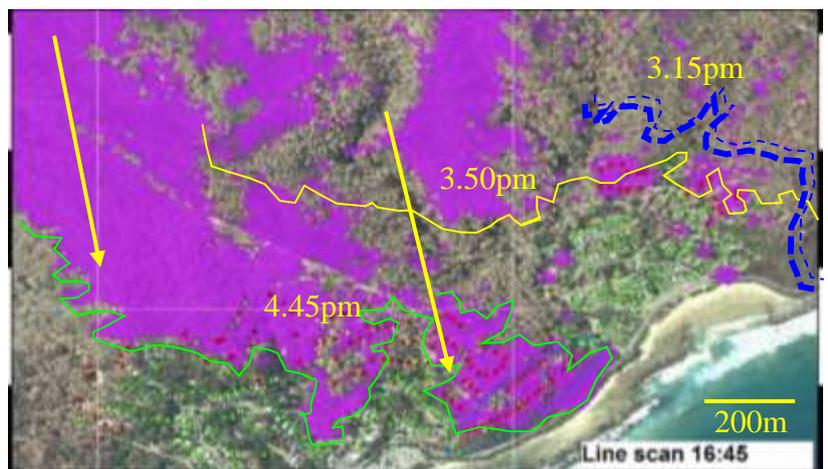
CSIRO reported the first five spot fires in the Mitchell Grove, Bass Avenue and Olive Street area of Separation Creek at 3.07pm. They were a few hundred metres ahead of the very wide (1km+) advancing fire front. The CSIRO report allows us to re construct the entry of embers and spot fires into the towns. Figure 25 uses the CSIRO's line scan reproductions (from fixed

wing plane at approx 10,000m elevation) as the base map and overlays the FLIR images (from helicopter at low elevation). They include geo-referenced houses - red dots were burnt and green dots survived.



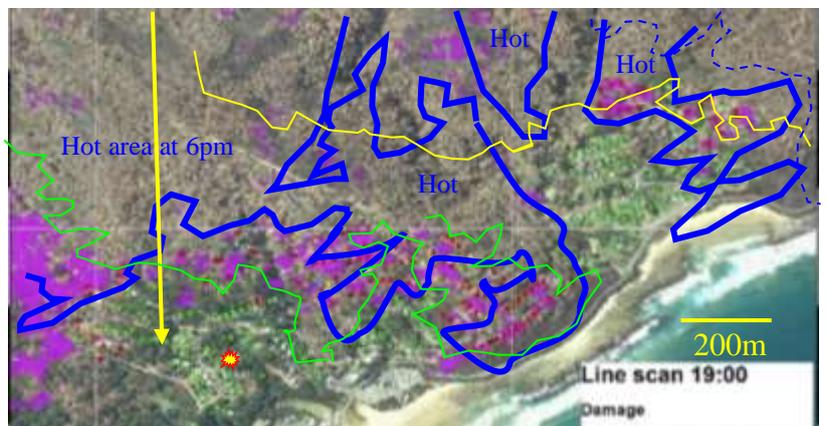
A 3.50pm line scan

Blue dash line is southern edge of heat mass from 3.15pm from FLIR scan and red blotches locate spot fires that developed in the previous 8 minutes. Blotches with green insides expired, yellow insides grew. Purple areas are heat masses from 3.50pm line scan (high elevation) yellow arrow is wind direction over towns. Note 4 new spot fires along ridgeline north of Wye River, and another spot fire near coast in Separation Creek, sourced upwind from dotted arrow.



B 4.45pm line scan

Purple is heat mass from 4.45pm line scan (high elevation) yellow arrow is approx wind direction from line scan. Note 7 or 8 new spot fires in Separation Creek. Yellow line is southern edge of 3.50pm heat mass Blue dash line is southern edge of heat mass at 3.15pm. Note the large areas without purple heat patches, indicating no bushfire flame took hold. This means the full cover of heat mass in 3.50pm line scan was due to superheated air of many fire fronts converging, not continuous surface fire.



C 7pm line scan

Purple is heat mass from 7pm line scan (high elevation) yellow arrow is approx wind direction Yellow arrow is prevailing wind direction Thick blue line outlines heat masses at 6pm from FLIR scan. Green line is southern edge of 4.45pm heat mass Yellow line is southern edge of 3.50pm heat mass Blue dash line is southern edge of heat mass at 3.15pm.

Figure 25 Heat mass movement across the two towns. Source: CSIRO Report, 2016.

Notes about Figure 25A: The hottest parts of the heat signature at 3.15pm are circled blue, indicating active flame. It is likely the northern blue circle was a spot fire front from the NW emerging out of a gully that threw embers into the Mitchell and Bass areas. The southern blue circle was the flame coming along the coast just as it began to climb the hill. The rest of

the line was speckled white on the scan, indicating hot air rather than flame. This line appears to capture the convergence of the fire mass from the NW that derived from the 2pm spot overs on the western part of the back burn and the flank fire mass hugging the coast, deriving from the 11am spot overs.



Figure 26 Houses alight due to ember attack at Mitchell Grove. Estimated time 3.30pm
There are four houses alight four houses alight and surrounded by green gardens and trees.
The houses have been directly hit by embers. Note the row of fire trucks on the road
John Nicholson / Channel 7 <http://bushfireaustralia.blogspot.com.au/>

The pink blotches south of the 3.50pm line scan are spot fires from the NW. One is on the coast in Separation Creek and three or four are in the Dunoon / Karingal area deriving from the fire mass on upslope to the Old Coach Road.

Notes about Figure 26B: After around 3.30pm, the prevailing wind direction became more Northerly, which pushed the leading edge of the heat mass approx 500m to the south by 4.45pm, an average spread rate of 0.5 kph when wind speed averaged 25 to 30 kph. The broad fire front spread by a combination of mass spotting 100 to 200m ahead of the front on downhill runs and by direct flame contact on upslope runs. At that rate, the leading 3.50pm edge would reach the Karingal / Dunoon / Old Coach intersection at 4.15pm, meaning embers started falling on the Dunoon / Iluka area around 4pm and peaked between 4.15 and 4.30pm. There may have been localised NW air flow over Wye River due to channelling in the Separation Creek valley.

Figure 26B shows that the 3.50pm line stopped at the Bass Mitchell area because of insufficient fuel in the residential properties to allow spot fire ignition of spread. This helps explain the large area of green dots (surviving houses) in Separation Creek. Another contributing factor to the green dots is the lack of vigorous ember generating flame, as indicated by the sparse purple blotches at 4.45pm north of the 3.50pm line.

The 4.45pm scan captures a heat mass in the Karingal / Dunoon / Iluka area. The area was within 250m or so of the exit point from the narrowed Separation Creek valley and an ember shower started at 4pm, falling onto vacant undefended houses, many with well maintained

low fuel surrounds. The embers ignited in the sheltered slope and ran up hill. Was it a sheet of flame? No. They were many separate narrow spot fires with low flame heights whose plumes combined to produce mass of heat.

The Iluka area vegetation was coastal heath, whose flame flash lasts 30 seconds and yet the line scan shows remnant heat mass 30 – 45 minutes after the flame expired. This suggests the flank flames expanded, holding the flame's heat longer. The CSIRO report shows the heath vegetation was scorched, not burnt, meaning the flame height as less than 1m tall.

Note how separated these spot fires are. Each of the spot fires on this picture is running up slope. At any one time there is plenty of escape room. There are plenty of fuel free gaps. It reminds me of a prescribed burn operation with a drip torch. There is nothing dangerous about these unless a person or object is upslope from the rising flame.



Figure 27 Mass spot fires in the Iluka area. Estimated time is around 4.30pm. Blue dashed line is Iluka Avenue. Yellow and red arrows are spot fire ignitions. John Nicholson / Channel 7 <http://bushfireaustralia.blogspot.com.au/>

Notes about Figure 26C The 6pm heat signature overlays the 7pm CSIRO line scan. The 6pm heat mass shows where the forest north of Old Coach Road burnt and generated the embers that showered the Dunoon / Iluka area from 4pm. Almost all of the 6pm heat areas were above the Karingal Road houses, meaning the heat mass of 4.45pm scan had no residual heat, ie, fuel load around houses was low. There were two exceptions - the Iluka heath area and the Koonya-Wallace forested area.

By 7pm, the line scan shows heat patches in the 6pm heat areas are largely confined to burnt houses and heavy fuel areas.

The leading edge of the western heat mass has moved a further 500m south in 2 hours, an average spread rate of 0.25 kph.

Ember throw into the towns (2)

Separation Creek

Separation Creek town is at the bottom of a southerly sloping basin that rises for 1 km up to Wye Road. This means an approaching fire has to back downhill, which is a good natural fire protection feature that takes the sting out of a bushfire attack. The embers from a downhill backing fire in this blue gum forest with a following wind were short distance, eg, up to 200m or so. Figure 26 shows a few sites that generated uphill runs (yellow arrows) that could have added medium distance embers into the mix. Based on the line scan at 3.47pm, air flow across the towns then was NNW to NW. Figure 26 shows the likely sources of embers that caused house loss around that time.

Prevailing wind from NNW



Figure 26A Oblique view towards SSE Yellow line is approx leading edge of heat mass at 3.47pm
 Pink dotted circles are most likely sources of short distance embers for attack on Separation Creek (up to 200m)
 Red circle is most likely source of medium distance embers for attack on Separation Creek (> 500m)
 Greenish areas with sparse crown cover indicate canopy is thin due to leaf loss but understorey is recovering beneath. Leaf loss was probably due to leaf scorch, suggesting flames were not tall enough to burn canopy foliage, but sufficient uplift to throw embers high enough above canopy to cause spotting short distance spotting (eg, 200m or so) downwind.
 Brownish tree cover areas with sparse crown cover probably indicates hotter fire with scorched or burnt canopy, suggesting taller flames with greater uplift to throw embers higher above canopy to cause medium distance spotting downwind, eg > 500m.
 Blue arrows are prevailing wind from NNW. Yellow arrows are short upslope runs from creek to ridge top that would have been a source of embers.

Wye River

The northern half of Wye River town is within a southerly basin, but the rim is low and very close to houses. Figure 26B shows a Northerly wind pushed the flame up the slope (yellow arrow) to Old Coach Road and also along the contour (pink arrows). The upslope flames generally stopped along the ridge line but they threw a mass of short distance embers down wind. These flames threw embers short distance (up to 200m or so), which when igniting as

spot fires ran upslope. The pink arrows pushed flame along the contour until the downslope converted them into a slow backing fire. Again, these flames generated short distance ember throw and spot fires ran upslope.

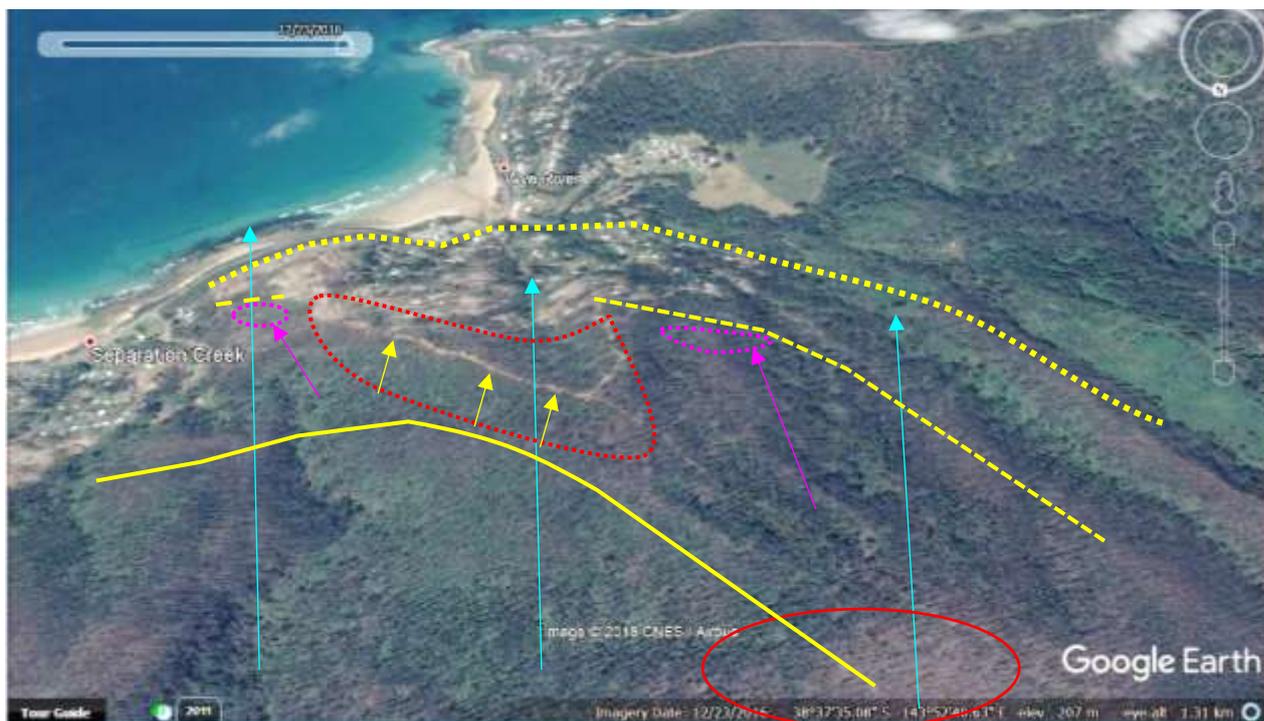


Figure 26B Oblique view towards South

Yellow solid line is approx leading edge of heat mass (probably flame front) at 3.47pm

Yellow dash line is approx leading edge of flame front heat mass at 4.45pm

Yellow dotted line is approx extent of short distance embers up to 4.45pm

There were two methods of flame entry into Wye River:

(1) Pink arrows show entry of flame pushed by wind along the contour until slowed by downslope converting them to backing fires.

Pink dotted circles are most likely sources of short distance embers for attack on Wye River (up to 200m)

(2) Red dash crescent encircles split ridgeline track, showing yellow arrows of upslope flame run that generated short and medium distance embers. South of the split ridgeline track is a steepening fall, suggesting short distance flame overrun across ridge track before downslope slowed it to a backing fire. Further southward progression downslope was by ember throw, which ignited in lee shelter and spot fires ran back uphill.

Red circle is most likely source of medium distance embers for attack onto Wye River (> 800m)

Greenish areas with sparse crown cover indicate canopy thin due to leaf loss but understorey recovery beneath. Leaf loss was probably due to leaf scorch, suggesting flames were not tall enough to burn canopy foliage, but sufficient uplift to throw embers high enough above canopy to cause spotting short distance spotting (eg, 200m or so) downwind.

Brownish tree cover areas with sparse crown cover probably indicates hotter fire with scorched or burnt canopy, suggesting taller flames with greater uplift to throw embers higher above canopy to cause medium distance spotting downwind, eg > 500m.

Blue arrows are prevailing wind from NNW.

Yellow arrows are short upslope runs from creek to ridge top that would have been a source of embers.

There were two methods of flame entry into Wye River:

(1) Before 4pm, wind flow across the towns was at NNW to NW angle, even though prevailing wind became N after 3.30pm approx. Pink arrows on Figure 26B show entry of flame pushed by wind along the contour until slowed to a halt by downslope.

Pink dotted circles are most likely sources of short distance embers for attack on Wye River (up to 200m)

(2) After 4pm, wind flow at the towns was closer to Northerly, matching the prevailing wind. The red dash crescent encircles split ridgeline track. Advancing flame rose up to the ridge track (Old Coach Road) generated short and medium distance embers, throwing them from a high point south into Wye River.

House loss distribution matches ember throw distance

The pink dotted areas were the furthest south that an ember generating flame occurred, due to increasing downslope. These areas were equivalent to fire breaks. Figure 27 summarises the ember throw distances from these “downslope firebreaks” and their directions into each town. This allows us to assess house loss distribution.



Figure 27 Yellow line is approx leading edge of heat mass at 3.47pm
 Pink dotted circles are southernmost sources of short distance embers from (up to 200m) where “downslope firebreak” occurred.
 Red dotted crescent is source of short and medium distance embers (200 - 500m) where flame spread stopped along ridgeline (green dash line).
 Yellow lines are 125k and 250m respectively downwind of closest ember-generating flame

Separation Creek House loss percentages are approximate

Distance downwind of closest ember-generating flame	Red dots Burnt houses	Green dots Survived houses	Yellow dots Damaged houses	Total
0 to 125m	15 75%	5		20
125 to 250m	3 10%	21	2	30
250m	18 36%	26	2	50

In Separation Creek, 36% of vacant undefended houses within 250m of the “downslope firebreak” were lost.

75% of vacant undefended houses within 125m of the “downslope firebreak” were lost and 10% of vacant undefended houses between 125 and 250m of the “downslope firebreak” were lost.

Wye River House loss percentages are approximate

Distance downwind of closest ember-generating flame	Red dots Burnt houses	Green dots Survived houses	Yellow dots Damaged houses	
0 to 125m	59 86%	6	3	68
125 to 250m	25 55%	19	1	45
250m	84 74%	25	4	113

In Wye River, 74% of vacant undefended houses within 250m of the “downslope firebreak” were lost.

86% of vacant undefended houses within 125m of the “downslope firebreak” were lost and 55% of vacant undefended houses between 125 and 250m of the “downslope firebreak” were lost.

These Tables provide supporting evidence for three interlinked theories of house loss.

- Ember intensity declines with distance from upwind ember source
- Chance of ignition of a house is correlated with ember intensity
- House loss rate is inversely correlated with distance from upwind ember source.

The houses were unoccupied and undefended. The Tables provide evidence for another core theory of house loss:

House loss rate for unoccupied houses is several times higher than occupied houses.

Eg, Solution Paper 6B** reported that a typical house loss rate differential of an unoccupied undefended house is around 60% and of an occupied defended house is around 14%.

The lower house loss rate at Separation Creek can be attributed to higher level of defence and lower density embers in upwind forest.

The house loss rate at Wye River was close to Marysville’s vacated houses on Black Saturday. Solution Paper 6B** reports that the width of the township area was narrow, approx 200m, and the house loss rate adjacent to the ember source was 85 – 90%.

** <http://www.redeagle.com.au/wp-content/uploads/2014/07/Paper-6B-House-loss-rate-in-severe-bushfires-Part-2.pdf>

4 Deduced fire suppression response

4.1 Fire Control Plans

In hindsight, the response to the first spot over at around 11am featured a half-hearted attempt to deal with the spot overs (the ground troops cannot reach it, so order LATS) and because subsequent Sit Reps barely mentioned the control line, we can say it triggered an immediate loss of interest in defence of the Jamieson Track control line and led to its subsequent

abandonment. We now know from the IGEM report that a breach was the trigger for evacuation of the towns.

Therefore, the deduced fire control plans were as follows:

Jamieson Track control line Defend vigorously using ground troops on site and helitankers on call until first breach. If breach occurs, evacuate towns immediately and send one strike team (1 strike team was probably to help with evacuation, because it was insufficient to defend 300 houses)

Defence of towns: There was no plan to do so. Although they went to great pains to prepare for evacuation of the towns, they neglected to make plans to defend the towns under attack.

Their planning therefore failed to meet any key principle of Best Practice forest fire suppression. Eg, You manage a bushfire by quantifying each threat and mitigating or eliminating each by either passive or active means or both. Your success is determined by how well you mitigate each relevant threat.

- To prevent a bushfire crossing a control line, you need to know what the physical threats are and you devise a plan to mitigate each threat.
- To defend a town against ember attack, you need to know what the physical threats are to each house and you devise a plan to extinguish spot fires on and near each house and make plans to deploy and command adequate resources.

The control team neglected both and incurred no criticism from either IGEM or EMC.

4.2 Resources allocated and work done on the ground

The IGEM quoted the Sit Rep's incorrect numbers of 37 fire fighters on the Jamieson Track control line on Christmas Day, but the ISP's list, also available to but not referenced by the IGEM, might be more accurate. The ISP's also listed resources allocated later to the townships.

In regard to the Jamieson Track control line, 51 fire fighters were allocated to the Western half and 32 to the eastern half, an average of 20 fire fighters per km. and three helitaks were also available. Whether they were on the line is not known. No infrared spotter was specified for the control line, however, one appeared at Wye River at 3pm to record the fire entry into the unprotected towns.

If the 11.15am spot over location was accurately reported, the ISP resources list was theoretically adequate to suppress the spot fires while small. Three on site helitankers with a 5-10 minute refill turnaround would have been invaluable if they were on site. The fact that the spot fires escaped suggests the resources were otherwise occupied or were not well coordinated or were not physically present. The spot fires spread without hindrance from near the Track and kept going and growing.

When the control line's abandonment was announced at 2.07pm, the reported spot over from its western edge at Point B must be regarded as an understatement. Working backwards in time, the two longer distance spot fires due south of Point B occurred during the North wind phase between 1.30 and 2pm approx. Both were well established and they were both spotting by 2pm. Their mother fire at Point B must have been vigorously alight by 1.30pm to have thrown embers 600m or so downwind. If the fire ground crew (including the spotter helicopters) knew about the escape at 2pm, they also knew about the fire situation at 1.30pm at Point B and would have passed it on to Colac HQ.

The 2.45pm photo showed the entire western half of the control line generating vigorous smoke, suggesting several of the back burn's hot spots had thrown short distance embers and the spot fires had been burning for a while and had joined forces south of the line, generating even more embers. We do not know if the allocated forces had prevented spot overs before abandonment, but if so, they could well have prevented them if they had stayed. Details about their suppression effort before abandonment should have been of great interest to the IGEM and a source of valuable "Learnings", but alas, there was no such interest.

In regard to town defence, one strike team of 5 tankers was sent to Wye River where some 300 houses were soon to be attacked. This was a token effort and grossly insufficient. The ISP suggests by late afternoon there were 4 or 5 strike teams, again grossly insufficient for protecting 300 vacant houses just after mass ember attack with spot fires slowly spreading laterally and upslope. The evening ISP said after the abandonment of the Jamieson Track control line, the DELWP fire fighters (80-odd) were dispersed to Delaney's fire and the towns, but the ISP only accounts for a third of that number. Where did they go?

Interviews with local CFA firefighters reveals that the local Captain (was he the appointed Commander?) banned fire fighters from house defence during the ember attack, a ban that persisted for 12 hours or more in the treed parts of the towns, covering the time when house loss occurred.

We have no idea what work they did, how many houses they saved, or the times they were allowed or were not allowed to enter the towns for defensive works during the ember attack.

Media reports, witness reports and media footage shows several helitaks at work over the towns before the fire front arrived. Whether they all returned afterwards is not known. At least one was recorded by media crews bombing a spot fire near the Wye bridge.

5 Analysis - effectiveness of suppression response

5.1 How effective were Incident Controller's plans and actions in achieving his suppression goals?

A First fire control plan – The Jamieson Track control line

The objective until 11.29am was direct attack - "to contain fire within current boundaries">

Was this plan appropriate (compared to Best Practice) and did resource allocation allow achievement of plan?

Partially appropriate The objective was partially appropriate because it only referred to preventing hot spots throwing embers across the line and did not include the need to stop escaped spot fires across the line while small.

Resources were inadequate to achieve objective.

If they were serious about the objective, they would need a continuous line scan coverage and rapid response resources to quell hot spots before they threw embers down wind and to stop spot fires while small.

B Second fire control plan – defend the towns under attack

The stated objective from 11.29am onwards was “asset protection” in the towns.

But this objective has two implicit components:

Part 1 Evacuate people

Part 2 Defend vacant houses

Part 1 Not appropriate

Enforced evacuation of everybody was inappropriate because it was a panicked response without reference to bushfire behaviour and the known consequences of evacuation, ie, vacant undefended houses have the highest house loss rate.

Part 2 Appropriate

Because the overriding goal of a government fire agency was to protect life and property,

Resources were adequate to evacuate the town, but were inadequate to defend the vacated houses

Towns were evacuated successfully with available resources. No lives were lost.

Resources were grossly inadequate to stop spot fires escaping from the control line. Several uncoordinated helitaks and a strike team was unacceptable.

5.2 Comparison of Incident Controller’s performance with Best Practice plans and actions

Best Practice standards required identification and preparation of most likely and most risky escape sites and appropriate deployment of resources to detect and rapidly suppress spot fire ignitions. These were specified in Section 5.2 of “Days 4, 5 and 6”. Such an analysis, preparations and deployment were not done.

Performance rating against Best Practice forest fire suppression: 0 / 10 on both counts:

- Resourcing the Jamieson Track control line was inadequate as specified in Section 5.2 of “Days 4, 5 and 6”. Abandonment of the line was scandalous. Just when the western half of the back burn line was becoming active, the whole line was abandoned. This western half was the major source of embers that destroyed the towns.
- Resourcing the towns’ protection was grossly inadequate. Evacuating the town’s residents from an ember attack when their property maintenance ensured embers could not ignite removed potential self-defenders was premature and ill considered, particularly when there was no plan to send in the 100 or so tankers needed to defend 300 vacant houses from ember attack.

5.3 Conclusion

The Jamieson Track fire was technically contained on Day 4 by the western spur track, Jamieson Track and Jamieson Creek wet line, even though the stated objective for containment was 6pm on Day 8. It remained contained after 11am on Day 7, even when the spot overs occurred in the saddle. The Controller’s new duty was to contain those spot overs with his deployed resources and hold the rest of the line. Their failure to do so did not change

the status of the control line. It was still contained after the 1.30pm spot over, when the Controller's new duty was to contain the spot fire with his deployed resources and hold the line. Their failure to do so did not change the status of the control line. It was contained until he abandoned the control line.

The Controller had different ideas compared to a Best Practice Controller

1 The Controller knew since Day 4 there could be an escape, so evacuations were planned in detail. But no plans were made to fortify or defend the houses. In hindsight, townsfolk were fooled into a false sense of security on Day 5 with the pitch that the back burn would make them safer.

2 The Controller knew where the escape fire would run. Yet made no preparations to stop their run.

The IGEM was in no doubt the Controller expected an escape from the back burn control line. *The IC had expected any fire spilling over containment lines would quickly move south over Godfrey's Track. By 12.45pm the fire had crossed both Godfrey Track and Wye Road*

The Coroner repeated this: *As part of its planning for this contingency, the IC had expected that any fire spilling over containment lines would quickly move south over Godfrey Track.*

3 The Controller had no intention of stopping the escapes.

The Controller's objective before 11.29am was "direct attack to contain within current boundaries". This means he expected the original fire to escape and they would catch it within the backburn area before it crossed Jamieson Track. If he planned to stop the back burn escaping, there would have been an objective like - contain escaped spot fires when small.

4 Instead, the first big escape across the control line was set as a trigger for a different objective. For a plan, it was a premature and panicked response - wind down the control line that was now worthless and protect the towns. The trigger set off an order the town to evacuate, to send a strike team to the towns, to redeploy aircraft from the control line to stop the runaway and then defend the houses.

A responsible Best Practice Controller would plan and get resources to stop the escape at all costs and have a back-up plan to defend the town. But this Controller did neither, and his actions were praised by the IGEM and the IGEM report was subsequently endorsed by the Coroner despite the IGEM being heavily criticised for non-independence.

Premature and panicked response

At 11.29am, with the report of two spot fires and the words "not confident of containment", the Controller pulled the trigger. Yet the line scan shows the fire area was only 5 ha at midday with a few spot fires to the south. Where were the helitankers? Where were the rapid response resources? This location was in the deepest saddle along that ridgeline, a known wind tunnel area, a predictable location for a spot over and for matching permanent defence forces. Were they caught napping?

- But their non-fight, their non-resistance, their easy capitulation tells us they were not serious about the defence of Jamieson Track. It tells me their attitude was if a spot fire escapes, they have no hope of stopping it, so let it run.
- There was no reference to a fight or a struggle to contain any other spot fires.
- This means the back burn was working very well in the wind. This was every reason to hold the rest of the line.

- There was no reference to subsequent spot overs till 2pm

Ironically, the first spot fire escape caused no damage to the towns. It ran to the coast and dissipated on the edge of Separation Creek.

Hindsight analysis of their statements of successes, reveal that their primary objective was not asset protection at Wye River, it was zero death toll. They knew the towns were not protected, just like the Black Saturday towns were not protected. They had already planned to evacuate the people. Houses cannot be moved away of course, so high house loss rate would be expected collateral damage. They can easily blame Mother Nature as in the past. But there must be no deaths.

Callously, the EMC and the Controller both said the house toll could have been worse. Yet they both knew the town was declared unsafe to fire fighters while the houses were being ignited by the half metre tall flames of sporadic spot fires. They both knew that if there had been a seriously coordinated town defence with adequate resources and if there had been no enforced evacuation, the house toll would have been much much less.

This high house loss rate is the direct outcome of the government's misinterpretation of the Royal Commission findings, specifically the use of evacuations to avoid the need for protective infrastructure and firefighters for the active defence of houses.

Consequences of decisions

116 houses destroyed, many more damaged, many lives cruelly disrupted, insurance payout \$120M+, estimated government costs \$50M+.

If the Controller applied Best Practice, the fire would be controlled by Day 2.

The Controller applied other principles and the fire went for 34 days.

The bottom line for government fire agencies is to minimise public money spent and maximise net public benefit and net local community benefit, but they have failed on each count.

Their story was full of contradictions:

- They reported one spot over 50m south of the control line at 2pm but failed to report the two spot fires steaming along 0.6km and 1km to the south. Their firebird saw the medium distance spot fires ignite to the south just after 1.30pm. Why were they not acted on when small by the rapid response team? Because there was never such a planned response. It was remiss of them not to report these spot fires to Melbourne HQ.
- There were reportedly 50 fire fighters allocated to the western half of the control line. If they were there before the north wind phase (1.30 to 2pm), they would have seen the revitalisation of the hot spots within the back burn area. Perhaps they held the back burn line in check while they were there. If they were there during the north wind phase (1.30 to 2pm), they would have seen the fire escape and grow large south of point B. None of this was reported. Perhaps they were not there.
- It perhaps makes sense that when they saw such distant fires escaped, they would abandon this line and relocate troops to help with town defence. But it makes no sense when they said the line was abandoned for safety reasons. At 2.07pm, they announced

they abandoned the line “for safety”, despite their unshakeable belief in their escape-proof back burn that would have made the Track the safest place to be on that day.

- They also knew that by 2.30 pm, the entire western half of the abandoned back burn had crossed the control line. They knew the NW wind was pushing those downwind spot fires toward the towns. None of this was reported.

Control team was remiss:

By dismissing direct attack when it was physically possible and economically and environmentally better, they were remiss in failing to obtain Best Practice advice.

By choosing back burn over direct attack in early summer, they were remiss in failing to obtain Best Practice advice

By failing to consider that a back burn can escape in a bone-dry forest is ignorance of forest fire behaviour, they were remiss in failing to obtain relevant Best Practice advice.

Approvers were remiss:

If it was foreseeable that the back burn would not escape, the approvers were ignorant of basic forest fire behaviour and were not qualified to make an informed decision.

It was foreseeable that the back burn could escape, but the next question was not asked by the approvers - can the escape be stopped or not stopped?

If it was foreseeable that escaping spot fires could be stopped, the approvers were duty bound to ensure adequate resources so they would be stopped before approving the back burn

If it was foreseeable that escaping spot fires could not be stopped, the approvers were remiss when approving the back burn.

The control teams were remiss in due diligence. They neglected to assess their liability exposure before deploying the back burn:

- If they light a back burn and it escapes their control
- If they light a back burn and fail to consider the consequences of an escape
- If they light a back burn and fail to consider their ability to prevent an escape
- If they light a back burn and have ability to prevent an escape but it escapes and causes damage and distress to communities

Overall conclusion

Day 7 of this tragically farcical fire week was no different from the other days - no shortage of warped thinking, misinformation, contradictions and ineffective management. The whole week personifies the symptoms of a broken bushfire protection system. The same broken system that delivered Victorians the Black Saturday tragedy has now deteriorated further. It is broke. We must fix it. The fire authorities cannot fix it because they are part of the problem.

Remember how confidently we were promised the “best prepared ever” fire services on TV the night before Black Saturday? Next day we got a rash of fires that delivered 173 deaths and 2000 burnt houses in just one afternoon.

The fires were infernos originating beyond government control, running towards exposed towns devoid of government sponsored protection infrastructure. We were on our own and half the properties were self-defended. We were promised protection by fire agencies that on the day were shambolically unmanaged, scarily unprepared and way out of their depth. Gallingly, the “best prepared ever” statement was repeated a month later by the Premier before another severe weather day. It was pure spin. Bushfire protection by spin. The fires were examined by a Royal Commission that refused to lay blame and hoped to prevent a repeat occurrence.

This time, the attacking fire was an artificially large fire (made so by government actions) with low flame height that, until it escaped from a government-controlled fire on government land, was under government control, now running out of control towards exposed towns devoid of government sponsored protection infrastructure. The people obediently evacuated at government request and were trustingly dependent on government directions, but no properties were allowed to be self-defended. They were promised protection by fire agencies that were shambolically mismanaged and in return they got zero deaths and 116 houses destroyed in moderate fire weather.

The fire was examined by supposedly independent government agents who said everything went really well and who agreed with government Minister declarations that rewrote history by saying the government’s back burn did not escape and cause the house loss, but it was the original fire’s fault, forgetting the government’s responsibility was to contain the original fire anyway.

Government control in action

The government-controlled fire fight on government land was unable to contain the fire at a small size due to management ineffectiveness. This led to its escape and then ill-advisedly throwing Best Practice out the window, they extended the fire size with a back burn, knowing it could escape but (1) failing to prepare to stop its escape across the control line and its eventual run into unprotected towns and (2) evacuating the residents but not fortifying the towns defences or providing enough resources to protect the enforcedly vacant houses from light to moderate ember attack, and then declaring the town unsafe for access by the few firefighters that were there.

What has changed since the Royal Commission

Zero death toll policy is in operation, evacuation has surreptitiously and cynically replaced the need to protect houses because by promoting zero life loss, house loss can be diverted as a policy concern by stating that houses can be rebuilt (it works on the public and the media but is anathema to the house loss victim)

House loss remains unacceptably high - to the individual it is life shattering, but to the government, which is in control, it is collateral damage

Mis-management on fire suppression control line has replaced un-management

Suppression budget expenditure remains bottomless, unverified, wasteful and unaccountable.

People are now obedient and trustingly dependent on government instructions but burnt out victims are disappointed by government non-support.

Risk management policy has replaced threat mitigation policy, eg, government now declares acceptable house loss in a town is say 400, whereas people of that town want zero house loss.

Still no accountability or program for government sponsored protection infrastructure for whole towns and settlements. Instead, new houses are forced to build at high fire resistance design to protect against an identified but artificially high threat, but the threat is left intact.

Neither the owner of the hazard nor surrounding houses receive notification. Consequence – no reduction in bushfire hazard.

CFA still has no corporate interest in protecting towns. It is not their fault, they designed to be a response outfit, not a prevention unit. Yet the powers to strategically manage fuel load to protect towns are in their Act. They have the powers to strategically remove fuel, but not the will. This is the root cause towns why are not protected.

The government's interpretation pendulum of the Royal Commission has swung too far.

The government policy of zero death toll has raised the popularity of evacuation

House loss rate is now irrelevant because life saving is more important than collateral damage.

Government centralism under EMC demands dependence and obedience of fire authorities and people and discourages self defence.

What must change?

1 Adopt Zero house loss policy

Why? Because it will save lives (when you save the house you save the life), will reduce suppression costs and will increase community self-reliance.

2 Acknowledge limited capability of Plan A

Acknowledge that fire agencies rely on suppression to protect the state from bushfires. This is their Plan A. Acknowledge its upper limit of capability is windy FDI 30 and that they have no Plan B.

Return to Best Practice suppression

3 Implement Plan B

Phase 1 Protect whole towns:

Make whole towns protected from the escaped running flame, thereby creating a safe work place for fire fighters and residents to defend against ember attack, then progressively remove ember sources.

Performance criteria = % of towns that are bushfire-protected.

Replace risk management policy with threat management policy – identify threats using bushfire behaviour science and eliminate them no more assess calculated / theoretical risks and minimise them

Eliminate enforced evacuation

Phase 2 Create environment of incentive to self-protect a property

How can we make a town bushfire protected so that we eliminate the bushfire risk for all houses?

- Define town protection objectives as Zero life loss, Zero house loss, and maximum community cooperation and self-reliance.
- Using the latest valid forest bushfire behaviour science, identify by neighbourhood and by danger direction the precise bushfire threats to house loss and mitigate each with protective infrastructure that will (1) keep the moving flame well away and at low flame height, and (2) minimise or eliminate short distance ember attack on the neighbourhood.
- Teach people how to monitor quality of protective status of this infrastructure, identify ember source areas and how to monitor ember production status.
- For each property, install and maintain passive infrastructure to manage maximum flame height, prevent flame spread and minimise ember ignition points.
- Teach residents active ember management and spot fire suppression, including what to expect in an ember attack.
- Coordinate neighbourhood response teams.

ADDENDUM CONTEXT

Déjà vu – Lancefield fire escape

Environment Minister Lisa Neville said: "What's occurred in Lancefield was unacceptable and the department will now work hard to ensure it has better systems and processes in place to help rebuild community trust in planned burning."

6 November 2015 The AGE

Victoria bushfires 2015: Lancefield area under threat as 100 fires burn across the state

Allison Worrall

4:54pm: 100 fires are blazing across Victoria with more than 200 properties under threat.

An out-of-control bushfire is threatening hundreds of properties in the Lancefield area, about 80 kilometres north-west of Melbourne

The CFA upgraded a watch-and-act message for the Lancefield fire to an emergency warning about 2pm

A wind change was expected to sweep through about 4pm

The state's hot and gusty weather conditions led to Victoria's earliest ever total fire ban with bans in six of the state's nine fire districts

6 November 2015 Herald Sun

Victoria fire alerts: CFA warnings as temperatures soar

As 300 properties were threatened throughout the day, and two destroyed, it emerged one of the most dangerous fires - in the Macedon Ranges - was triggered by a controlled burn that jumped containment lines.

The revelation that a controlled burn has prompted Federal Government Minister Greg Hunt to seek an explanation from Premier Daniel Andrews.

3.42pm: Fire Services Commissioner Craig Lapsley said there were 100 fires burning around Victoria and three were significant.

Mr Lapsley said the Lancefield fire was burning last week, started again on the weekend and fire crews believed it was under control but went out of control again today with the extreme winds. **Mr Lapsley confirmed the Lancefield fire was a controlled burn that jumped containment lines last week.** He said it was in an area that was difficult to control and today's conditions made it more difficult.

8 November 2015 The Age

We share your anger, Andrews tells owners of homes imperilled by bushfire following planned burn

By Richard Willingham, Liam Mannix, Patrick Hatch

On a visit to the bushfire-ravaged town of Lancefield on Thursday, a frustrated Premier Daniel Andrews said locals had a right to feel angry.

The state government has appointed the director of Western Australia's Office of Bushfire Risk Management Murray Carter to lead an inquiry into how a planned burn got out of control.

Mr Andrews left Parliament early on Thursday to visit the bushfire-stricken town with a message for furious locals: "You have a right to be [angry], and we're pretty angry too".

"I cannot explain to you why what happened happened. But that's why we're having the review. Strength to you. It cannot be easy," Mr Andrews replied.

One man believed he had suffered almost \$100,000 dollars in property damage from the fire, caused by a backburn that quickly got out of control in boiling and blustery conditions.

He is already planning a class action against the government.

Department of Environment, Land, Water & Planning **chief fire officer Alan Goodwin said the Cobaw forest burn off's escape was regrettable. He denied emphatically the operation had been understaffed and ignorant of pending heatwave conditions.**

The state government has appointed the director of Western Australia's Office of Bushfire Risk Management Murray Carter to lead an inquiry into how a planned burn got out of control.

Ken Wright called on police to focus less on roadblocks and more on arresting the "moron" at the department who controlled the backburn.

"Heads should roll," he said.

At the historic Mechanics Institute in Lancefield 200 locals gathered to receive updates on the fire situation and vent their fury at government and emergency services representatives.

The real venom of the meeting was reserved for a representative from the agency that conducted the burn off. "We saw the smoke for five days," Steve Brain, who lives on Three Chain Road, told the meeting. And on the day that was vital they did not have helicopters up in their before it started. We've had this before and it's been covered up."

19 November, 2015 The Age
Independent report condemns Environment Department's handling of Lancefield planned burn
Darren Gray

A botched fuel reduction burn near Lancefield which destroyed homes was **under-staffed, inadequately planned and risks like "heavy" fuel loads in the area were not properly recognised**, a damning independent report on the blaze has found.

The report, which was released less than seven weeks after the houses were destroyed, also found: Communication by the department with the local community was inadequate at all stages of the burn, "including planning, implementation and after the escape".

Many staff did not have sufficient awareness of the risks posed by heavy fuel loads inside the burn area.

"A failure of decision-making" in not significantly ramping up resources after the burn first escaped on grand final day.

Greater thought should be given to using aircraft to conduct burn security surveillance.

Decision-makers failed by not "significantly elevating" resource levels in anticipation of adverse fire weather forecast for October 6.

Asked whether the grand final eve holiday, or grand final day contributed to a lack of staff on the fire, Environment Minister Lisa Neville said: "No. Absolutely not. Staffing levels are based on risk assessment, they're done at an operational level. And if the fire had been assessed as higher risk ... more staffing would have been available."

The secretary of the Environment Department, Adam Fennessy, apologised repeatedly and profusely to Lancefield locals at a packed community meeting held to discuss the report. The burn was planned, conducted and patrolled by staff from his department.

*"I am very sorry, I am deeply sorry for the distress this fire has caused you. And the disruption and the enormous impacts it's had on your lives. When this planned burn escaped containment lines it threatened you, it threatened your properties and threatened you as a community – and we let you down," he said. ***

Environment Minister Lisa Neville said: "What's occurred in Lancefield was unacceptable and the department will now work hard to ensure it has better systems and processes in place to help rebuild community trust in planned burning."

** This apology is a remarkably public admission of liability - Conservation Forests and Lands Act 6 (2) (c) The Secretary may sue and be sued in its corporate name.

Christmas Day - Fire spreads from Jamieson Track to Wye River / Separation Creek

Evacuation – the authorities' response to a bushfire that escaped authorities' control

25 December 2015 The Age

1:39pm: This is the latest advice on the Wye River bushfire from the CFA

Note: Obviously, this Advice was issued before 1pm, possibly around midday.

There is a quickly moving bushfire in the Wye River, Separation Creek area.

This fire is out of control and is expected to impact anytime within the next two hours.

Evacuation Information:

If you are located in Wye River, Separation Creek, it is strongly recommended that you evacuate to Apollo Bay via the Great Ocean Road.

This advice is current to 25/12/15 1:00 PM, evacuation after this time is considered life threatening.

After 25/12/15 1:00 PM it may be too late to leave, take shelter when the fire arrives - protect yourself from the fire's heat.

If you are away from home; do not return.

If you choose to stay, emergency services may not be able to help you.

Incident Information:

This bushfire is currently creating spot-fires up to 1-2km ahead.

It is traveling towards Wye River.

1:40pm: The CFA has just issued this update at 1.36pm, recommending people EVACUATE WYE RIVER

Recommendation to Evacuate

Wye River, Separation Creek

Effective: 25/12/15 1:36 PM

Expires: 25/12/15 2:30 PM

This advice is current to 25/12/15 2:30 PM, evacuation after this time is considered life threatening.

After 25/12/15 1:00 PM it may be too late to leave, take shelter when the fire arrives - protect yourself from the fire's heat.

1:56pm: The CFA has just issued an updated warning on the Wye River and Separation Creek bushfire, here it is. You are recommended to evacuate.

Recommendation to Evacuate

Wye River, Separation Creek

Effective: 25/12/15 1:52 PM

Expires: 25/12/15 2:30 PM

2:05pm: **This update on the Lorne bushfire from Alana Schetzer**

While many people are fleeing the area, one person is doing the opposite. Rex Brown, chairman of Otway Coast Tourism, is making his way from Melbourne to Lorne, where he is a volunteer CFA firefighter.

Mr Brown said the local crew were doing a "fantastic job" and that the priority is to ensure everyone was safe.

"I understand there's been house-to-house evacuations. We are so grateful for all the work the CFA guys are doing, especially working on Christmas Day. The CFA door knocked every single house since December 23. We hope that means everyone will be safe."

He said after ensuring everyone was safe, ensuring that critical infrastructure was protected was the priority.

2:18pm: Here's what we can tell you about the **Lorne fire**

Hot northerly winds are sweeping across the state, and have pushed the Lorne fire south across containment lines. It is now burning toward communities including **Wye River, Separation Creek, Kennet River and Grey River.**

The Great Ocean road is closed in the area in one direction. If you are evacuating you are urged to take it back to Apollo Bay - if not, the road is closed in the other direction.

The fire is currently 301 hectares and growing.



2:27pm: **The CFA warning for Lorne:**

Watch and Act Issued: 25/12/15 2:17 PM

The fire could impact any time within the next 2 hours. Don't wait, leaving now is the safest option - conditions may change and get worse very quickly. Emergency Services may not be able to help you if you decide to stay.

3:38pm: **Fire has now reached the outskirts of the small southern community of Wye River. People in Wye River are warned it is too late to leave, and they should shelter inside.**

"The situation is not fantastic," Emergency Management Victoria spokesman John Schobler just told the ABC.

"This fire has been burning for area for a week, it has breached containment lines today. It has pretty much more than doubled in size.

"The front of the fire itself has actually reached Wye River. We don't have any reports of damage but that's not looking so good for them."

Victoria Police have contacted everyone in that community. Thanks to early warnings from the CFA most people have had an opportunity to leave. The CFA believe anyone remaining behind is prepared to fight the fire when it enters the tiny town.

3:53pm: Age Editor in chief Andrew Holden was among those who evacuated Wye River for Apollo Bay at about 12.30pm after receiving an alert from the emergency services app.

At that time firefighters had already warned campers in nearby parks and were heading towards the township, he said.

"The fire was visible over the hillside, there was only a faint smell of smoke in the village at that point," he said.

"That's when the majority of people were being shifted out, I would have thought the village would have been basically evacuated by 1pm."

3:58pm: Here's the CFA's map of the Separation Creek fire. You can see it has now been altered to show that the fire has now entered the northern outskirts of the town. Wye River, which is larger, is the next town along the fire's southerly path.

The CFA advises that it is too late to leave Separation Creek, and affected residents should take cover inside.

4:19pm: **A Watch and Act has just been issued for Lorne.** Here is the warning:

A wind change is expected between 9.00pm and 10.00pm Residents and visitors in and around Lorne are asked to put their fire plans in place.

5:22pm: The CFA has now issued an evacuation alert for Lorne. Fire sirens in the town have been sounded. Here is the warning:

There is a fast moving bushfire in the LORNE, ALLENDALE, NORTH LORNE AND CUMBERLAND RIVER area.

This fire is not yet under control and is expected to impact anytime within the next four hours.

Evacuation Information:

If you are located in Lorne, Allendale, it is strongly recommended that you evacuate and seek shelter at 1 Merrijig Drive Torquay

This advice is current to 25/12/15 7:00 PM, evacuation after this time is considered life threatening.

After 25/12/15 7:00 PM it may be too late to leave, take shelter when the fire arrives - protect yourself from the fire's heat.

Last resort options include a Neighbourhood Safer Place, a stationary car in a cleared area, a ploughed paddock or reserve or body of water like a swimming pool or dam.

If you are away from home; do not return.

If you choose to stay, emergency services may not be able to help you.

5:59pm: Meanwhile here's the current fire map for Separation Creek and Wye River.

State Control Centre spokesperson John Schauble said they believed houses had been lost in both Wye River and Separation Creek. "We just don't know how many at this stage," he said.

"But I think you can assume that there has been property lost because the fire has burnt into the townships."

Mr Schauble said almost all of Why Rivers 80 permanent residents and about 350 holidaymakers had evacuated the town.

About 138 vehicles and 19 aircraft, including two large tankers, are working battle the 14,00 hectare blaze.

6:49pm: Another David rang into 774 from Apollo Bay, where he had evacuated with a family group of seven from Wye River.

"The first plumes of smoke appeared at 11.45am, then things happened so quickly. Thank goodness for fire-ready apps...

7:43pm: The CFA has just issued a fresh emergency warning for **Wye River** and **Separation Creek**.

Here is the warning: This is an Emergency Warning issued by Country Fire Authority for Wye River, Separation Creek.

There is a fast moving, out of control bushfire travelling in a southerly direction towards Wye River and Separation Creek.

You are in danger, act now to protect yourself.

It is too late to leave. The safest option is to take shelter indoors immediately.

7:51pm: CFA captain Roy Moriarty said they still weren't sure how many houses had been lost in the fire that continues to burn through Separation Creek and Wye River, reports Chloe Booker.

"We've lost homes, but it's probably not as bad as what it could have been and what we thought it would be," he said.

The Toll

25 December 2015 Herald Sun

At 7am this morning the fire was 275 hectares, 12 hours later it has grown to 1,500 hectares.

More than 150 MFB and CFA firefighters, 60 tankers, 6 water bombers and two large air tankers are working to contain the fire.

8.11 pm Incident Controller, Alistair Drayton: "There have been no reports of injury or loss of life but several houses have been destroyed."

10.26 pm The CFA confirmed 53 homes were lost, with 18 destroyed at Separation Creek and 35 at Why River, after the 2000ha fire jumped the Great Ocean Road and burned to the beach at Wye River.

26 December 2015 The Age

11:00am: Emergency Management Commissioner Craig Lapsley spoke at the State Control Centre just a few moments ago.

He said no lives had been lost at this stage in the fire, and most of the property damage was limited to holiday homes.

Here's a quote from the transcript via the website tveeder.com:

"The key thing, though, and it's in the numbers, Wye River is a beautiful holiday place. 334 homes in Separation Creek and Wye River is building register. 80 of those are where it is the primary place of a residence, the rest of holiday homes and when I say the rest are holiday homes, it's something that's valued but it's not the primary place where someone lives. That's important to understand."

12:01pm: Emergency Management Commissioner Craig Lapsley said earlier that the fire was started by a lightning strike on December 19 in difficult country that has not had a fire for decades.

27 December 2015 The Age

The Great Ocean Road fires have taken 116 houses in the latest tally with that number possibly rising, and emergency services have been praised for their early evacuation efforts. (Vision courtesy ABC News 24)

Nearly one in three homes in Wye River have now been confirmed as destroyed in the Christmas Day fire that ravaged the Great Ocean Road.

Authorities revised the number of homes destroyed in Wye River and Separation Creek upward to 116 - twice the number of homes lost than was originally feared.

Wye River had 334 residential buildings, of which 80 were primary residences, according to Emergency Management Commissioner Craig Lapsley.

He confirmed 98 of those homes were lost. A further 18 homes were lost in Separation Creek, bringing the total to 116.

26 December 2015 Herald Sun

Craig Lapsley says Wye River is a beautiful beachside getaway, and he is not alone in that opinion. But the Emergency Management Commissioner's visit to it on Christmas Eve was strictly business.

"I was briefed by the captain of the fire brigade about exactly what the fire would do," Mr Lapsley said. "It was a matter of which day it was going to do it."

Christmas Day was clearly going to be hot. But while total fire bans were in place, Mr Lapsley said the fire danger did not appear to be extreme, and he was happy with the control work done by firefighters.

"However, they said it will all be about wind," Mr Lapsley recalled.

"It'll be about wind that picks up a fire, picks up an ember and puts it over the control lines ... That actually happened on Friday.

"It was a little bit premature in the sense that we expected it not to be on a day that it was 32C with wind speeds of 40, 50, 60km/h. We thought it would have been a day of 40+C with 80, 90, 100km/h winds. But it happened." By 9am, the temperature had already topped 27C and northerly winds reached 33km/h.

Spot fires started beyond the containment lines and the bushfire blew wildly out of hand.

By Christmas night, the CFA said the blaze was so powerful that it was creating its own weather conditions.

Fire authorities now believe it's a bushfire that could still be burning in February.

While fires have ravaged the Otway Ranges before — particularly on Ash Wednesday — Wye River had escaped unscathed for decades.

Mr Lapsley said the only significant fires that impacted the township were in 1939 and 1962.

Now 2015 has been added to the history books

By late yesterday, Mr Lapsley confirmed at least 116 homes destroyed — 98 properties had been destroyed at Wye River and 18 at Separation Creek.

The Insurance Council of Victoria declared the Great Ocean Rd fire to be a catastrophe and said it anticipated claims of more than \$25 million. **(Note this was later revised to \$120M)**

27 December 2015 ABC on line

But "Anglesea legend", friend and long time CFA member Billy Bubb came to the Jacobs family home's rescue. "When I came back from being on the hose at Wye River, he said 'Peter, I've been round to your place'," Mr Jacobs said.

"I grabbed him by the shoulder and said 'yeah?' He said, 'I've saved your house, Peter'.

"I'm indebted to him, he's a legend.

"He stayed there with all the sprinklers on — I lost all my water and everything, tools and sheds and stuff."

30 December 2015 The Age Bushfire message this summer is 'leave and live'

Craig Lapsley Emergency Management Commissioner

The fire at Wye River and Separation Creek came as no real surprise to a community that knew that one day it would again experience an event similar to the one that burned to the beach, destroyed homes and cut off the town in January 1962.

The Victorian community has already endured more than 2500 bushfires since October. Some 139 houses, several vehicles and a range of other built and natural assets have been destroyed. Yet what are traditionally the hottest months – and those in which Victoria's most damaging bushfires have occurred – are still to come.

Everyone who lives, works or travels in bushfire-prone parts of the state over the next few weeks needs to come up with their own plan for action on high bushfire-risk days.

There is plenty of research that shows how and when people are most likely to die in a bushfire. There are things you must not do, such as leaving late.

Nor should you wait to be told what to do. The communities of Wye River, Separation Creek and Lorne were fortunate to receive warnings and direct recommendations to evacuate that allowed people ample time to leave safely

The only guaranteed way of surviving a bushfire is to not be there. That is the underpinning logic behind leaving early.

How existing communities are strengthened both physically and in terms of social resilience remains one of our biggest challenges. The vast majority of the existing building stock in high risk areas across the state is simply not designed to withstand the passage of a bushfire. This will not change within the foreseeable future.

Community based planning that factors this inherent weakness into survival strategies has to play a part in strengthening communities against disaster

3 January 2016 The Age

Victorian bushfires: The day nature's fury came to Wye River and Separation Creek

Peter Jacobs

A CFA member for over 20 years, I recently retired as an active member. Everyone knew I would be staying and defending. I figured that, with at least three family members there to man the pumps and hoses, we could manage it.

A CFA member came around and said "Please, get out." Roy Moriarty, our CFA captain, also came around and told us to evacuate as my family drove around to Wye River and then on to Apollo Bay. Upon returning to our station, I saw my mate Billy Bubb, from Anglesea, who had been at Separation Creek. "G'day mate," Billy said. "We've been into your place." I waited with bated breath for him to continue. "We've used all of your water. And you owe me a beer, because we've saved both your studio and your house." I broke down, patted him on the arm, and thanked him. I returned to the Wye River surf club, where another local, Tony Maly, and I saw that houses along Iluka Avenue just above us were starting to burn. Tony and I watched helplessly as one house went up, then another, then the house next door to Tony's. Tony told me his 4WD containing all his tools was parked on the road above. It went. The fire then suddenly started to burn his house. It took a couple of hours to burn.

Questions arise

6 January 2016 Herald Sun

Wye River beach reopened today and will be patrolled every day of the school holidays. Fire razed 116 homes in Wye River and nearby Separation Creek, forcing families to abandon their homes. The blaze continues to burn in dense bushland about 6km west of Wye River but smoke is not expected to impact the Great Ocean Road. Two hundred firefighters, including a group of forest fighters from New Zealand, continue to fight the fire.

8 January 2016 The Age

Forestry industry demands Wye River fire inquiry Richard Willingham

The Otway bushfire that destroyed more than 100 houses at Wye River and Separation Creek should have been contained before Christmas Day, foresters say. And if no lessons are learned from the disaster then popular Great Ocean Road towns will be at risk again in the years to come. The fire was sparked six days earlier by lightning, which the institute says is common, so the fire should have been contained quickly. Officials warned when the fire was first sparked that it was a difficult task for firefighters because of inaccessible terrain. But foresters say the Otways are no more inaccessible than country in East Gippsland and north-east Victoria where multiple lightning fires are common, and controlled quickly. Gary Featherston, chairman of the Victoria division of the institute, said better fuel management including fuel reduction burns should have been employed. "If it nothing happens, in another 30 years Wye River will be under threat again," he said. "Experienced foresters find it hard to comprehend that a small, lightning-caused fire in relatively accessible forest, could not be contained after five days of benign weather conditions before Christmas." He said focus on the emergency and evacuation management response had obscured the elephant in the room.

The Institute of Foresters Australia is demanding the Andrews government hold a special inquiry – similar that held after the Cobaw fire last October – into the fire which destroyed 116 houses on Christmas Day. Emergency Services Minister Jane Garrett said emergency services did an "extraordinary job to safely evacuate hundreds of homes, contain the blaze over many days and ensure that no lives were lost". "Given the significance of the Wye River fire and in line with normal practice, I have written to the Inspector-General for Emergency Management to look at what lessons can be learnt," she said. The Inspector-General for Emergency Management will examine the fire as part of the normal process for any fire of significance.

13 January 2016 The Age

Backburn may have caused Wye River fire to escape

Nick McKenzie, Richard Baker and Tammy Mills

The [confidential state government files](#) reveal that three days after a lightning strike on December 19 caused a small, half-hectare blaze to begin near Wye River, Victorian fire officials ordered a controlled burn operation which included the dropping of small fireballs from aircraft.

The fact that the backburn operation and associated warnings have not been publicly detailed by the state government or Emergency Services Commissioner Craig Lapsley since the Wye River fire has

prompted accusations of a cover-up from fire-fighting officials and local residents, who are also demanding an independent inquiry.

Leaked Department of Environment, Land, Water and Planning firefighting reports reveal that the decision to launch the controlled burn operation was approved by the state government officials, despite warnings about what could go wrong.

Fire officials from several agencies involved in battling the blaze told Fairfax Media that they were angry that the state government and Mr Lapsley had not publicly explained why the backburn operation was carried out in the presence of extreme fuel conditions and predicted very high fire danger.

The officials also questioned why more effort was not made to control the blaze when it was smaller - in the days before the backburning - and why fuel reduction burning had not been carried out during cooler weather in the previous months or years.

The officials have also pointed out that firefighters were able to contain the Delaney Road fire, which also started out as a small fire in the same vicinity and time of the Wye River fire, without the use of back-burning.

Mr Lapsley confirmed a controlled burn-out took place from December 22.

He said the fire was in deep, inaccessible country and it could not be extinguished. He said a decision was made by the incident controller, with support from the regional controller and himself and his team to conduct a burn-out when conditions were milder.

He said this decision was made public to residents at community meetings on December 23.

The aim was to bring the fire out into country where it could be controlled. However, firefighters could not access the fire still burning in a deep gorge before the weather changed.

It's from this gorge that strong northerly winds picked the fire up and flicked it over a ridge, causing three spot fires, and onto a path straight to Wye River on Christmas Day, Mr Lapsley said.

"We knew the risks and you're damned if you do and damned if you don't," he said.

"You've got to try and bring it and finish it and if you do nothing it creeps around by itself and it ends up in the same spot anyway.

"We have to trust the people in the seat at the time and they're experienced bush people."

Mr Lapsley said he believed the fire would have done exactly the same thing even if controlled burns were not conducted. He said "every option" to control the fire was taken before the decision was made to burn out.

"They exhausted every option before they put fire into it," he said.

He said an investigation into the fire by the Inspector-General for Emergency Management would be a sufficient response. "That will be published to a community so it's transparent," he said.

In a statement released Wednesday evening, Mr Lapsley said: "Community members who have lost their properties are understandably upset and have a right to ask questions.

The report by the Inspector-General for Emergency Management will identify what was learnt from the fire, and opportunities for improvement across a range of operational and community engagement aspects of the fire."

But fire officials who spoke confidentially to Fairfax Media said that the Inspector-General did not have the power or resources to undertake a thorough and independent inquiry, similar to that conducted after the Lancefield fire in November, which was started by back-burning.

The officials said that the department's eagerness to perform backburning operations needed to be examined in the light of the Wye River fire.

The [damning Lancefield fire inquiry](#) concluded that the controlled burn which started the blaze was inadequately planned, inadequately staffed and that department staff did not properly appreciate the risks associated with conducting the burn.

Responding to the Lancefield report last year, Environment Minister Lisa Neville said: "What's occurred in Lancefield was unacceptable and the department would now work hard to ensure it had better systems and processes in place to help rebuild community trust in planned burning."

Denials bring more Questions

January 14 2016

UFU calls for Judicial inquiry – but Minister says back burn did not cause house loss

Source ABC on line Jan 14, Emma Younger

The firefighters' union is calling for a judicial review into whether the planned burn was responsible for the spot fires that went on to destroy homes on the Great Ocean Road.

The Inspector General for Emergency Management will review the fire. But the secretary of the United Firefighter Union, Peter Marshall, said the coroner needed to investigate.

"Here we have 116 homes that have been devastated by a fire that has actually grown as a result of back-burning and incendiary devices being put into the bush," he said.

"We need to know the answers as to whether that was the cause of the loss of those houses."

The Victorian Government has backed the protocols for investigation in place, as well as its decision to sign off on the back-burn.

Environment Minister Lisa Neville said the blaze that devastated Wye River and Separation Creek was not fuelled by the controlled burn.

"What the firefighters, the Incident Control people, would show you on all the maps is that the fire broke out from its original start, not from the back-burn, that that's where the spread came," she said.

January 14 2016

Mr Lapsley defends back burn strategy as correct

Source ABC on line Jan 14, Emma Younger

Emergency Management Commissioner Craig Lapsley said the strategy was signed off at an unusually high level because of the inherent danger it posed.

We made sure the assessments were done, overanalysed it, and said in the end you've got to put some fire in around it.

"That was a decision to make and what they call 'burning out', taking fuel out of the ground, that otherwise would have been in itself a bigger fire, a more intense fire, and something they couldn't control.

"The strategy was right. The wind got them on Christmas Day when it flicked embers up over the burnt area, over the mineral earth break."

But Mr Lapsley said back-burning was not responsible for the devastation caused by the bushfire on December 25th.

"On my initial investigation, I don't believe the burning did contribute," he said.

"I think the larger areas that were burnt were to the east and west of where this fire spotted from.

"On face value, I believe the spot fires came from where the original fire was and it was the hottest, most difficult part of the fire," he said.

18 January 2016 ABC on line

Victoria's firefighters union applies to Coroner for inquest into Christmas Day blaze

Victoria's firefighters union says it has applied to the Coroners Court for an inquest into Christmas Day fires that saw 116 homes destroyed along the Great Ocean Road.

United Firefighters Union secretary Peter Marshall said he wanted a judicial review to look into whether tactics used to fight the fires were appropriate.

The inspector-general for emergency management is already reviewing the fire.

Although no-one died in the blaze, Mr Marshall said the UFU had asked the coroner to consider a decision by fire authorities to back-burn near Wye River and Separation Creek three days before bushfire destroyed the homes.

"The coroner is universally accepted as independent, and senior officials from fire agencies would be confident that they could appear before the coroner without the risk of repercussions in the workplace," Mr Marshall said in a statement.

23 February 2016 ABC on line

Wye River bushfire: Impact would have been 'far worse' without back-burning, report finds

By Loretta Florance

In an interim report addressed to Victorian Emergency Services Minister Jane Garrett, Mr Pearce addressed three key points regarding the blaze:

- He said the fire which caused so much damage originated from the lightning strike, not the back-burning.
- He was satisfied the burn-out strategy was the best option available to fire crews at the time.
- He said a stronger aerial attack on the fire when it originally started "would have likely had very little impact" because of the dense cover of forest in the Otway Ranges.

"There is no doubt in my mind that the eventual impacts on Wye River and Separation Creek townships would likely have been far worse than was suffered had the fuel load between the main fire front and Jameison Track not been significantly reduced prior to the spot fire occurring," he said.

Ms Garrett said the fire took hold despite the "every possible human effort" from fire authorities.

"The inspector-general's finding is that the fire that caused such damage in Wye River and Sep Creek came from the original spot of the fire which was started by lightning in some of the most harsh terrain the Otways have," she said.

"It's deep in a gorge, very difficult to get to, no tracks in, very thick canopy so aerial attack isn't the saving grace that it could be where there's open grassland or sparse bushland.

But the United Firefighters Union's Peter Marshall renewed calls for a coronal inquest into the fire, saying the report was an "attempted cover-up" and did not reflect the view of many senior firefighters.

"This is outrageous, in all my 20 years that I've been around, I've never seen an interim report being handed down 48 hours after a fire has been contained," he said.

"Clearly this is an attempt to prevent the coroner looking at the real issues."

He said he believed more could have been done to attack the fire when it was ignited, with the use of more aerial bombing and repelling crews.

23 February 2016 The Age

Victorian bushfires: Backburning not to blame for Wye River fire, investigation finds

The report found that the fire was most likely caused by the embers of an earlier fire sparked by lightning on December 19, or from the collapse of a tree across a containment line within the original burn area. According to Mr Pearce, the initial fire was "immediately and vigorously attacked" by ground resources and aerial support but later spotted and became inaccessible.

Emergency Services Minister Jane Garrett said she hoped the findings would give communities in Wye River and Separation Creek some piece of mind that the right calls – including the contentious decision to add fire to the fire as part of the strategy- had been made.

"The Inspector-General says that not only was it the appropriate course of action, it was based on thorough risk assessment, all other options were considered, and if that fuel load had not been reduced by putting the fire in, it would have been much worse," Ms Garrett said.

"Difficult decisions were made on a horrendous fire, and they were the right decisions, and while we did have a devastating loss of property, there was no loss of life."

Mr Pearce handed his interim report to Ms Garrett on Friday night.

But while the minister said she had every confidence in its findings, the firefighters' union has branded the investigation as a whitewash, and renewed calls for an independent coronial inquest.

"It's a cover-up, a sham, and absolutely disgraceful," said United Firefighters Union state secretary Peter Marshall.

"The fire was only contained 48 hours ago, and very senior people who expressed extreme disquiet about the strategy and the tactics that were used haven't even been spoken to. So how can an interim report be handed down that totally exonerates the actions of the Emergency Services Commissioner and his department?"

Questions surrounding the Christmas Day fire intensified this month after Fairfax Media revealed leaked files showing that the backburn operation, carried out despite warnings of potential catastrophe, could have been led to the destruction of 116 homes at Wye River and Separation Creek.

However, Mr Pearce's interim report finds that:

* The burn out strategy ahead of Christmas was "the most appropriate option available" and "there is no doubt in my mind that the eventual impacts on the Wye River and Separation Creek townships would have been far worse" had the fuel load between the main fire front and Jamieson Track not been significantly reduced prior to the spot fire occurring.

* The initial attack strategy applied to the fire caused by lightning on December 19 gave proper consideration to the risks and even if firefighters had deployed a greater number of air resources over that period, it "would have likely had very little impact" due to the dense terrain.

23 February 2016 News.com.au

Firefighters want a say on Vic bushfire

The government is under pressure from the United Firefighters Union after the release of an interim report into the blaze that destroyed 116 homes on Christmas Day in Wye River and surrounding townships.

A state government investigation into a long-running bushfire on Victoria's surf coast failed to ask senior firefighters for their insights into the blaze, according to the union.

The report, penned by inspector-general for emergency management Tony Pearce, found the Wye River-Separation Creek fire was sparked by a lightning fire along the Jamieson Track and was not caused by back-burning.

"There is no doubt in my mind that the eventual impacts ... would likely have been far worse than was suffered," Mr Pearce wrote in a letter to Emergency Services Minister Jane Garrett, released on Saturday - just two days after the fire was contained.

"The back-burning decision was a tough decision," Ms Garrett told reporters.

"Mr Pearce found that was absolutely the right call."

Union secretary Peter Marshall says the government moved fast to suppress any concerns about the fire, in an attempt to dissuade the coroner from conducting an independent investigation.

He said firefighters were shocked to hear about the findings because they were unaware an inquiry was underway.

"We think it's outrageous that less than 48 hours since the fire was contained, there is an interim report that exonerates the actions taken by the government on the day 116 homes were lost," Mr Marshall told AAP on Saturday.

"We know for a fact some very senior fire officers who were involved in the firefight have not been questioned or enabled to tell their side of the story to the person that wrote this report."

The inspector-general's full report is due on February 12.

February 2016 IGEN Final Report published

Comment Unlike the IGEN Interim Report, the final report made no causal link between the back burn and the escaped spot fires. It simply says a tree fell in a previously burnt area, but that terminology was undefined.

What is going on here?

The media coverage in early January strongly linked the escaped fire and town destruction with and escaping spot fires from the back burn area.

The Ministers and EMC replied with strong denials.

The IGEN Interim report and the IGEN's media comments denied the link.

The Ministers praised the IGEN for independence and the right call.

The Final IGEN Report said the source of the spot fires was a previously burn area, when he could have said the back burn area.

The EMC report said similar but could have said the back burn area, but did not.

The indisputable fact is that embers escaped across the nominated control line that the government controlled fire fighters were patrolling, and they failed to stop the spot fire's run. The source of embers is irrelevant. The fact is they failed their duty.

September 2017 Coroner's decision not to hold an inquiry

In the circumstances, and having considered the applications, I have decided that is not necessary to hold an inquest, for the following reasons:

(a) the available evidence is sufficient to allow me to make the findings required by section 68 of the Act concerning:

(i) the cause and origin of the fire;

(ii) the circumstances in which the fire occurred, as set out above; and

(b) that there is no legitimate coronial purpose that is likely to be served by holding a public hearing in this matter.

An example of the strong criticism about the IGEN Interim Report

Union secretary Peter Marshall says the government moved fast to suppress any concerns about the fire, in an attempt to dissuade the coroner from conducting an independent investigation.

He said firefighters were shocked to hear about the findings because they were unaware an inquiry was underway.

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"We know for a fact some very senior fire officers who were involved in the firefight have not been questioned or enabled to tell their side of the story to the person that wrote this report."

news.com.au Melissa Meehan and Jacqueline Le AAP January 23, 2016

Coroner's report states: *In order to investigate the matters concerning the appropriateness of the decision making of those in charge of fighting the Jamieson Track fire, I requested and obtained a detailed statement from the Emergency Management Commissioner, Mr Craig Lapsley. The analysis which follows arises from a review of Mr Lapsley's statement, the materials supplied by EMV in support of the matters set out in the statement, and the information contained within the IGEM review of the response to the fire.*

In his review, the IGEM stated that all relevant evidence was considered "in an impartial and objective manner" and that the observations and findings made as part of the review were made "on the basis of merit and without bias." There is no evidence before me to suggest anything to the contrary. The assertions made by the UFU about this matter do not amount to evidence of a lack of objectivity by the IGEM in the gathering and analysis of the information required to conduct the review which was, in turn, provided to the Minister. To the contrary, the information which I have gathered from the EMC and the DELWP as part of my investigation concerning the response to the fire, is entirely consistent with the matters set out in the IGEM review.

Comment The IGEM report was accused of not being independent and being a whitewash by exonerating actions taken by government specifically, exonerating DELWP and EMC for a fire that caused 116 house loss.

To investigate the accusation and to determine if another inquiry is required, the Coroner referred to the IGEM's statement proclaiming his own independence, and to supporting statements from the two government participants that had been exonerated and determined the IGEM's report was independent.

This is like asking a defendant found not guilty by the judge to give his opinion about the judge's verdict.

The Coroner made no effort to test the independence or veracity of IGEM findings from sources other than the sources he exonerated, eg, senior fire officers omitted from the IGEM inquiry.

She also said, had she done the inquiry, she would have had access to the same info as IGEM, therefore there was no need for duplication of inquiry. She did not consider the possibility that she may have had a different approach or attitude or mind set to the IGEM, or called different witnesses. She therefore implied she would have made the same findings. This would perhaps be acceptable if she was a carbon copy IGEM clone.

For example, I have access to documents the IGEM had and I found that the back burn did escape and destroy houses.

The circumstances were that a government-controlled fire escaped and destroyed 116 houses, and the IGEM exonerated the government.

IGEM was asked to consider and incorporate good practice and [lessons] from the management of the Wye River-Jamieson Track fire.

The IGEM found a few minor lessons, but opined that the back burn did not escape, and that the decisions made and the whole process was just fine.

That was the only inquiry held.

In contrast, the government brought an independent investigator from WA for the Lancefield fire escape when only a few houses were lost, and the terms of reference were directed to finding causes and identify shortcomings, not finding "good practice and lessons".

Cleverly, the government misrepresented the IGEM inquiry as if it was a Lancefield-type inquiry when it was not and misrepresented its exoneration like it had just received a not guilty verdict.

What now?

Has justice been done for the house loss victims?

Not yet

They need an independent inquiry with terms of reference directed to finding causes, identify shortcomings and assigning accountability. The scope of the required inquiry is much greater than the limited powers of the IGEM and a Coronial Inquiry.