REPORT ON FIRE IN GREYSTONES PLANTATION

MUNDARING DIVISION

29/1/1973

CONTENTS:

DIARY OF EVENTS

29/1/1973

1040 Simultaneous sighting of smoke by Gungin and Dale towers.

1045 F/G Pollock in office, plotted smoke in Greystones Compt. 4. F/A Butts and A/F Selkirk advised red action required, acting O/S C. Heine and H.Q. standby crew instructed to proceed to fire. Pollock left for fire.

1050 Butts and Selkirk in office. A.D.F.O. Scambler left for fire. Siren sounded, Mundaring standby crew despatched.

1055 Gnangara and Kelmscott advised, message passed to Supt. F.J. Campbell.

1056 Scambler at fire, Pollock remained on Allen's Rd. to guide incoming crews. O/S Heine with L/D and two men arrived at fire after unsuccessful attempt to approach fire from east side. Towers plot of fire confirmed.
At this stage, the fire extended from a few metres to the west of the creek in compartment 3 adjacent to the Weir, to about 90 metres east of the track alongside the creek. The fire had not crossed the track on the southern end of compartment 4, although two spotfires had commenced N of the track and within a few metres of it. Heine's crew successfully held the fire along this track until support arrived.

1102 O/S Thompson with 4x4 H/D and one man at fire proceeded to attack headfire on eastern flank.

1105 O/S Peet with combination truck and one man at fire and assisted Thompson in headfire attack.

1108 Acting O/S B. Rhodes with 3 men in L/D at fire and attacked the western section of the fire burning on both sides of the creek in compt. 3.

1120 Running fire stopped and packspray patrols deployed on N and E flanks of fire.

1126 Tip truck with slip-on H/D and two men arrived at fire via N and E boundaries of compt. 4.

1127 Scambler advised F.C. to call off red action.

1140 Michigan front end loader arrived at fire and commenced pushing in.

1142 Act. O/S Heine completed patrol of N and E boundaries of compt. 4 without observing any spotfires. Pollock carried out front patrol inside compt. 4.

1144 Scambler proceeded back to H.Q.

1147 Act. O/S Rhodes, drafting water on edge of Weir to SE of fire reported fire "on other side of river". (The spotfire was in compt. 18, see plan appendix) The following events then occurred in rapid succession.
Heine and three men with L/D proceeded to a point on the north side of the Weir opposite the spotfire, left the truck and proceeded around the arm of the Weir on foot, carrying rakes.
Pollock parked his utility alongside Heine's truck and reported that Heine and crew should be able to contain the spotfire, which at this stage was estimated to be less than 10 square metres in size.
Pollock despatched the tip truck with slip-on H/D unit to fire and proceeded to assist Heine's crew on foot.
Act. O/S Rhodes and three men left for the spotfire by road.

1515 Backburning progressing N of Allens Rd. along track E of compt. 27 to Byfield Rd.

1525 D/F Cowcher reported to H.Q. and was requested to hold himself available for night shift.

1555 C.O.D. McNamara arrived at H.Q.
F/R Newman, O/S Ashcroft and Dwellingup crew with H/D arrived at control point and proceeded to south-west sector.

1615 O/S Warren and Dwellingup crew with L/D arrived at control point and proceeded to southern sector.

1640 Scambler returned to H.Q., briefed McNamara and requested relief forces for night shift. Three sectors now defined.

1738 Fireboss reported Sector 1 is being held and will be secured.
Sector 2 has running fire within the dozer break, and break will be edged. The edge of compt. 35 held.

1750 Adams reported hopover in compt. 15 being edged in by D4.

1820 DE Fire Control advised relief forces for night shift.

1830 F/R G. Newman and O/S Treasure with Harvey gang in L/D reported to control point and despatched to Sector 1.

1910 Sector 1 reported all running fire stopped, mopping up commenced.

2000 Collie D4 and Jarrahdale Michigan arrived at fire and commenced mopping up Sectors 1 and 2.

2040 Inspector Lejeune arrived at H.Q.

2045 F/R White, F/R Kearns and O/S Osborne with Harvey crew and H/D arrived at control point and proceeded to Sector 1. Adams, Pollock, O/S Thompson and crew relieved. Sector 3 now held from Allens Rd. to aircraft burn.

2050 Scambler returned to H.Q. and briefed Lejeune.

2105 S.F. McEvoy reported to H.Q. for Supply Officer duties.

2145 F/A Butts rested. Situation stable and McEvoy left to return to Bunbury. O/S Heine and Rhodes crews relieved.

2205 F/R G. Black and Collie crew arrived.

2210 Lejeune and Cowcher proceeded to fire to relieve Vince.

2315 Scambler, Vince, Hunt, O/S's Saunders and Peet's crews relieved.

30/1/1973

0530-0700
All external officers and gangs relieved. Forster took over as Fireboss, Adams, Cave and Pollock sector bosses, Selkirk patrol, F/G Mathews and Mersch recce.

Mopping up proceeded through the day with all Mundaring wages personnel, except H.Q. gang.

1020 Hopover occurred on south boundary of compt. 27 adjacent Allens Rd.

1043 Hopover under control.

1700 All officers and men left fire, H/D patrol maintained to 1900 hrs.

2000 Cowcher carried out late patrol.

1202 Scambler viewed the spotfire from compt. 3 and proceeded around the Weir by road, calling for the 4x4 H/D to proceed to the spotfire. This vehicle was drafting and did not receive the transmission.

1204 The rake attack was unable to contain the spotfire, which had spread easterly for a distance of approximately 80 metres and was burning on both sides of the northernmost track in compt. 18. Winds at the spotfire were observed to have increased considerably above levels noticed in compt. 4 and are estimated at this time to have been 20-30 k.p.h. Act. O/S Rhodes with L/D arrived and attacked the headfire with live reel hose. The tip truck H/D backed into the tail of the fire (he could not proceed direct to the fire (head) not having 4 wheel drive) and attempted to attack the S flank of the fire. Both attempts failed due to the rapid development of the headfire, which was crowning in coppice N of the track.

1214 The two units proceeded to the eastern boundary of compt. 18 to re-approach the headfire.

1215 Scambler arrived at spotfire.

1218 Tip truck and L/D arrived back at headfire via compt. 18 eastern boundary track.

1220 Several spotfires observed to N and E of fire at distances ranging from approximately 100-300 metres.

1226 Red Action re-called. F/R Adams at fire, O/S Thompson with 4x4 H/D at fire.

1232 Spotfires observed to be developing rapidly and in turn spotting.

1234 L.F.O. called. Supt. F.J. Campbell and C.O.D. McNamara appraised.

1240 Pollock with Act. O/S Rhodes and L/D despatched to Allens Rd. to recce. Other forces remained to hold fire out of plantation in compt. 18.

1250 Pollock requested to attempt to prepare fireline in E side of fire to cut off headfire into 1978 aircraft burn.

1310 DE Fire Control manned.

1313 DE Fire Control requested to despatch fireboss, D4 and two gangs in addition to red action support en route.

1315 Pollock and Rhodes crew commenced backburning from first track E of Hairpin Bend on Allens Rd., working N-S.

1320 Gnangara crew at fire, deployed to compt. 18.

1330 Forester Hunt with O/S Saunders and Kelmscott crew at fire and deployed to western flank north of Weir.

1350 Control point set up at eastern end of compt. 2 and F/R Forster took over as fireboss.

1400 O/S Peet with 2 men in combination truck left compt. 4 to assist Kelmscott crew on west flank. One man packspray patrol left in compt. 4.

1410 Scambler returned to H.Q.

1415 A/F Selkirk proceeded to fire as Recce Officer.

1445 Forester Vince took over as Fireboss.

1455 Pollock with Rhodes crew and Michigan backburning to west of compt 35, proceeding south.

1505 Gnangara D4 arrived at fire and commenced to clear break through compt 14. Scambler left H.Q. to view fire with Vince. Forster proceeded to western flank to assist Hunt.

31/1/1973

Mopping up and patrol continued with 2 gangs, Michigan and 2 D4's.

L. 2. 5. 6. 7/2

Salvage operations commenced. Two men with jib crane and H/D worked with piecework ers to pull in tops and extinguish those which caught alight.

8/2

Salvage operations continued by piecework only - completed 19/2.

WEATHER AND TOPOGRAPHY:

Forecasts for the day were:-

Dwellingup — Fine and warm, winds 10-1200 hrs. SE at 13 k.p.h.
12-1400 SE 13
14-1600 S 16
16-1800 S 16
EMT 27° EMRH 30%

Perth — Fine and warm, winds 10-1200 hrs. SE at 13 k.p.h.
12-1400 SSW 19
14-1600 SW 24
16-1800 SW 24
EMT 29° EMRH 28%

Tower winds recorded as follows:-

	0900	1000	1200	1400	1600	1800
Dale	NE 8	Nil	W 5.16	W 26.33	WSW 35.36	WSW 35.36
Gungin	E 5.10	Nil	W 5.16	WSW 5.16	SW 5.16	
Sawyers	E 8.16	N 8.12	W 16.24	WNW 8.16	SW 16.24	

H.Q. temperature and RH% readings were as follows:-

	0800	1000	1200	1400	1600
Dry Bulb	16.5°	25°	28°	27°	25°
R.H.	71%	44%	32%	36%	44%

Maximum temperature for the day was 30° C.
Min. R.H. for the day was ..... 24%.

Drought Index = 666

F.D.I.

Basic Hazard was 7.7

Taking wind strength as maximum at nearest tower (Gungin) i.e. 16 k.p.h.

F.D.I. = 52.7 Jarrah = 174 Pine

TOPOGRAPHY

The area is deeply dissected by the Helena River and tributory creeks. The terrain varies from moderately steep to very steep, and the ground surface is generally rocky with occasional large outcrops of granite.

LOCAL WIND BEHAVIOUR:

During the attack on the fire in compt. 4, winds were observed to be very light, estimated less than 5 k.p.h., and high smoke travelled slowly in a NE direction. Gungin tower reported an absence of wind at this time.

During development of the compt. 18 spotfire, wind strength was estimated to be 20-30 k.p.h. in a westerly direction. Towers 1200 readings confirm that the westerly was in at this time and Gungin recorded it at 5.-16 k.p.h.

It would appear that the compt. 4 fire may have created its own wind and the NE smoke movement was principally due to the effect of slope. The increase in wind strength in the area of the spotfire above that recorded by towers was probably due to contriction within the arm of the Weir.

FUELS:

Compt. 4

Open grown P. Radiata, approximately 125 stems/hectares (50/acre), planted 1952. Moderately dense undergrowth of A. Cynophilia with grass, wild oats and pine thinning slash on ground.

Needle bed =	12	T.P.H.
Wattle, scrub, grass	10	"
Slash	7.5	"
	27.5	"

Location of Hopover

Moderately dense wattles with occasional coppiced flooded gum and marri. A high proportion of dead scrub material was present.

Estimated scrub fuel = 15 T.P.H.

Compts. 14, 18

1927/28 P.Radiata, approximately 75 trees/hectare.

Light undergrowth of wattles with heavy thinning slash and grass on ground.

Needle bed =	14.5	T.P.H.
Slash	39.5	"
Scrub and grass	6.0	"
	60	"

Hardwood coppice

The hardwood areas south consist mainly of failed P. Radiata plantations planted 1929, and subsequently clear felled by 1955 and abandoned to jarrah and marri coppice regrowth. These areas had been included in the plantation protected area and had not come under regular burning. The time of the last burn carried in this regrowth country was after clear falling in 1956.

Average litter weight = 22.0 T.P.H.

FIRE BEHAVIOUR

Compt. 4

Estimated R.F.S. = approximately 300 metres/hour. Observed headfire flame height 1.3-3 metres. On the day after the fire, it was noted that a group of pine crowns had burnt to a height of approximately 7 metres, this having occurred before first arrival at the fire. It is assumed that maximum flame height at this time would have been about 15 metres.

Spotting

Was light near the immediate perimeter of the fire, 5 spots were noted on both the east and north sides of the fire, all within 20 metres of the final perimeter. Distance of the Compt. 18 hopover from the most easterly side of the Compt. 4 fire was 260 metres, slightly S of E. Some time subsequent to the Compt. 18 hopover, 2 stumps were found to be smouldering on the bank of the Weir, at distances of 85 metres and 140 metres, and due east of the fire in Compt. 4.

Hopover

Estimated R.F.S. = 400 metres/hour.

Headfire flame height 2 metres - 6 metres (in coppice). Spotting distance 100 - 300 metres.

Compts. 14 & 18

This section consisted of the flank fire.

Estimated rate of spread 150 metres/hour. Flame height 2 - 15 metres, with occasional crowning of pine in compt. 18 gully.

Regrowth hardwood area

Based on 2½ hours taken for the fire to travel from compt. 18 to Allens Rd. due east, a distance of 1600 metres, average R.F.S. was 640 metres per hour inclusive of spotting.

Headfire flame height varied from 3 - 25 metres. A crown fire was observed to be running ahead of the main headfire on the steepest slopes in wandoo forest.

Spotting

Development of spotfires thrown by the original hopover in compt. 18 was rapid, and it was observed that the spotfires were in turn spotting by the time they had attained a size of approximately 0.25 hectares. The steep slopes, heavy fuels and strong winds created by the constricting gullys caused by spotting for spectacular distances, fortunately into the 1972 aircraft burn. The longest spotfire noted lit a single marri tree approximately 1400 metres from the fire.

SUPPRESSION

Initial Attack

The first L/D unit with Act. O/S Heine and the standby crew held two spotfires to the north of the southern back in compt. 4, and kept the fire south of this track until the H/D's arrived. O/S Thompson with 4x4 H/D attacked the headfire direct and was shortly supported by O/S Peet with combination truck. Act. O/S B. Rhodes with L/D and the Mundaring standby crew then arrived to suppress the western end of the fire burning on both sides of the creek in compt. 3

Patrol of compt. 4 fire

One man packspray patrols were put on both the east and north flanks of the fire prior to running fire being stopped. F/G Pollock patrolled inside of compt. 4 on foot. The tip-truck with slip-on H/D unit was directed by despatcher A/F Selkirk to approach the fire via the N and E boundaries of compt. 4 and did so. Act. O/S Heine with L/D patrolled the N and E boundaries of compt. 4 after running fire was suppressed, and completed his patrol about 5 minutes before the compt. 18 hopover was observed.

Hopover attack

Act. O/S Heine and 3 men walked around the arm of the Weir on foot and attacked the hopover with rakes. Act. O/S Rhodes with L/D and tip truck with slip-on H/D and two men proceeded around the Weir by road. It is estimated that the rake attack commenced within 5 minutes of the spotfire being observed, and the two trucks arrived at the fire about 17 minutes after the hopover was observed, having had to travel a distance of 5.9 kilometres.

The spotfire was only about 10 square metres in size when the rake attack commenced, but the attack failed due to the intense heat of the fire and the rocky ground. On arrival of the trucks, only the L/D 4x4 unit was able to proceed direct to the headfire, which was now commencing to crown in coppice stems, and was too hot for the small pumper. The tip truck H/D, arriving just behind the L/D, backed in the rear of the fire and commenced to suppress the south flank.

Progress along the flank was not fast enough, and when the L/D pulled out from the headfire, both units proceeded to the eastern boundary of compt. 18 to regroup at the headfire. However, before an effective attack was commenced on the headfire, at least seven spot fires were observed to the N and E of the fire, on both sides of the creek at distances ranging from 100 - 300 metres. It was at this stage that the red action was recalled, and when spotfires were observed to be in turn spotting a L.F.O. was called.

L.F.O.

Due to the difficult country and the severity of the headfire, direct attack was not possible. The only tactics available were to attempt to run the fire into the 1972 aircraft burn E of Allens and Byfield Roads. Only one officer and one crew were initially available for this, as other forces were required to hold the fire out

of very valuable plantations in compts. 18 and 14, and one unit had been left to tend to the compt. 4 fire.

South flank

The flank fire in compt. 18 and 14 was held by 4x4 H/D (O/S Thompson and 3), tip truck H/D (2 men), one crew with hand tools (Act. O/S Heine and 3) directed by F/R Adams. These were reinforced at 1320 by F/R Law, and Gnangara red action crew with H/D, and at 1600 hours by F/R R. Newman and O/S Ashcroft with Dwellingup crew and H/D.

East flank

F/G Pollock with Act. O/S Rhodes and 3 in L/D commenced backburning from Allens Rd. due south along the first track east of the hairpin bend, but had to abandon this line due to heavy spotting east of the track. They subsequently back burned successfully along the west boundary of compt. 35 and due west along the road between compts. 35 and 14. This sector was reinforced by the Michigan front loader and tip truck H/D at about 1400 hours, and by O/S Warren and Dwellingup crew in L/D at 1615 hours.

The Gnangara D4 arrived at the fire at 1500 hours and commenced to clear a break through compt. 14 to link up the back burned fireline with the section held through compt. 18 to 14.

West flank

The first attack on this sector was commenced by F. Hunte with O/S Saunders and the Kelmscott crew at 1330 hours. At this stage the fire had spotted heavily into 5 year old fuel north of Allen's Rd., and an attempt was made to rake a fireline from Allens to Byfield Rds. to cut the spotfires off. This was proceeding extremely slowly, due to the rocky country and steep slopes, and when this sector was reinforced by O/S Peet and 2 in combination truck at 1400 hours, backburning was commenced along the track SW of reference tree AR 70 3. This sector was subsequently reinforced by F/R Forster at 1500 hours and the fireline was completed and held between Allens and Byfield Rds. by about 1900 hours, after which the section between the Weir and Allens Rd. was raked in by hand.

All running fire was stopped by around 2000 hours.

Mopping Up

Certain problems encountered in mopping up within pine compartments are worthy of note.

1. On the south west section of the compartment 4 fire, a ground fire occurred in peaty soil adjacent to the creek. This was mopped up using a Pacific Marine portable pump, and at least 20,000 gallons of water were required to extinguish a small area of about 0.25 hectares.

2. Old pine stumps burnt for days below ground and even along lateral roots. Careful examination of ground in the vicinity of old stumps is essential close to the fireline, since it is possible for a lateral root to burn ~~into~~ under the firebreak.

2. It is also necessary to create a firebreak well down into mineral soil around plantation fires where old stumps are present.

3. As it is essential to commence salvage recovery of pine logs as early as possible, a H/D unit is required to stand by when the cutters are working on hot ground. Tops and slash should be immediately hauled well into the burnt area.

4. Although "willie willies" were not in evidence after the fire, probably due to cool weather and stable atmospheric conditions, the likelihood of their occurrence after a pine fire is high, and they have been very evident after pine clearing burns.

AREA BURNT AND COST OF FIRE

Area Burnt

Compt. 4 - total area burnt 1.8 hectares, including 0.6 hectares under pine.

Compts 18, 14

2.8 hectares of pine burnt, about 250 trees.

Hardwood Area

Total area burned 194 hectares.

Cost of Fire

Division	Wages	Plant	Total
Wanneroo	240.00	132.23	372.23
Kelmscott	330.00	212.00	542.00
Dwellingup	903.00	189.00	1092.00
Harvey	900.00	106.02	1006.02
Collie	522.00	117.00	639.00
Mundaring	2678.00	1090.63	3768.63
	5573.00	1846.88	7419.88
Food			86.17
Total cost			7506.05

Damage

Scorch height in hardwood area was total with many areas defoliated. However, the stands consist of multiple stem coppice regrowth and C quality wandoo forest and have little production potential.

No loss of pine wood occurred, and salvage of the burnt areas produced :-

36.0 loads 5'7" casewood
34.9 " 7'9" "
98.4 " mill logs
95.3 " peelers

CAUSE

No firm evidence as to cause of the fire was obtained. However, recent children's footprints were found adjacent to the point of origin of the fire. It is not thought that the fire commenced on the morning of 29th January, since no vehicleswere seen in the area at that time. It is quite possible that a family group somehow lit a fire adjacent to the creek in compartment 4 on the 28th January, and the fire smouldered in peaty soil overnight before running on the 29th.

Public entry to the area within one mile of the top water level of Mundaring Weir is prohibited by the Public Works Department, but a large number of persons undoubtedly enter, particularly on weekends.

COMMENTS

Red Action & Initial Attack

It is considered that the red action turnout and the initial attack on the fire were fast and effective. The decision to call off the red action was obviously incorrect. However the necessity for fast divisional turnouts is emphasised by the fact that neither Kelmscott or Gnangara crews would have arrived in time to attack the compt. 18 hopover before it got out of control if they had proceeded direct.

Kelmscott combination truck had not left H.Q. when the red action was called off.

Gnangara crew did not receive radio advice that the red action was called off until approximately 11.37 and they were at this stage about 55 minutes travelling time away from the fire in compt. 18.

Spotting

It was not anticipated that a hopover would occur south of the arm of the Weir for the following reasons:-

1. Winds during suppression of the compt. 4 were light and smoke from the fire travelled NE, up the slope of compt. 4.

2. Spotting observed during and immediately after suppression of the running fire was light, and confined to within 20 metres of the E and N boundaries.

However the following factors were not appreciated during attack.

1. The fire had crowned in several pine trees prior to first arrival. Towers reported a large column of black smoke boiling up vertically shortly after detection, but this information was not passed on to the field. Examination of the fire on 30/1/1973 confirmed that the fire had crowned in about 6 trees.

2. The area between the compt 4. fire and the hopover is largely dead ground fuelwise, consisting of the Weir and its banks. Although two stumps were found, to be smouldering on the north bank some time after the occurrence of the compt. 18 hopover, these were not detected early enough. Had there been continuous fuel east of compt. 4 there would undoubtedly have been a trail of spotfires extending east.

   Towers recorded easterly winds at 0900 and these backed to the west with a fixed westerly occurring shortly before 1200 hours. While conditions were generally calm up 1200, it is probable that the crowning which occurred in compt. 4 co-incided with a westerly gust.

Hopover attack

Factors contributory to failure to hold the spotfire were:-

(a) Confusion due to occurrence of the fire in area not anticipated.

(b) Fatigue following initial attack.

(c) More intense fire development of the hopover than anticipated, and thus underestimation of the consequences of the time factor involved in travelling to the hopover by road.

(d) Failure to get water to the fire early, either by packsprays or by running a hose across the Weir.

L.F.O.

Officers participating in the L.F.O. were as follows for the initial stages:-

Controller/Intelligence	A.D.F.O. Scambler
Recce & Subsequently Supply	A/F Selkirk
Fireboss	For. Vince
Sector Bosses	F/R Adams, F/R Forster F/G Pollock, F/R Law, For. Hunt.
Recorder, Timekeeper, Caterer	F/A Butts

While it is considered that an effective attack was maintained on the fire at all times, the period which elapsed until the L.F.O. was functioning on a properly co-ordinated basis was excessive. It is thought that this was principally due to the lack of an adequately staffed H.Q. control.

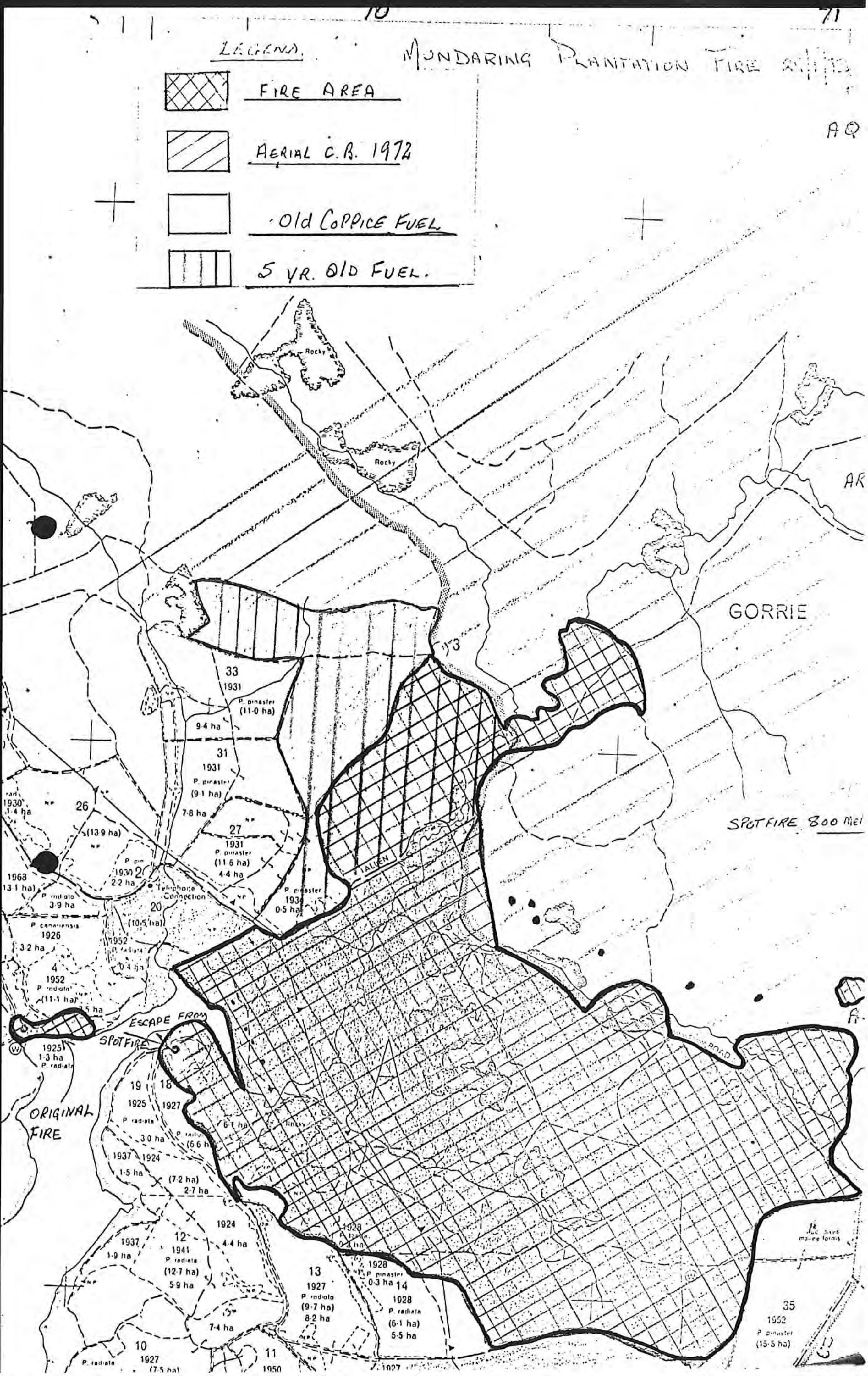
CONCLUSIONS:

1. The need to anticipate spotting within a wide area ahead of hills plantation fires has been demonstrated, and this must be borne in mind by O.I.C. red action, who should give consideration to instituting a fast roving patrol ahead of plantation fires at the inception of the red action.

2. Towers reports of smoke indicative of crowning are highly significant and must be passed on to O.I.C. red action.

3. Water is essential to contain hopovers in heavy fuel, particularly when even a slight time delay is involved.

4. A properly staffed H.Q. control should be set up as soon as possible at all L.F.O.'s, and it is the responsibility of the O.I.C. of the fire to implement this.


MUNDARING PLANTATION FIRE
LEGEND.
FIRE AREA
AERIAL C.B. 1972
Old COPPICE FUEL
5 YR. OLD FUEL.
GORRIE
SPOTFIRE 800 Met
ESCAPE FROM SPOTFIRE
ORIGINAL FIRE
Rocky
Telephone Connection
33
1931
P. pinaster
(11·0 ha)
9·4 ha
31
1931
P. pinaster
(9·1 ha)
7·8 ha
27
1931
P. pinaster
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20
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4
1952
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P. radiata
19
1925
P. radiata
3·0 ha
18
1927
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1937
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2·7 ha
12
1941
P. radiata
(12·7 ha)
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8·2 ha
7·4 ha
14
1928
P. radiata
(6·1 ha)
5·5 ha
1928
P. pinaster
0·3 ha
35
1952
P. pinaster
(15·5 ha)
10
1927
P. radiata
(7·5 ha)
11
1950
1968
(13·1 ha)
3·9 ha
ROAD

LIGHTNING?

LIGHTING FIRES GNANGARA PLANTATION

5/1/73

RECAPITULATION

A meeting of all Staff was held at Wanneroo today to discuss the above.

REASONS FOR SUCCESS

The basic principle of successful fire control applied, viz. rapid detection and attack. All personnel are again congratulated on their efforts.

Following an intelligent tower report, one HD was deployed to the general area a few minutes before the strikes. Towermen had been told to forgo lunch break.

WHERE CAN WE IMPROVE?

Communications

(1) Again the need for a new office at Wanneroo was demonstrated.

(2) VHF reception was noisy. Although it did not affect us, channel 2 was coming through on 3 and Como Fire Control could not monitor.

(3) Our FD phone box on the junction of Warbrook and Silver Roads was well placed as a Control Point. Use of the phone took pressure off radio and made communication positive.

This phone line is invaluable and we must

(a) Put field phone with suitable leads in Gnangara HD and have another held at Wanneroo. Regular two weekly test. On all phone batteries show dates where installed.

(b) Accelerate construction of the field cable layer. Phone could then reach most of the plantation if required.

(c) Call sign for a phone on this line will be ..

(d) List of call signs to be in phone box. (G.K. to fix)

(4) VHF radio traffic.
This was generally well controlled. However towerman's radio should not be used to discuss smokes when fires are running. All reports on smokes must go to DHQ by phone where available. Some confusion occurred because personnel in the field acted on tower radio reports and DHQ was not aware of action taken.

(5) Pony radios reached fires but were not required due to small size. More training of staff and O/S is required so they feel completely at home with these sets.

(6) The multiple fire situation highlights the need for VHF on all HD's. This will mean three more radios for next year. The expenditure will be justified.

Field Efficiency

At the first fire at least, pumper motor was running when H.D. arrived. This is good.

Plans and Location

(1) The Wanneroo 80 is revised nearly every year and recently there were extensive alterations at Gnangara. All our plans in use are up to date but other Divisions involved and Fire Control should check that they have December 1972 issue. In future F/A Wanneroo will be responsible for advising others involved each time the Wanneroo 80 is revised.

(2) Although all forces were aware of the fires, the announcement Red Action Group Section Compartment was not put over both radio channels. This should be done by DHQ as each fire occurs. One HD headed to the right compartment in the wrong Section.

Procedure should be established a ward Office.

(3) Fuel age plans on 1:12500. Four small plans required for Gnangara plantation. Lack of space at Wanneroo office resulted in a composite plan stuck on at an angle. This is not satisfactory. In future we will send a copy to Fire Control.

(4) PAFTAC reports were not given well partly due to radio traffic. These are most important to the organisers and must always be given.

Condition of Plant

Out of four HD's at Gnangara only two were of any use and in fact put out all three fires.

One Bedford HD was in workshop.
One Blitz broke universal as it drove out. This is a risk we take with these old trucks. It was repaired by its workshop crew and reached control point in quite good time.

All other units including F.L. plow made good time to the control point.

Wanneroo gang was attending a strike near Pinjar with rakes on Kombi. Yanchep gang put out a strike in PP adjoining Gnangara just after the plantation fires.

Due to a misunderstanding Brearly took a ute when he could have taken a L/R. 4x4 vehicles where available must always be taken in preference to 4x2.

Yanchep Inter. with tank and pump was not despatched. NOTE In a Red Action, all vehicles carrying water must go.

PIECE WORK FALLERS

Only one working. We must obtain siren for Treever. It can take some time rounding up a dozen fallers.

In the event of future dry lightning storms we should marshal the fallers when the storm appears.

TIME TAKEN

First Fire	1230 tower report	HD arrived 1256	- 8 miles from HQ.
Second Fire	1237 tower report	HD arrived 1245	
Third Fire	1245 tower report	HD arrived 1313	

STAFF

We have now reached the stage when an additional officer on fire control full time is justified. This should greatly assist overall efficiency.

At present staff is so short that we cannot keep up to t he mark. A larger office at Wanneroo will be required.

Metro hydrants

A test indicates normal time taken is:
Fitting to hydrant - 3 minutes
Filling tank - 4 minutes

From this we can decide whether or not to travel empty to Metro fires.

D.R. LEJEUNE
INSPECTOR

WANNEROO
17/1/73

Distribution

Officer in Charge Gnangara
Officer in Charge Yanchep
Officer in Charge Somerville
Mr Watson, Como
Fire Control - please show to T/A Birch
Superintendent Grace, Como
All Wanneroo Staff to note
Conservator of Forests - J.B. Campbell to note.

21/2.

CRA 22/2/73

SOMERVILLE FIRE NO. 3 OF 1969/70.

REPORT BY F/R. BUKELIS.

In the afternoon of Satusday November 1st, 1969, a fire in Compartment 55 burnt 1.4 acres of pines. Phoscheck was used and a Red Action, lasting 35 minutes, became necessary.

Details are given here under the following headings:

1. Sequence of events.
2. Topography and ground fuel.
3. Weather and Fire Behaviour.
4. Suppression and Phoscheck.
5. Damage.
6. Costs.
7. Comments and Notes.
8. Scale plan.
9. Comments by Inspector Lejuene (addendum).

1. Sequence of Events.

1445 Fire seen from Somerville Tower. Indirect view O/S Boyd to investigate.

1447 Boyd departs in H/D Truck.

1450 Boyd reports back; Fire in pines. Need help.

1451 Bukelis directs Woods and Polgar to take Phoscheck to the fire. Then departs from H.Q. in L/Duty.

1455 Bukelis arrives at fire. H.D. pumper won't start. Calls Red Action. Starts extinguishing with L/D pumper.

1457 H.D. Pumper started. Boyd plus 1 volunteer commence spraying at N.W. flank to cut off headfire.

1500 Phoscheck pumper arrives and commences spraying along extraction tracks clockwise around head fire.

1502 Bukelis shifts L/D to N.E. side to retard spread of headfire, extinguish spots and direct Phoscheck application.

1510 Fire Brigade arrive and commence spraying W. flank and raking E. flank.

1515 O/S Feast arrives in H.D. directed to W. flank.

1520 By now Boyd with H/D and Fire Brigade with hand tools have secured most of E. flank. Phoscheck has been laid around headfire. Phoscheck truck and crew still required there until other pumpers become available. Wind now from South and giving a little trouble on W. flank, attended by F/Brigade pumper and H/D from Como.

1528 Perimeter now sufficiently secure to handle with present forces. Bukelis cancels Red Action but requests Gnangara H/D to continue on its way to help mop up.

Somerville Fire No. 3 of 1969/70 continue

Sequence of Events cont.

1537 Messrs. Meacham, Hewett and Ashcroft arrive.

1544 Somerville Tower reports smoke near Cpt. 63.

1545 Hewett & Bukelis leave Cpt. 55 to check out report.

1547 Lejuene & Kæsners already near Cpt. 63, smoke is outside.

1600 Mr. Meacham leaves.

1615 Gnangara H/D arrives(F/R plus 4).

1622 Fire Brigade leave.

By 1930 all outside forces and officers have left.

Somerville H/D and 1 man remain on continuous patrol and limited mop up in 2 shifts between 8 p.m. and 7 a.m. of following morning. Several intermittent patrols by Bukelis and Burdett throughout Sunday.

Fire black out by 8.a.m. Sunday morning.

2. Topography and fuel.

The site has a gently sloping SW aspect and is only 2½ chains inside plantation perimeter.

The 16 year old pines are in an open stand of 100 trees per acre.

Green canopy level is 30 feet. These factors account for very good access by S.W. winds.

Slash from heavy thinning in 1966 was partly burnt in the winter of 1967 and reburnt with good fuel reduction in 1968. Thus the needlebed is only about ½" thick and tops on the ground are bare wood without needles. An exception is the Northern portion of the fire which was in heavier needle-bed - see attached plan.

3. Weather and Fire Behaviour.

Once again wind was the main cause of rapid spread. The Somerville Tower wind reading at 1500 hrs. was 10 to 23mph and at 1445 gusts up to 28 mph where observed. This would account for the relatively large size of the fire before the smoke could be seen rising above the trees.

Weather readings (at Wanneroo) were :

Time.	Wet	Dry	R H	Wind	F.D.R.
1400	68	59	60	WSW 18	1.1 green
1600	70	60	56	SW 20	1.4 green

For obvious reasons the rate of headfire spread could not be measured. This, in fact, is the case with all pine fires of short duration.

A rough estimate is 8 ft. per minute.

Somerville Fire No. 3 of 1969/70 continued.

Weather and Fire Behaviour cont.

Flame heights averaged an estimated 2 feet in the Southern portion and 3 or 4 feet in the Northern.

This difference was due to winter burning - see plan. Also, at the headfire, flames reached up to 10 feet and ignited a few crowns during a gust of wind. This occurred just before the fire reached the Phoscheck strip.

Spotting was comparatively light and reached only up to 30 yards.

4. Suppression and Phoscheck.

Mechanical trouble with the first H.D. pumper (CC20) made the situation precarious at the early stage and a Red Action was called even before the 2nd H.D. arrived with Phoscheck.

Phoscheck was laid across the path of the headfire in a 4 chain L-shaped strip with an average width of 20 feet. About 300 gallons were used.

This, together with plain water at the front flanks checked the headfire and thus served its purpose. The remainder of the perimeter was extinguished with plain water in a routine manner.

Despite the heavy application of Phoscheck the fire burnt through it on a width of 40 feet, but its rate of spread was only about 1 ft/minute.

5. Damage.

130 to 140 trees were killed or badly damaged and are now being felled. This will produce about 35 lds O/B of which some 60% are in the 7" to 12" diameter classes.

6. Costs.

Somerville only : $44 Wages plus $30 Plant. This includes all patrolling, but not cost of Phoscheck.

Costs from other divisions have not yet been advised. Estimated at $90.

7. Comments and Notes.

The cause of the fire is unknown - suspected deliberately lit. 2½ hours earlier another fire was lit in the pines less than 30 chains East and yet another on Sunday a week later 12 chains West. These were duly seen from the tower and put out by the Somerville crew before they could cause any damage. Ease of suppression and absence of damage were greatly aided by previous winter burning.

SOMMERVILLE FIRE NO. 3 of 1969/70.

COMMENTS.

H.D. Outfits.

A Red Action would not have been called had the first H.D. pumper started when required. Also the "Phoschek Truck" pumper failed after laying the trail.

This was a useful lesson and in future H.D. units in Wanneroo-Metro. will be given the sort of attention that one would expect with an aircraft.

Organisation.

The attack and back up organisation worked extremely well. However, in future, messages from the Fire Boss re sending certain forces to the fire will go to Wanneroo office for rationalisation. In this case as it happened, the Wanneroo H.D. was much closer to the fire than the Gnangara H.D. which was instructed to proceed.

Effect of Past Burning.

Without the past burning it is probable that this coul have developed into a much bigger fire requiring all the back up forces.

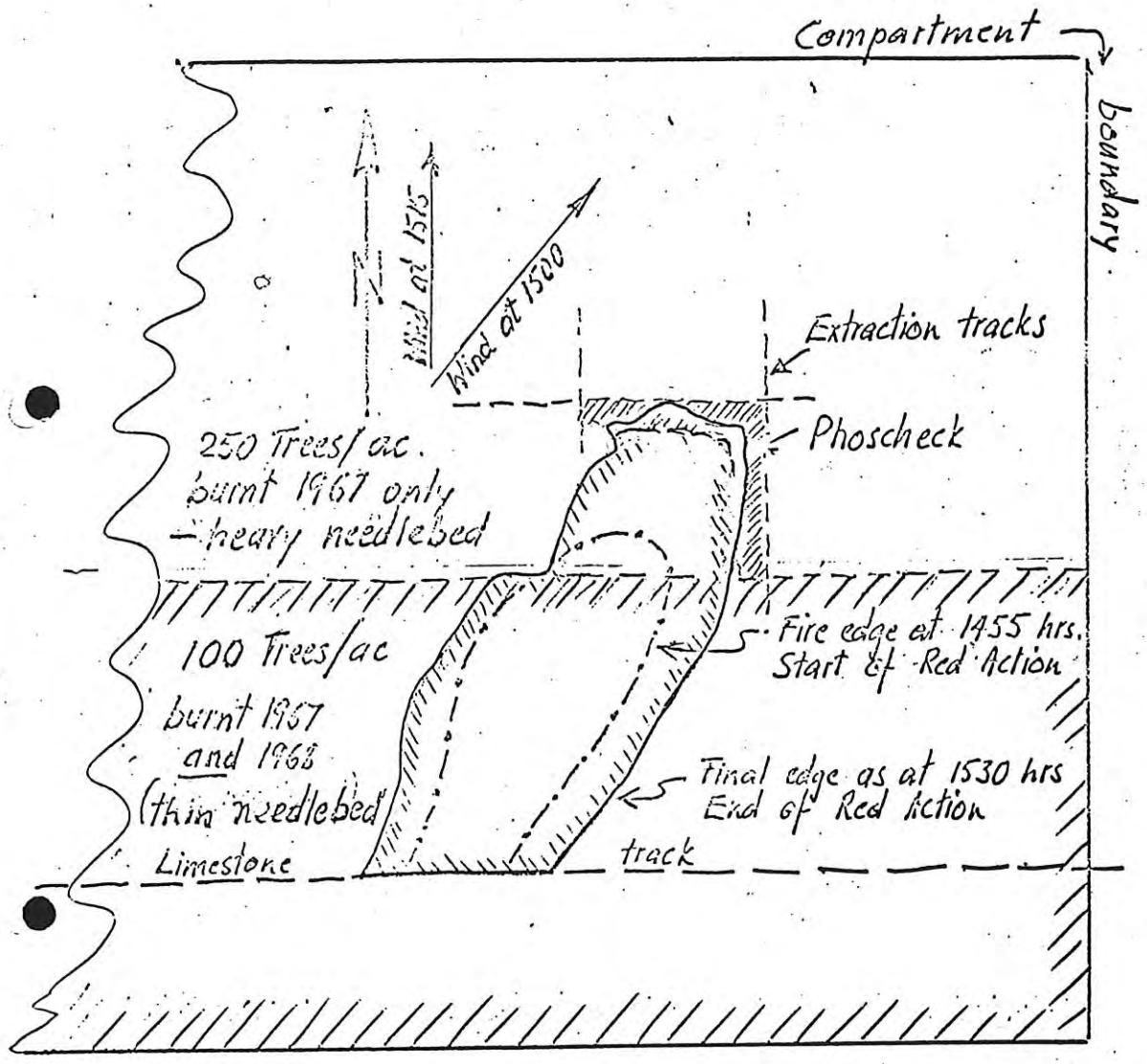
Phoschek.

This material was very effective but there is little doubt that the relatively narrow and approachable head fire could have been stopped with water. It appears that a more serious situation is required to thoroughly test phoschek.

D.R. LEJEUNE,
INSPECTOR.

Somerville Fire No. 3 of 1969/70

Date of Fire: Nov 1st — Compt 55 — Area: 1.4 ac



Scale: 2 chains to one inch

N.B. 11/4/69

CONTENTS:

RED ACTION. FIRE S.F. 14 22.3.1969.

COLLIE HILLS - MUNGALUP PLANTATION.

SECTION A.

COMPARTMENT 18.

1. SUMMARY.

At 2105 on Saturday 22nd March 1969, O/S. Vince and gang with H/D Gang Unit returning from a P.P. fire noticed from Moorhead Siding a fire in the Mungalup Plantation and across the Collie River.

D.F.O. Shedley had made a scheduled call from Collie at 2100 and closed down. Vince therefore travelled to Collie to raise the alarm then proceeded to the fire by 2125.

Red Action was called at 2115, two H/Duties and one L/Duty were despatched from Collie, 1 H/Duty from Wellington, 2 L/Duty and 1 H/Duty from Harvey with Dwellingup and Kirup Standing by.

When the Phoschek H/Duty arrived at 2139 a second fire was discovered and was tackled by this unit.

Both fires were stopped by 2210 but mopping up continued until 0159 on 23rd.

It was considered that the fires were deliberately lit and assistance from the local Police and the Bunbury C.I.B. was obtained.

2. DIARY OF EVENTS.

22.3.1969.

2105	Fire spotted by O/S Vince from Collie-Roelands Road.
2115	Red Action called at Collie.
2122	Harvey notified.
2125	O/S Vince with H/Duty gang truck arrived at fire.
2130	D.F.O. Shedley arrived at fire.
2133	F/R. Donnelly manned field control point. D/For. Hancock arrived at fire.
2139	O/S. Miller and Phoschek H/Duty and F/G. McWhirter arrived at second fire.
2140	First fire stopped. F/R. O'Leary arrived at fires.
2145	Collie F/Attack arrived and put an flank of second fire.
2210	Second fire stopped.

RED ACTION CALLED OFF.

2214	O/S. Chitty and Collie H/Duty arrived at fires.
2228	A/F. Humphrey and F/R. Evans arrived at fires with pony radios.
2237	Harvey H/Duty arrived at Collie having travelled the back road.
2247	Harvey H/Duty from Collie and O/S. Chitty from Harvey via Roelands arrived Allanson.
2259	O/S. Coglan arrived Allanson.

2303 Wellington H/Duty arrived C/P.
Harvey No. 1 gang arrived at fire also F/R. Donnelly.

2340 Harvey No. 2 gang arrived at fire.
D/For. Hancock despatched for patrol of Bussells Plantation.

23.3.1969.

0159 Mopping up complete.

F/R. Donnelly and 1 man patrolled for balance of night.

3. SUPPRESSION.

The initial attack on the first fire was with a heavy duty gang truck unit manned by an overseer and four men. The 1000 ft. of canvas hose on the truck was sufficient to reach right around the fire and attack was direct starting on a flank and continuing around the head fire and back on the other flank.

The initial attack on the second fire was with a standard H/D. unit with phoschek and manned by an overseer and five men. Their attack was close to the headfire with the phoschek being applied on the flames and for a width of about 10 ft. into unburnt fuel. The backfire and one flank were suppressed with a standard gang unit manned by 3 men and using the live reel.

4. MOPPING UP.

For the first fire the H/D. gang truck was driven to the waters edge of the dam and a hose line run to connect the canvas hose used in suppression. All logs were put out with water and a break six feet wide was raked clear of fuel.

For the second fire the mopping up was the same except that water was not pumped direct from the dam.

The lack of adequate lighting for mopping up work was critical and despite repeated inspections there was a deal of charred fuel outside the raked break which could not be detected until daylight.

5. AREA BURNT AND DAMAGE.

½ Acre	-	first fire.
3/4 Acre	-	second fire.
1½ Acre	-	Total. About 750 Trees.

The stand was planted in 1959 on a steep rocky site and is not quite ready for first thinning. The area has since been heavily marked and it will be possible to recover about 15-20 loads of case logs from the burnt trees. The thicker barked trees without too much scorch are being retained for observation.

6. FUEL TYPE.

The first area contained part dead undergrowth mainly ac. pulchella to 6 ft. The steep rocky ground had prevented complete initial clearing and trees had been felled and left over half the area.

Slash from low and high pruning was well flattened down.

On the second area there was no scrub but patches of eucalypt coppice caused flaring.

7. WEATHER CONDITIONS.

The temperature during the day reached 80° at 1600 with a minimum RH of 24% at the same time. Wind was NE all day decreasing from 20 mph at 1000 to 10 mph at 1800. By the time of the fire outbreak the wind had dropped completely.

No temperature readings were taken at the time of the fire.

8. FIRE BEHAVIOUR.

Flame heights averaged about 4 feet with maximums of 10-12 ft due to scrub and coppice. The highest scorch occurred where coppice was present and all coppice was totally scorched. Only 4 or 5 pines were scorched right to the tip.

The fuel was almost totally burnt from the ground exposing mineral soil.

There was no spotting and forward spread was influenced mainly by slope.

9. RECOMMENDATIONS.

1. Greater use of portable pumps on the Wellington Dam should be made rather than develop water points for trucks.
2. More canvas hose will be required.
3. Signposting to be improved.
4. It is recommended that improved torches be provided. Investigations into the suitability of miners type rechargable dry cell lamps is recommended.
5. Improved siren required for Collie H.Q.
6. Improved exterior lighting for yard and office despatch.
7. Pony radios must be at each Divisional centre to be of any real value.
8. Signalling equipment between pump operator and end of hose is required.

P.N. SHEDLEY D.F.O.

COLLIE
28.4.69
PNS:CGC:

SUMMARY OF COSTS

	WAGES	PLANT	TOTAL
COLLIE	187.00	51.83	238.83
HARVEY	170.00	50.99	220.99
KIRUP	10.00		
DWELLINGUP	Stand-by not charged.		
TOTAL	367.00	102.82	489.82

APPENDIX 2.

AVAILABLE RESOURCES

	Attended Fire	At Office
COLLIE	6 Officers 3 Overseers 14 Men	2 Officers
HARVEY	4 Officers 2 Overseers 10 Men	2 Officers
KIRUP		6 Officers 2 Overseers 8 Men
DWELLINGUP		7 Officers 2 Overseers 2 Gangs

All with supporting H.D. Units and transport.

SOMERVILLE FIRE NO. 10 OF 1968/69.

REPORT BY N. BUKELIS

This fire was detected from Somerville Tower at 0754 on January 10th, 1969. It burnt 0.15 acres of P. halepensis in Compartment 26 and is notable because it caused very little damage despite the time of the year.

Sequence of Events.

0754 Towerman reports smoke on first observation.

0756 Somerville outfit of 5 men in 2 H.D.'s and one L/D depart from Headquarters.

0800 Somerville men arrive at fire, no outside help needed.

0805 Running fire stopped. Commence mop up.

0840 Bukelis telephones Hilton Police. Boyd returns to normal work.

0900 Police arrive.

0930 All leave fire except one man with H/D who remains to saturate the whole burnt area. This is completed by 1 p.m.

Topography and Fuel.

The burnt area is on a hill crest in a well grown stand of P. halepensis, planted 1931. Present stocking about 150 T.P.A. Last thinning in 1963. High pruned in 1944. Needlebed burnt winter 1967.

On the ground there was a compacted "duff" layer 1 to 3 inches thick overlain by nearly an inch of loose needles plus some old felling slash. Also plenty of dry grass on extraction tracks.

Weather.

The fire occurred 20 days after rain and this was only an isolated fall of 9 points on December 21st. The intervening period was mainly hot with 6 days of temperatures in the 100° to 110° range.

Weather on the morning of the fire:

Time	Dry Bulb	Wet Bulb	R.H.	Est.Tower Wind	F.D.I.
0730	63	60	83	SSW 5 m.p.h.	0.28
0830	71	68	85	SSW 5 m.p.h.	0.36

Fire behaviour.

Flame heights were between 9 inches and 2 feet with an average of, say 15 inches. Due to the light wind there was little difference between head and flank fire and the shape of the burnt patch is roughly circular.

Rates of spread could not be measured during the short time of suppression. Possibly the fire had burnt for 1 or 2 hours before detection. The cause remains unknown.

Damage.

There are 20 trees in the burnt area. One bole is blackened to 15 feet and has been attacked by ips. The remainder average only 5 feet of blackening and have no insect damage to date. There is no crown scorch at all despite a canopy level of only 20 feet.

Some light bleeding of resin is visible on 8 to 10 boles. This, however, bears no relation to the height of but blackening. In fact, a tree of the same species which received severe crown scorch in another fire did not bleed at all.

Suppression Costs.

Wages : $16. Vehicle + pumpers $13.44

This included mopping up and patrols.

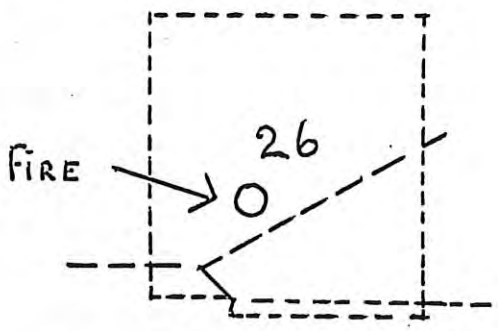
Comments.

1. Without doubt the absence of serious damage was due to both the mild weather and previous winter burning.

2. The essential difference between the effects of this fire and those of a winter burn is the amount of ground fuel consumed.

   This fire burnt all the old wood on the ground, regardless of size, and also 90% of the duff layer.

3. As an additional detection measure an early morning observation at 6 a.m. was introduced following this fire.



POSITION SKETCH : 10 CH = 1 INCH.

REPORT ON COLLIER FIRE OF SUNDAY JANUARY 5TH, 1969.

1. Summary.

Overseer J. Feast reported a smoke at 1300 hours to Asst. Forester O'Grady who on arrival at 1310 found approximately 2 square chains alight on the east side of the main N and S track in Compartment 10.

In the meantime a Red Action had been called because of the extremely dangerous fire hazard and rapid growth of the fire.

On arrival at fire, A/F O'Grady noted that the ground fire was under control so immediately called off Red Action. This was 11 minutes after the fire was sighted.

The running fire was stopped 10 minutes after the fire was first reported. However, hop-overs were still frequent for up to 2 chains from the cultivated fire line forming the front edge of the burnt area.

It appears that the fire had been deliberately lit in an open patch on the edge of the track. Car tracks were partly visible but had been almost obliterated by the passage of the fire truck.

A/F O'Grady took the name of a young man who had followed the Victoria Park Fire Brigade in. As the name seemed familiar it was checked and proved to be that of the person who had eventually been apprehended in 1957 for lighting fires in the plantation when over a 100 acres were burnt.

The Victoria Park Police were notified and they are at present making enquiries.

2. Sequence of Events.

1300 Overseer Feast notifies A/F O'Grady that there is a fire in Compt. 26. Actually the fire was in Compt. 10 which is almost adjacent to Compt. 26.

1301 Somerville Tower notified by O/Feast.

1302 Collier units left for fire. 3 men
Victoria Park Fire Brigade notified, by O'Grady.
Forest Workman Wilkes called in from standby.
Employee A. Lawrence called in from standby.

1307 Mr. Ashcroft notified.

1307 Wanneroo notified.

1306 Both Collier units at fire.

1306 Red Action called by O/Feast from fire.

1306 Both Somerville units left for fire.

1303 Insp. Lejuene left Wanneroo.

1307 Wanneroo unit left for fire.

1312 Gang truck ready to leave.

1311 A/F O'Grady at fire calls off Red Action as the fire edges had been contained.

Sequence of Events continued.

1314	Victoria Park Fire Brigade at fire.	+ 3 men
1315	B. Wilkes and Lawrence at Fire.	+ 2 men
1325	Somerville H/D (Bedford) returned to Somerville.	
1325	Central Fire Brigade with 4 wheel drive unit at fire.	+ 4 men
1340	Somerville H/duty at fire - transferred water to Collier unit.	+ 2 men
1351	Somerville H/D returned to Somerville.	
1356	Mr. Ashcroft left fire.	
1530	A/F O'Grady left fire - Instructions left that fire had to be completely extinguished.	
1830	Main gang left fire.	
1900	Patrol by A/F O'Grady.	
20 - 2400	Patrol by O/Feast.	

6/1/69.

530	Inspection by overseer.
800	Inspection by A/F O'Grady - dead out.

3. Suppression and Mopping up:

When suppression started the flames were whirling up and around the trees to a height of approx. 30 ft. Ground fuel was comparatively light as the Compt. had been burnt over in 1968 winter. The fire tanker arrived at approx 10 minutes after ignition but approx. 2 square chains were already in flames. The Head fire 1 chain in width was attacked first and with the ground fuel being cut off by a 10ft. cultivated strip it was possible to reduce the heat and flames and obtain control in approx. 6 minutes.

Mopping up was continued until 1830, 2,000 gallons of water were used before the fire was completely extinguished.

Numerous hop-overs occured over the cultivated strip to approx. 2 chains in front of the Head fire. These were contained by spraying from the light duty outfit and spraying the needles from the H/D outfit. Smoking spots were removed with shovels and deposited on the burnt area.

The tail fire did not present any difficulty as it was against a clear track.

Some spotting occurred on both flanks but penetrated only to about 1 chain on either side of the fire.

Most of the mopping up was concentrated on putting out the burning organic matter in the ground.

Report on Collier fire on 5/1/69 continued.

4. Area Burnt:

Total burnt is 2 square chains of Pinus pinaster approx. 60 - 70 ft. tall planted in 1929. Three trees are scorched to their full height, while six trees have severe butt scorch. It is estimated that six trees have been killed.

5. Fuel Types:

The fuel consisted of light branches and needles remaining after the 1968 winter burn. The amount of fuel was practically the minimum to which it is possible to reduce it by winter burning. There was no fuel on the cultivated strip and this strip was probably a decisive factor in obtaining quick control of the fire.

6. Weather Conditions.

Time:	Temp.:	R/H.	Wind.	F.D.I.
1200 hrs.	110.2°	8%	NW 10mph	20.00 Pink
1300 hrs.	99.0°	21%	W 15mph	7.56 Yello
1400 hrs.	97.0	21%	W 15 mph	6.45 Brown

7. Fire Behaviour:

An estimate at rate of spread - ground fuel 2 chains 5 minutes, i.e. 20 ft. per minute. Overhead spread i.e. hop-overs - 40 ft. per minute. Fire whirled around trees to approx. 30 ft. high fanned by a light westerly breeze and self induced draughts. When the ground fuel was cut off by the ploughed strip and the flaming trees behind hosed down the wind and fire induced draughts fell in strength enabling the firefighters to obtain complete control.

8. Observations:

The overseer being on the tower with the lookout man when the fire started, immediately rushed to the fire and thus saved several minutes. I would say that about 10 minutes elapsed between the lighting of the fire and the arrival of the tanker. In this time approx. 2 square chains had burnt with flames 20 - 30 ft. high. Owing to the dangerous fire weather I had kept R. Ritchie on standby at Como Headquarters to drive the light duty outfit if need he said that when the tanker went on to the cultivated stri to attack the head of the fire it was completely obscured b flames and smoke. I am sure that the clear cultivated strip by making a break in the ground fuel contributed largely to getting control of the fire before it crowned. Winter burning is highly effective, but still leaves suffic ient fuel on the ground to allow hot summer fires under extreme fire hazards.

Report on Collier fire on 5/1/69 continued.

9. Recommendations:

Winter burning and cultivation of extraction tracks at 1 chain intervale. Cultivation is relatively cheap as a light tractor travelling say at 6 miles per hour would strip out approx. 250 miles per week or 2,000 acres per week. If this was reduced to 1,00 acres per week it would still be very useful in fire control.

I also feel that a more efficient type of shut off nozzle is essential. The operator should be able to contro the water output from the nozzle more positively from plus to minus.

10. Appendices:

(a) Plans

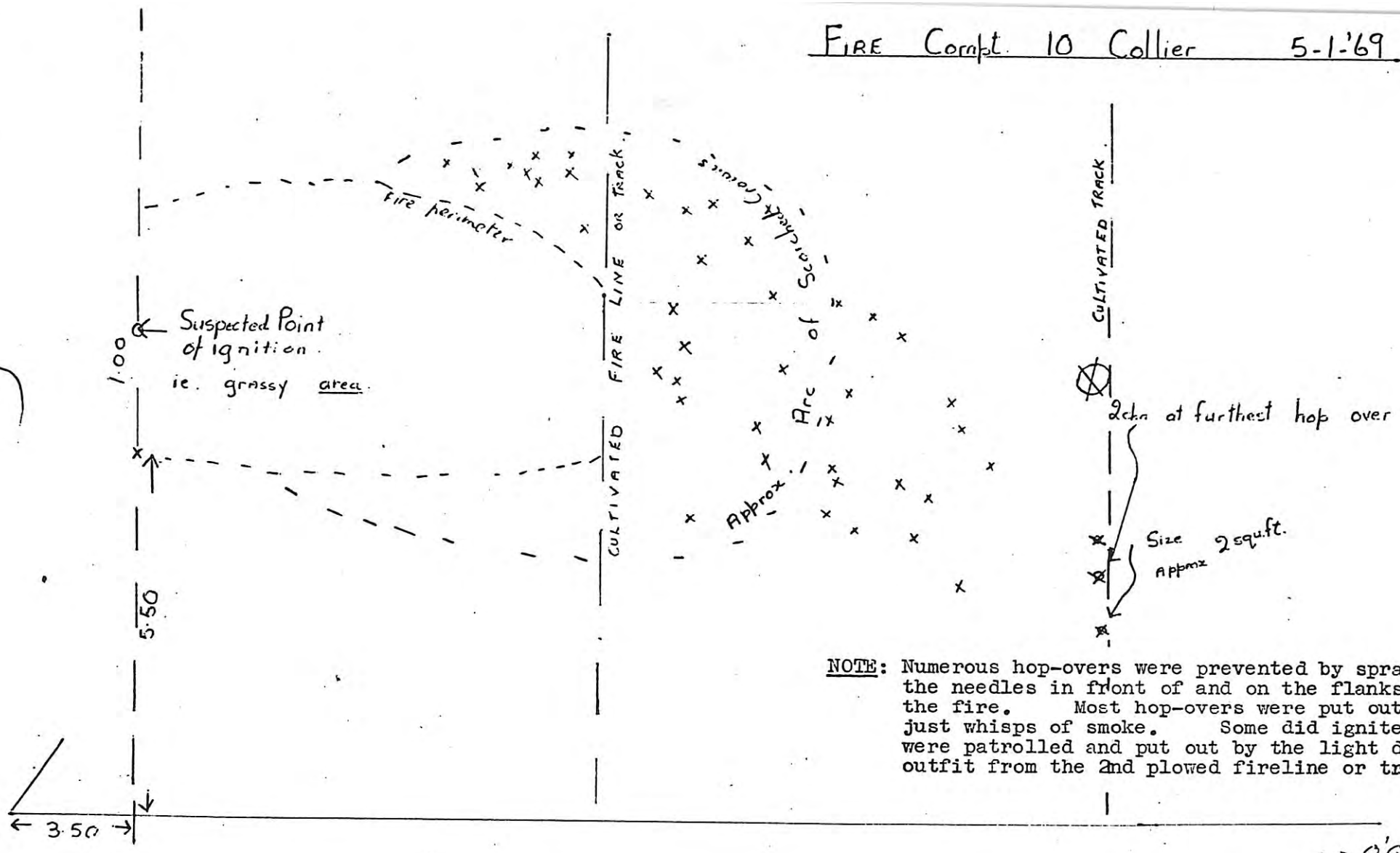
(b) Costs

Collier Gang	-	$60.00
Somerville & Gnangara	-	40.00
		$100.00

This fire demonstrates the type of fire to be expected on days of extreme fire hazard, in stands that have previously been controlled burned during Winter months.

It is also interesting that crown scorch was most severe on trees in the front arc of the fire front, but not within the burnt area. 15 trees suffered butt and crown scorch within the fire perimeter, while 19 trees (10 seriously) were affected outside the fire area.

FIRE Compt. 10 Collier 5-1-'69



NOTE: Numerous hop-overs were prevented by spraying the needles in front of and on the flanks of the fire. Most hop-overs were put out when just whisps of smoke. Some did ignite but were patrolled and put out by the light duty outfit from the 2nd plowed fireline or track.

L.D. O'GRADY
22.1.69.

MR. McNAMARA.

Somerville Plantation Fire
November 16th, 1968.

At 2.50 p.m. on Saturday November 16th, a fire was reported by the Somerville Towerman, its position being given as Compartment 1.

The Somerville gang and F/Ranger Bukelis left H.Q. immediately and arrived at the fire by 2.57 p.m. confirming that it was in Compartment 1, about 0.25 acres in extent and asking for assistance from Collier/Wanneroo. The Collier gang (Overseer Feast and 2 men) arrived at 3.15p.m. as did Inspector Hewett and the running fire was stopped by 3.45 p.m. CAUSE is Unknown.

A moderate westerly breeze helped the early spread of the fire, and caused a number of hop-overs including one almost 4 chains from the fire and in Cpt. 2. At about 3.10 p.m. the wind veered South West and decreased in strength.

1. Outside Assistance.

This fire was not treated as a full scale Red Action and notifications were :-

1. Collier Plantation - Duty Officer
2. Wanneroo Division
3. S.F.C.F. Ashcroft - not available.
4. Inspector Hewett

Heavy Duty units plus manpower were made available from Collier and Wanneroo and arrival times of all units were recorded as follows:-

Somerville Gang (O/S + 2 men + H/Duty)	1457	hour
F/Ranger Bukelis (Light Duty + 1 man)	1458	"
O/S Feast (H/Duty + 2 men)	1515	"
Insp. Hewett	1517	"
F/G Haunold (Wanneroo H.D. + 1 man)	1550	"

2. Suppression Methods.

Compartment 1 is 41 years old P. pinaster of the Land race and of average quality. It has been thinned to approx 70 trees per acre and has been control burned in the winter o 1966. Under these conditions a direct attack on the Head f with Heavy Duty units was used to knock down the fire and all for use of hand tools to tidy up the edge. After the head fire had been knocked down units worked down the North Wester flank then the S. Eastern flank. A number of spot fires occurred, mainly within ½ chain of the head fire and one appr 4 chains from the fire.

Somerville Fire 16/11/68 (continued).

3. Mopping up. - Commenced at 3.45 p.m. and it was decided to let the Wanneroo H/Duty arrive since it was already within a mile of the plantation and both of the existing Heavy Duty units were nearly out of water. A complete wetting of the area was carried out together with raking-up and breaking-up heaps around the perimeter. Although the area had been previously control burned two factors added to the difficulty of handling the fire, viz, generally dry grass throughout, and a deep soil and needles "Duff" layer. This duff layer is generally two or three inches thick and smoulders for some time with little show of smoke or flame and appears to have a different fire behaviour then duff under unburnt needle and branch litter. The admixture with bone-dry surface sand made wetting difficult.

Mopping up finished at approximately 6 p.m.

4. Damage to Forest.

The area burned has been estimated at 0.47 acres and included 24 trees, each with an estimated volume of 16.1 cubic feet U.B. - a total of 67.6 cub.ft. U.B. Only five (5) trees appeared to be severely crown scorched and a re-assessment of damage will be required in a few weeks time.

5. Weather.

Time	Temperature	Rel/ Humidity	Wind	F.D.I.
1300	73.5°	54%	W.10-15mph	1.08 Green
1400	73.8°	56%	W.10-15 "	1.08 Green
1500	73.0	56%	W.10-15 "	1.04 Green

6. Suppression Costs - Will not be known for some time but an approximation has been made.

a)	Fire fighting man-hours 25 @ $1.50	$34.50
b)	120 miles for vehicles @ 12 cents/mile	$14.40
		$48.90

7. Observations.

1) The O.I.C. and men from Somerville are to be commended for quick effective action.

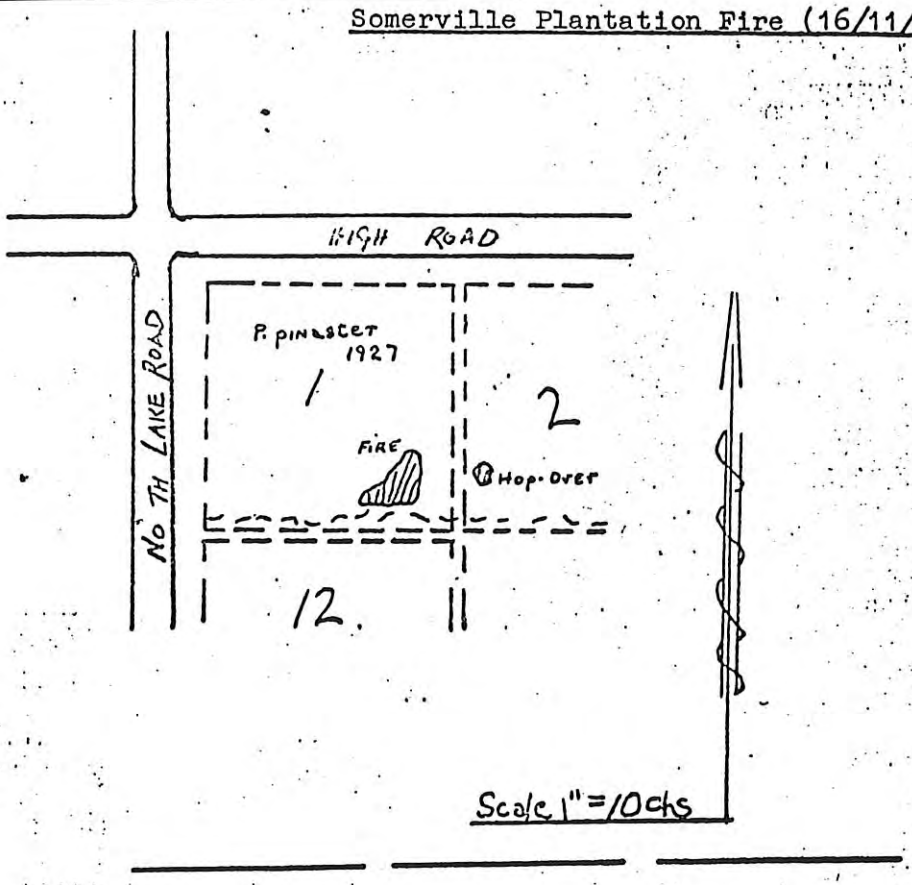
2) The use of Somerville Towerman as despatcher worked fairly smoothly.

3) The behaviour of duff-fuel suggest the need for more investigation of detergents in pine fires.

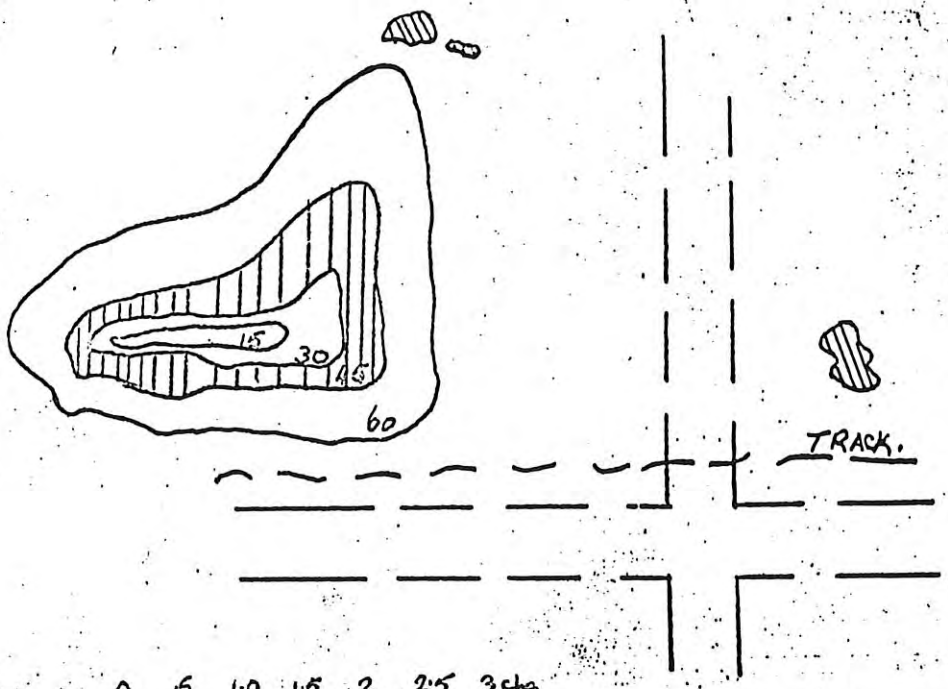
PNH:ML
COMO.
18TH NOVEMBER,1968.

P.N. HEWETT,
INSPECTOR.

Somerville Plantation Fire (16/11/68).



R.O.S. from 1450 - 1550 hrs



18/11/68

REPORT ON SOMERVILLE FIRE OF WEDNESDAY JANUARY 31st 1968.

1. SUMMARY.

Somerville Tower reported a smoke at 1405 hours to F/R Bukelis who on arrival found about ¾ acres alight in the partly planted swampy area in the plantation south of Cpt. 5A. The northern part of the fire was in 12 year old P. radiata while a few chains south and across swampy ground it was either in or very near to a 1½ acre plot of 100 ft. P. caribea.

F/R Bukelis immediately called for help from Como, Wanneroo and Melville Fire Brigade. The sum total of attendance was 4 heavy and 4 light water trucks, 2 officer's vehicles and 19 men.

The running fire was stopped 95 minutes after the first report. Phoscheck was tried for the first time and proved successful in both light and heavy ground fuels.

The total area burnt is 2.6 acres.

It appears that the fire had been lit in at least 2 places several chains apart. Sgt. Cameron of Brentwood Police questioned some teenagers near the fire but chances of finding the culprit are slim.

2. SEQUENCE OF EVENTS.

1405	Towerman reports smoke on 59° indirect view, appears outside pines. Has obtained areas from Jandakot Airport on 325° who can see 3 separate smokes.
1406	Crossbearing plots in "Old H.Q. Site" south of Cpt.5A.
1409	F/R Bukelis leaves H.Q. in light water truck and while travelling asks O/S Boyd with one man to go to fire
1412	in H/D (from Cpt. 48) and remaining 2 men at H.Q. to prepare to mix Phoscheck if needed.
1417	Bukelis arrives at fire(s) and asks Towerman to get help as follows : H/D with Phoscheck plus 1 H/D each from Como and Wanneroo, also Melville Fire Brigade.
1420	A/F Watson at Como notifies Brentwood Police.
1421	O/S Boyd arrives with H/D and attacks fire in SE, Bukelis in NE. Visability poor but both fires appear joined.
1422	H/D with one man leaves Wanneroo.
1425	Police arrive.
1427	2nd Somerville H/D leaves H.Q. with Phoscheck.
1432	Inspector Lejeune and For/Kesners leave Wanneroo.
1435	H/D leaves Como and L/D a few minutes later.
1437	2nd Somerville H/D and Melville Fire Brigade arrive H/D crew to lay Phoscheck on north flank, fire brigade to watch for spot fires.
1448	North flank and NE head under control, E flank troublesome but expect to hold with existing forces and those which are on the way. Eastern running fire about 4 chains wide.

Contd.....

1450 Como crews arrive.

1505 Somerville h/D starts laying Phoscheck on east flank. Wanneroo H/D arrives.

1510 Canning Volunteer Brigade arrive in 4 x 4 Toyota.

1517 Messrs. Lejeune and Kesners arrive.

1528 Only one chain of running fire remains.

1530 Inspector Lejeune sets up control point and instructs Bukelis to remain Fire Boss. Pony radios put to use. Inspector van Noort arrives.

1540 Inspector Lejeune to all units: running fire stopped. No further help needed.

1547 Melville Fire Brigade leave.

1600 Canning Volunteer Brigade leave.

1740 Mr. van Noort leaves.

1803 Messrs. Lejeune and Kesners leave.

1835 Somerville gang and Wanneroo H/D leave.

1905 Collier forces leave.

2000 O/S Boyd returns to take up patrol till 2 a.m. when relieved by H. Wilkes.

2010 F/R Bukelis leaves.

3. SUPPRESSION AND MOPPING UP.

When suppression started the 2 spots had apparently joined and the long axis of the fire lay in a N-S direction. The wind was from SW.
Due to uneven fuels the northern section was spreading NNE while the southern headed eastwards and both were under pine canopy. At the NE perimeter it was burning less fiercely amongst clumps of ti-tree.
The N and NE was attacked with the light pumper while the 1st H/D unit commenced on the SE corner and worked northwards through the plot of P. caribea. This latter section proved difficult because of heavy ground fuel and several spot fires, which, however, only reached up to 6 yards from the main fire.

When the truck with Phoscheck arrived it was first used to secure the remaining 4 chains of fire in the plot of P. radiata and then moved to the P. caribea where a further $3\frac{1}{2}$ chains was laid after 2 H/Duties had slowed down the head fire here. The phoscheck stopped the running surface fire and mopping up was then commenced. The western tail fire presented no difficulty at any time. Most of the suppression and mop-up effort was directed at the persistent fire in the plot of P. caribea. An all-night patrol was maintained (2 shifts of one man each) and this paid off when a "sleeping" spot fire came to life at 2 a.m.

4. AREA BURNET.

Total burnt is 2.6 acres of which 1 is P. caribea

Contd. .....

0.4 P. radiata and the remainder unplanted. The burnt section of the P. caribea plot contains about 100 large trees estimated 35 years old. Of these some 30 or 40 are scorched to their entire height of 100 feet while some have only moderate butt damage and little crown scorch. Butt blackening ranges from 5 to 35 feet. There are also many saplings most of which are totally scorched.
The average height of the P. radiata is 35 feet.
An estimated 20 of these are scorched beyond survival but nearly all show signs of butt damage.

5. FUEL TYPES.

In the plot of P. radiata there was a 1 inch layer of needles plus light pruning slash.
In the unplanted areas there was green grass in the swamp and dry grass on higher ground with clumps of ti-tree and scattered self-sown pines. Under the caribea canopy there was a 9" to 12" layer of needles plus patches of a loosely-packed mixture of swamp grasses and pine needles. Under this there is a dense moist mat of roots which did not burn but made mopping up difficult.

6. WEATHER CONDITIONS.

Forecast : Mod. - 73° - 45%.

L.F.D.I. (predicted) Jarrah - Low Green.
Pine - Blue.

		1400	1500	1600	Peak of Day
Met. Bureau	Temp.	73.5	73.7	73.3	78.4 at 1315
	R/H	58%	58%	56%	75% at 0200
	Wind D and S	SSW 13 kn.	SSW 15 kn.	SSW 14 kn.	SSW 33 at 1555
Somerville Tower - Wind		SW 15-20	SW 25-30	SW 25-30	
F.D.I. for Jarrah (from Met. Bureau figs.)		1.3	1.4	1.4	7.5

7. FIRE BEHAVIOUR.

Rates of spread were not measured. An estimate for the NW flank can be given as 1½ feet per minute. Maximum flame height seen was about 20 feet in the P. caribea where there was possibly a junction of two fires. Some 8 to 12 spot fires occurred in the P. caribea up to 6 yards from the head fire. The only other spot fire occurred 10 hours later and 9 chains NE of the main fire. Apparently a spark had landed on some dry rotted Banksia in the swamp and this was ignited by an east wind at 1 or 2 a.m.

8. OBSERVATIONS.

(a) There is little doubt that a detection delay occurred and this was due to two reasons: firstly, wind prevented smoke from rising above the pine canopy, and, secondly, tree top level in the fire area is hidden from the towerman's view by a hill. A detection test (in winter) showed that it took the

towerman 6 minutes befire he could see black smoke from a large paperbark lit by the writer in this area.

(b) Out of 7 plantation fires in Somerville this season this is the only one which occurred in an area where no winter burning had been done.
The largest of the other six burnt 1/20 of an acre and caused no damage.

(c) Phoscheck works well in heavy ground fuels by stopping the rapidly moving surface fire. The deeper needlebed fire then slowly tunnels underneath the layer of Phoscheck.

9. RECOMMENDATIONS.

More winter burning for fuel reduction with research on effect this has on growth rates.

10. APPENDICES.

(a) Plans .. 10 chain and 4 chain scale (attached).

(b) Costs (including patrol and mop-up).

	Wages.	Plant.	Total.
Somerville	$ 87.10	37.56	124.66
Wanneroo	9.33	34.08	43.41
Como	50.00	17.80	67.80

Phoscheck - 650 lbs.

(Signed) N. BUKELIS.

FOREST RANGER.

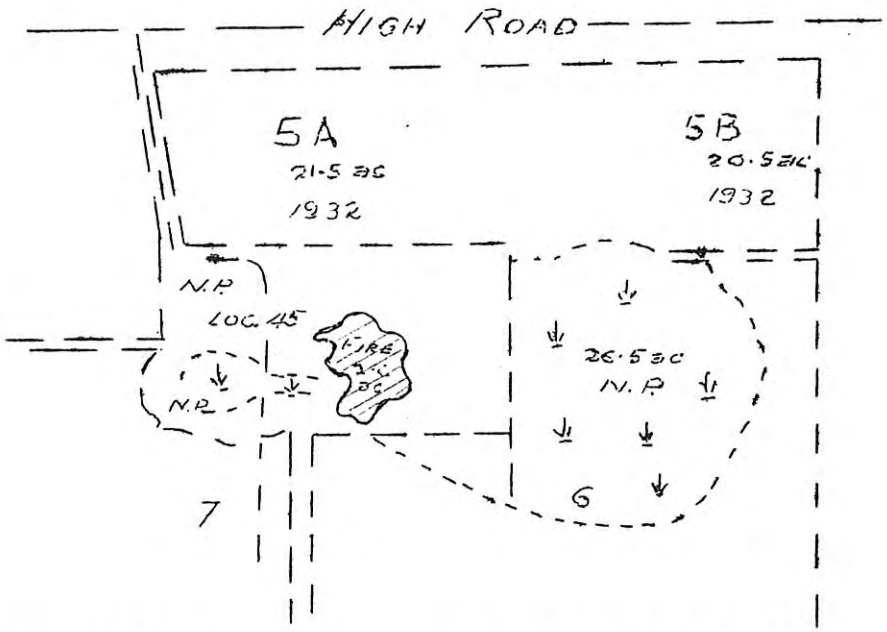
NB/ML
15th February 1968.

Comments by Inspector Lejeune.

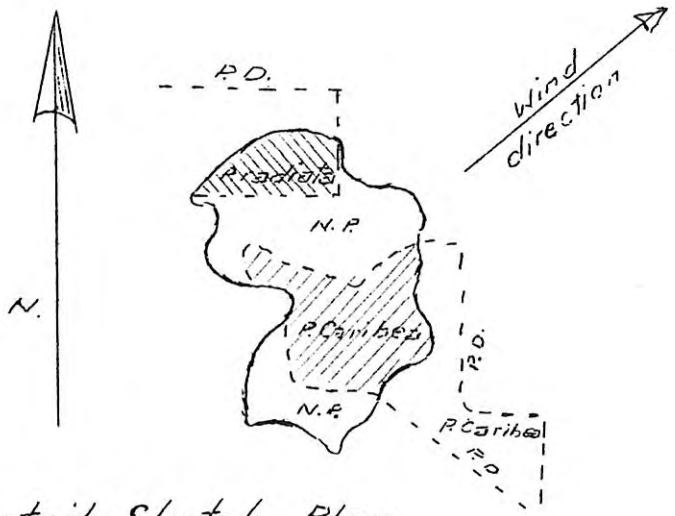
1. F/R Bukelis did not call a "Red Action", the reason for this was that there was only about ¾ ac. of previously unburned pine in the path of the fire, i.e. beyond the point where the fire was stopped. Apart from very small pockets the fire was surrounded by 1967 control burning of pine or other fuel .. He stated at the time that he was confident local forces could control it and this judgment proved correct. He estimates from past experience that a Red Action call would have added at least $300 to the cost.

2. The fire area and surrounds contained an unusually large range of fuel types which to a Fire Boss without local knowledge would have resulted in some valuable time making an accurate assessment and deciding on the correct action. F/R Bukelis was able to decide to perform useful suppression work as soon as he arrived at the fire.

Somerville Fire 3/1/68



(a) Locality Sketch - 10 chains to 1 inch



(b) Detail Sketch Plan.
4 chains to 1 inch.

A D D E N D U M.

The following officers attended this fire at Somerville on the 31-1-68.

Mr. van Noort.
Mr. Lejeune.
Mr. Kesners.
Mr. Bukelis.

With the exception of Mr. Bukelis, the above officers did not witness the complete application of "Phoscheck" and although this test cannot be regarded as conclusive, the general impressions gained was that "Phoscheck" was an effective checking agent, all were impressed with the result. Only a coating of the preparation, to the surface fuel was required to achieve this result, hereas saturation of the whole fuel profile would have been required by the use of water.

All Officers agreed that "Phoscheck" could be a worthwhile fire retardant for plantation fires.

Adverse comments recorded were, firstly, that the red colouring additive in the mixture was rather inconspicious when applied to the red coloured needles on the surface of the fuel bed.

Secondly, that in the mopping up operation care had to be exercised in extinguishing treated incompletely burnt fuel, as this tendered to smoulder.

The disadvantages are not regarded as serious drawbacks once they are recognised and allowed for.

A. J. Ashcroft.

A. ASHCROFT.
S.F.C.F.

SOMERVILLE PLANTATION FIRE 1ST MARCH 1967.

Table of Contents

REPORT ON SOMERVILLE FIRE - COMPT 29

Wednesday March 1st, 1967.

SUMMARY:

A fire was reported to F/R Bukelis at Somerville Headquarters by a settler, Mr. Bowman of Coolbellup, at 0457 hours on 1st March 1967. After rousing the settlement personnel, Mr. Bukelis climbed the fire tower to assess the location and size of the fire and notified S.F.C.F. Ashcroft at approximately 0503 hours. D.F.O. Quain was advised and stood by at Wanneroo until the Red Action was called at 0525 hours.

When the first gang arrived at the fire it was approximately 2.5 acres and it was burning strongly with a moderate ENE breeze.

Compartment 29 was planted in 1937 with Pinus Pinaster (South African Strain) which is mapped as Site Quality 3, and has been thinned to approximately 350 trees per acre. Current thinning operations were proceeding on the eve of the fire.

Debris inside the Southern boundary of the compartment, had been lightly control burned in Winter 1965 but there was an accumulation of tops along the outer edge of the compartment.

The running fire was stopped and the Red Action called off at 0650 hours, at which time the area burnt was 3.0 acres. Possible causes are discussed in the report which follows.

2

DIARY OF EVENTS:

HOURS.

0457 Fire reported by phone to O.I.C. Somerville.

0503 S.F.C.F. Ashcroft alerted.

0505 A.F. Watson notified and asked to contact Melville Fire Brigade.

0510 D.F.O. Quain notified - standing by for reports.

0515 Somerville gang arrived at fire.

0525 Red Action called.

0525 Mundaring (Inspector Hewett) notified.

0530 S.F.C.F. Ashcroft and Melville Brigade arrived.

0550 O/Seer Feast and one man arrived ex Collier.

0600 F/G Walton arrived ex Gnangara.

0630 O/S Lindley, gang, light duty and Wanneroo Heavy duty arrived.

0635 D.F.O. Quain, P. Staley, Gnangara gang, Light Duty and Heavy Duty arrived.

0640 Inspector Hewett, A.D.F.O. Underwood, F/R Ashcroft and one man arrived.

0640 A/F O'Grady and one man in Light Duty.

0645 Control Point manned by Hewett.
Pony Radios put into service.

0647 O/S Saunders and six men ex Carinyah arrived.

0648 Melville Fire Brigade left.

0650 Mundaring Gang, Light Duty and Heavy Duty arrived.
Running fire stopped - mop up commences.
Red Action called off.

0713 Mechanic (G.Gallager) in 4 x 4 Willys.

0728 Somerville gang sent home for breakfast.

0735 Ferguson Tractor (E. Moulds) arrived ex Collier.

0740 A/F Wells arrived.

0745 Ferguson Tractor (C. Postans) ex Gnangara.
At 0810 hours the Collier O/Seer left the fire to return to Como and gangs were gradually withdrawn until by Midday only the local Somerville personnel were left at the fire assisted by a heavy duty from Mundaring Weir.

Manpower (at Peak) 11 Officers. 34 men.

SUPPRESSION AND MOPPING UP:

The fire had moved in a general Westerly direction by the time suppression commenced, and was close to existing firebreaks on its Southern and Western flanks. For this reason, an attack was made on the Northern flank, after suppression of hopovers in Compt 28, which was extending steadily. The existence of extraction tracks at approximately 1 chain intervals enabled the use of Heavy Duty Units directly on the fire face, and mopping up teams using rakes followed up the dousing with water.

Spotting occurred up to two chains ahead of the fire and several men were deployed to contain these.

The running fire was stopped and a complete raked perimeter existed when mopping up commenced at 0650. Mopping up was done with pumpers and hand tools continuing into mid-morning with a 2 gangs and 3 pumpers. The forecast weather for the day gave a fire hazard of Severe to Dangerous and so a completely cold mop up was carried out.

The mopping up and patrol of the area continued until 2200 hours that day with an early morning patrol at 5 a.m. the following day.

The area was then patrolled intermittently for a further two days.

AREA BURNT:

The area burnt in compartment 29 was 3 acres in a strip approximately 10 chains long by 3 chains wide. The trees at 30 years of age, Site Quality 2 are estimated to have a volume of 90 loads, and the severe scorch seems likely to kill practically all trees within the fire perimeter. This timber can be salvaged almost immediately.

FUEL TYPE:

The area burnt had only recently been thinned and was covered with green thinning tops. The southern edge of the fire only had been burnt and the remainder carried a heavy continuous layer of needles and twigs at least six inches deep.

The fuel quantity was very high and would have been in the 15 - 20 tons per acre range; some of which would have been green.

WEATHER CONDITIONS:

The evening of February 28th was warm and dry having been preceded by several days of Severe or Dangeruous fire hazards. The cause or time of lighting is not known, but the weather reading suggests that the fire had not been burning all night.

Perth Met Bureau observations have been obtained for the morning of 1st March 1967 as follows:

TIME	DRY BULB	REL. HUM.	WIND DIRECTION	STRENGTH
0400	77.8	39%	East	10 knots
0500	76.7	41%	East	13
0600	75.0	44%	East	11
0700	75.1	45%	East	10

*Note: at 0445 hours there were several gusts of 24 knots.

WEATHER CONDITIONS CONTD:

The Fire Danger rating for 0500 is 1.5 (green) and gusts of 24 knots raise this rating to 3.48 (brown) so the burning conditions were fairly severe even for a Jarrah forest.

FIRE BEHAVIOUR:

(a) GENERAL:

The headfire had run into the breaks by the time the first personnel arrived and so no comments can be made in regard to the intensity or rate of spread of the head fire. All available fuel on the ground was consumed and dry needle fuel in the crowns also burnt. In the previously unburnt section of the fire the flank fire was from 4 - 5 feet high while in the previously burnt section the flank was only $1\frac{1}{2}$ - 2 feet in height.

(b) SPOTTING:

This was generally only about two chains in front of the head fire and the area it spotted into in Comp. 28 had been burnt during last winter and so the spots developed slowly.

OBSERVATIONS:

Because the fire was in recent thinnings an immediate inspection of all vehicles and equipment at work in the thinnings was carried out as soon as the running fire was stopped and while mopping up was proceeding. This inspection showed that a jib belonging to the contractor had a hole in the exhaust pipe in the vicinity of the front spring.

The fire started in Comp. 29 which is a good distance from a trafficable track among heavy thinning slash. The fire was only $2\frac{1}{2}$ acres in size at 0515 hours and it was still dark when the first gangs arrived at this time.

It appears doubtful if the fire was lit by a person stumbling around in heavy slash away from a road.

The cause of the fire cannot be positively ascertained but it is considered more likely that the jib had ignited the duff along the extraction tracks during the day of the 28th February. This went unnoticed by the bush crew and it spread very slowly in the duff until early in the morning of the 1st March when it ignited the fuel off the track and the fire developed.

The Red Action section of the fire again worked well although it was slower to get underway because people had to be aroused and took some time to get organised.

The pony radios were used extensively at the fire and proved to be excellent for communication between the control centre and different sections of the fire.

The lower fire intensity in the recently control burnt areas was again evident and it was fortunate that the fire spotted into an area that had been control burnt last year. This reduced the number of fires starting from spots and also reduced the development of the resulting spot fires.

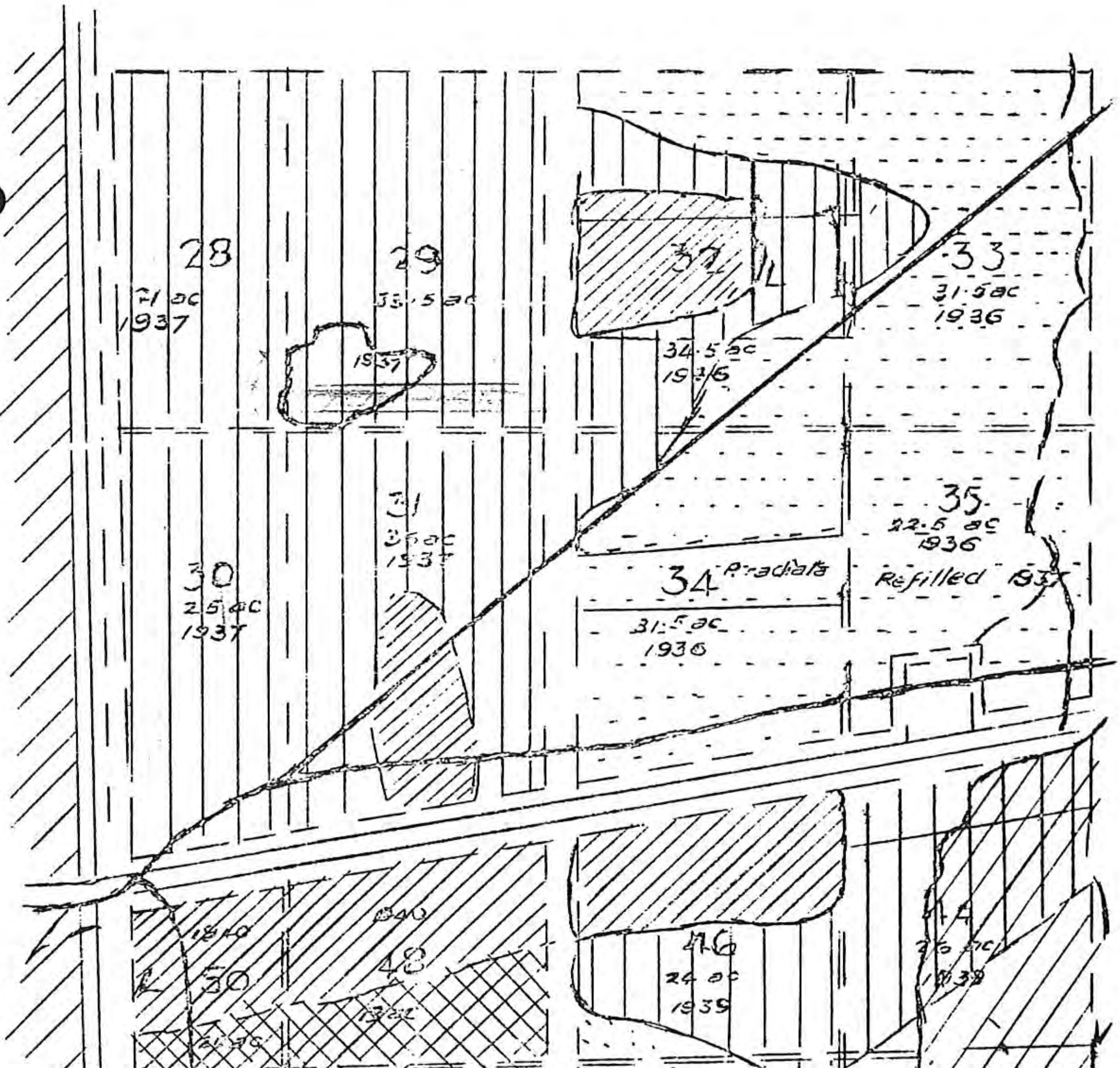
The early arrival of the Melville Fire Brigade was a welcome addition to the manpower at the fire in the early stages.

RECOMMENDATIONS:

(1) Obtain additional manpower for Metropolitan Fire Suppression if possible.

(2) Extend the control burning under the pines in Somerville to include all thinning slash areas.

S.J. QUAIN.
A.J. ASHCROFT.


28
1937
29
33.5 ac
1937
33
31.5 ac
1936
34.5 ac
1936
31
1937
30
25 ac
1937
35
22.5 ac
1936
34 P. radiata
31.5 ac
1936
Refilled 1937
50
48
46
24 ac
1939
44
1939
N.P.
47
30.5 ac
1939
45
22.5 ac
(28.5ac)
1939
CB Winter 1966
CB Winter 1965
FIRE SM.12
1/3/67
73 acres
37 acres

APPENDIX 2.

Summary of Costs - Fire No. S 12 - Somerville.

1/3/1967.

Centre.	Wages.	Vehicles.	Total.
Somerville	94.75	23.76	118.51
Collier	18.00	18.00	36.00
Gnangara	46.87	81.54	128.41
Wanneroo	39.08	65.82	104.90
Mundaring Weir	58.19	57.91	116.10
Kelmacott	57.95	20.64	78.59
			$ 582.51

COMO, W.A.

MR. A. J. ASHCROFT,
SENIOR FORESTER FIRE CONTROL,
FORESTS DEPARTMENT,
COMO. W.A.

7th February 67.

SOMERVILLE FIRES 16.1.67 - RED ACTION.

A Red Action was called at Somerville plantation on Monday, January 16th at 1203 hours. A complete Red Action notification was executed, and was in progress at all centres as far as Dwellingup by approx. 1205.

The fire started in Mr. George's property which is part of a salient of private property within the main body of the Somerville Plantation, and which has been included in the Red Action Zone because of the large extent of grassland which it contains.

1. SUPPRESSION:

The Somerville gang and Heavy Duty Units (2) were in attendance within 5 minutes but were not able to stop the head fire which was moving quite swiftly with a South Easterly breeze. The fire had reached North Lake Road by the time Messrs. Ashcroft, van Noort and Hewett arrived (12-20) and several spot fires occurred on the West side of this road. These were suppressed by the light duty unit from Collier and the Heavy Duty units continued to work along the flanks. The running fire was stopped by 12.30 and was considered under control when the Red Action was cancelled at 13.10.

However at 13.55, and before many units had been sent back to their base, a vigorous hopover in a heap of pine tops, flared up in the middle of the paddock West of North Lake Road. This was immediately attacked by three Heavy Duty and two Light Duty units, and was put out by 14.05.

At 14.10 a second fire was reported to the South West near Compartment 54. With the wind still in the South East and a sea breeze likely, this fire also posed a threat to the pines and a force comprising 2 light duty and 2 heavy duty units were deployed to watch this fire at the plantation boundary.

By 1515 all fires were considered to be under control and the outside gangs and equipment were sent home.

2. DIARY OF EVENTS - 16.1.67:

1203	Red Action called
1205	Dwellingup, Mundaring, Gleneagle, Wanneroo notified and acting.
1220	SFCF Ashcroft, van Noort and Hewett arrived.
1235	Collier H/Duty and O/S Feast.
1240	Running fire stopped.
1245	Carinyah gang and T. Ashcroft.
1245	Mop Up commenced.
1250	F/G Walton, A/F Wells, A/F Jones and Jarrahdale gang.

Somerville Fires 16.1.67 - Continued:

1256 Wanneroo H/duty, Gnangara H/Duty and 2 gangs (O/S Lindley & Darovic)

1310 Red Action called off.

1315 Ferguson Tractor (Gnangara) arrived.

1320 A.D.F.O. Robley arrived.

1340 T. Ashcroft, A/F Wells & Carinyah gang left for fire at Bickley.

1355 Hop-over 7 chains from fire edge.

1410 Second fire, near Cpt. 54.

1515 All fires under control and auxiliary forces sent home.

Note: At 1310, when Red Action cancelled,

i. Mundaring gang, H/duty and A/F Selkirk at Todd Avenue, Como - still 15 minutes away.

ii. A.D.F.O. Robley ½ mile from fire. Gleneagle gang at Forrestdale.

---

3. MANPOWER:

At the peak of activity, the following personnel were at the fire.

a) From Somerville - F/R Bukelis, O/S Boyd & 7 men.
b) From Collier - O/S Feast plus 3.
c) From Wanneroo - F/G Walton, 2 O/Seers and 9 men.
d) From Gleneagle - ADFO Robley, A/F Wells, F/R Ashcroft, A/F Jones, 2 O/Seers and 8 men.
e) Other Staff - Messrs. van Noort, Hewett, A. Ashcroft, J. Reynolds.

Total force totalled approx. 43 persons, with 2 Fire Station crews as well, for part of the time.

4. AREA BURNT:

4.1. Fire (1) was the main threat and burnt approximately 15 acres of P.P. grassland and a few outhouses.

Cause of Fire - Settler burning rubbish on previous evening.

4.2. Fire (2) was all grassland in a new S.H.C. suburban development, and burnt about 3 acres.

5. WEATHER CONDITIONS:

Dwellingup forecast 16/1/67. Fine and Warm, Severe Hazard, EMT. 88°, EMRH. 14%.

Mundaring Actual 16/1/67. Fine and Warm, App. Dangerous. Max.temp. 92°. Min.RH. 13%. Wind strength Gungin at 1400, was 14 m.p.h. from ESE.

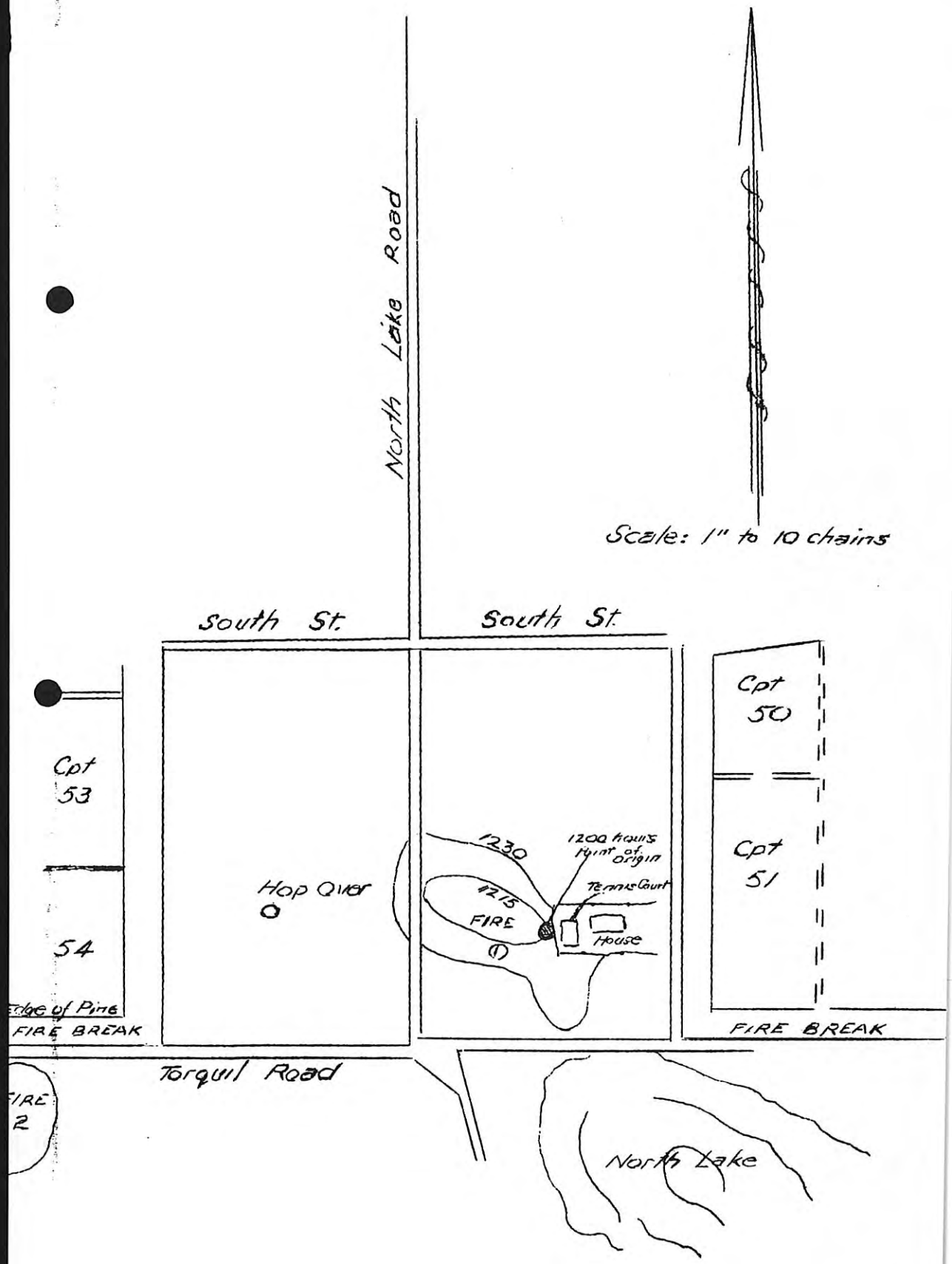
6. COSTS:

Mundaring	$ 69.53	(did not get to the fire).
Gleneagle	$162.35	
Wanneroo	$272.84	

P.N. HEWETT.
ACTING INSPECTOR.

PNH/JC.

RED ACTION FIRE - SOMERVILLE 16-1-61



Harvey

D.F.O. QUAIN,
Forests Department,
Wanneroo.

31st January, 1967.

7/59

Somerville Fire.

I read with interest your report on this fire. It appears that the "Red Action" procedure is already working fairly well and certainly from your report (apart from the fact that the area was previously controlled burnt) that a greater feeling of confidence and control is evident when compared to other reports.

I would like your opinion on two points:-

(1) It occurs to me that this is the first fire that three Heavy Dutys were in attendance within thirty minutes of the start. To what degree did this fact improve control at the fire face.

(2) In the new Red Action procedure it is noted that two gangs and two officers are to be despatched from Dwellingup. Locally it would be desirable to send only one officer and if you can concur on this point I would like instructions altered accordingly. A second officer could be sent at a later stage if necessary.

I can agree with your recommendations regarding the type of Heavy Dutys despatched from Carinyah and would like this point brought up with me on this year's vehicle estimates.

Regarding helmet lights these are available and a requisition should be submitted for your requirements.

(J.B. CAMPBELL.)
ACTING SUPERINTENDENT.

Harvey
31.1.67.
JBC:SMU

Copy to S/F Ashcroft
Insp. Hewett.

FIRE REPORT - SOMERVILLE.

18.12.66.

Attached is a report on a recent fire at Somerville Plantation.

Experience at this fire underlines the nature of

(a) Winter Burning in the pines.

(b) Red Action Procedures.

The area had a light Control Burn last winter.

If the area had not been burnt I am confident that this would have developed into a major fire.

17.1.67.

Mr. Meacham.

Mr. Beggs.

SOMERVILLE PLANTATION FIRE 18TH DECEMBER, 1966.

Table of Contents.

REPORT ON SOMERVILLE FIRE - COMPT. 27.

18/12/66. (Sunday)

1. SUMMARY:

A smoke was reported by Somerville Tower in Compt. 27 Somerville at 1606 hours and Red Action was put into operation.

The forecast hazard for the day was High Summer for the Jarrah Forest but the maximum temperature was only 79.2 and minimum R.H. was 50% which gives an actual hazard for the day of 5.8 Moderate Summer.

When the fire was first observed it consisted of three spots spread over three to four chains which indicated that the fire was deliberately lit.

Compt. 27 was planted in 1931 with P. pinaster and had been reduced to approximately 100 stems per acre at the time of the fire. The thinning debris had been control burnt in winter 1966 which had only removed the flash fuel. The estimate in fuel reduction of the winter burn was from 17 tons per acre to 12 tons per acre.

The running fire was stopped and the Red Action called off at 1655 hours. The size of the fire was one acre.

There appears little doubt that without the control burn in winter this would have developed into a major fire.

2. DIARY OF EVENTS.

1606 Somerville Towerman observed smoke and started siren which instigated the local Red Action procedure.

1608 Red Action Somerville Compt. 27 was put over the V.H.F. and acknowledged by the Gnangara Tower.

1610 Gnangara Headquarters and Wanneroo were notified of the Red Action. This was then passed on to Mundaring Weir and Gleneagle Divisions from Wanneroo through Dale Tower.

In the meantime Somerville Towerman continued with his phone notifications.

1612 Somerville gang arrived at the fire with 1 light duty outfit, 2 Heavy Duties. On the way to the fire Mr. Bukelis asked for Soltoggios Scoop.

1620 Melville Fire Brigade arrived with three men and assisted with hand tools.

1625 S.F.C.F. Ashcroft arrived and took charge of the fire.

1635 Collier Gang arrived with H.D. and Light Duty (O/S + 2 men).

1645 Soltoggios Payloader arrived and was immediately put to scraping around fire .

1650 G. Reynolds and D. Walton arrived at Fire.

1655 Fire under control and Red Action called off except for Wanneroo Division assistance being still required.

1658 Gnangara Gang arrived with Heavy Duty, Light Duty and six men.

1700 Wanneroo Heavy Duty arrived with three men.

1705 D.F.O. Quain arrived.

1710 Wanneroo Light Duty with B. Forster arrived.

1715 Forest Ranger H.E. Quicke arrived with two men.

1730 D.F.O. Hewett and A.D.F.O. Robley arrived.

1725 Inspector van Noort arrived.

1735 Fremantle Police arrived - the local police being unavailable.

1830 Wanneroo and Gnangara Gangs began returning to Headquarters.

1930 Somerville Gang and Forest Ranger Bukelis were left to complete the mop up and patrol for the day.

WHEN RED ACTION WAS CALLED OFF AT 1655 HOURS:

The Mundaring crew which consisted of Gang Truck 4 x 2 and Heavy Duty 6 x 6 with six men turned back at Bell Bros. Guildford. The estimated time of arrival of this group of men and equipment at the fire would be 1730 hours.

Carinyah Crew which consisted of one officer and three men were within two miles of the fire and the estimated time of arrival at the fire would be 1700 hours.

Jarrahdale Gang with Overseer and five men were near Byford when called back which would give their estimated time of arrival at the fire of 1720 hours.

3. SUPPRESSION AND MOPPING UP PATROL:

The initial attack concentrated on holding the head fire and dangerous flank with water from two heavy duties and a light duty until further assistance arrived. With the arrival of the Collier heavy duty the running fire was stopped and a track put around with Soltoggios Scoop.

Numerous spot fires occurred within one and a half chains of the fire under the influence of the strong South West wind. These spot fires developed only slowly in the previously burnt duff and were extinguished with knapsack and shovel; mainly by the three Melville Fire Brigade men. Patrols were carried out as far as Compt. 26 for spot fires but none were found. Occasional spots occurred until 2230 hours and one was picked up the following day. With the arrival of additional forces mopping up proceeded until it was completed and the main gangs left the fire.

The Somerville crew patrolled the fire until 2315 hours that day and returned 0530 hours on the 19th December. Intermittent patrols were then carried out over the next four days. The heaps on the fire edge from previous bulldozing work were found to be still burning after this period and were spread out and watered down.

4. AREA BURNT:

The area burnt was one acre in Compt. 27 which contained 70 trees of P. pinaster thirty five years old. The stand was Site Quality 1 and 2 and was up to 80' high. It is anticipated that up to 90% of these stems will require removal mainly because of butt and bole damage.

It is estimated that 50 loads of timber are involved which will all be salvaged.

5. FUEL TYPE:

The fuel in Compt. 27 consisted of a heavy continuous layer of twigs and needles to six inches deep with scattered heaps of old thinning slash up to two feet high.

Last winters control burn removed only the fine flash fuels from the slash heaps and forest floor.

On the access tracks and open patches dry grass was present which was too green to burn when the area was control burnt. This dry grass assisted the rate of spread of the fire.

6. WEATHER CONDITIONS:

Weather data from the Perth Met. Bureau for 18th December 1966. The maximum temperature was 79.2°F the minimum relative humidity 50% while the fire hazard was moderate 5.8.

TIME	TEMP.	RH%	WIND DIRECTION	WIND STRENGTH
1600	73.4	53	SW	10 - 15
1700	71.5	68	SW	10 - 15
				Gusts from 18 - 22 knots.

7. FIRE BEHAVIOUR:

(a) GENERAL:

The headfire was intense and burnt all available fuel leaving the ground bare. The crown scorch varied from nil up to 90% of crown depending on position of the tree in the fire. The blackening of stems took place up to twelve feet.

(b) RATE OF SPREAD:

The fire did not run for sufficient time to enable any rates of spread to be obtained but it was assisted by the dry grass fuels in the area and the open country on the windward side of the Compt. Also the fire direction took it up the slope.

(c) FLAME HEIGHT:

Reports give flame heights of four feet at the headfire and it is considered that these would have been higher had the flash fuels not been removed.

(d) SPOTTING:

This was confined to one and a half chains from the headfire and the spots developed only slowly.

8. COMPARISONS AND OBSERVATIONS:

To substantiate the final paragraph in the summary it is necessary to critically examine the weather and fuel conditions with the resulting fire behaviour at this fire as compared with previous fires in Somerville on 7th February, 1965 and January 28th, 1964.

DATE OF FIRE.	Max.Temp.	Min.R.H.	Wind Strength + Direction	Flm.Ht.
18/12/66	79.2	50%	SW 10-15 Gusts to 22 knots	4'
7/ 2/65	79.5	52%	SSW 10-22 No gusts recorded	8-10'
28/ 1/64	81.0	55%	SW 12-14 No gusts recorded	8-10'

Date of Fire	Spotting Distance	Area Burnt.
18/12/66	1½ chains	1 acre
7/ 2/65	5 - 25 chains	112 Acres
28/ 1/64	4 - 10 chains	20 acres

This reduction in fire intensity was a direct result of the winter control burn and was discussed and noted by the experienced gang members from all centres.

The flame height and spotting distance was obtained from the pers onnel at the fire before it was brought under control and the previous fires behaviour was obtained from the reports on these fires.

The comparison with the fire on 28/1/64 is ideal because the weather and fuel conditions apart from the control burn were similar. Also the development of the fires were much the same and the discussion on the fire on 28/1/64 states "It would be difficult to envisage a more efficient attack on these fires." Therefore the major alteration in fire intensity reduced size and cost must be attributed to the fuel reduction brought about by the control burn in Compt. 27 during the winter.

This being the first fire in the Metropolitan Plantations since the adoption of the "Red Action Dispatch System" it gives an indication of the improvement in dispatching assistance from outside Divisions.

Within one hour of the first sighting of the smoke from the tower outside assistance arrived or would have arrived at the fire from three centres. Within an hour and a half assistance would have arrived at the fire from five centres. On studying reports of previous fires in the Metropolitan Plantation no assistance arrived at the fire from outside Divisions within an hour of the first sighting of the smoke.

Although many minor problems were shown up at different centres the "Red Action" worked surprisingly well.

An obvious weakness is shown up in that men only with hand tools are available from the neighbouring Jarrah Divisions because their light and heavy duty units cannot negotiate the sand. The Carinyah crew were one of the three groups who would have arrived at the fire in less than an hour from first sighting.

The lack of manpower in the early stages of the fire was again evident; and had it not been for the Melville Fire Brigade there would have been no one available to control the spot fires; without undermanning the pumper units.

RECOMMENDATIONS.

1. Obtain more manpower locally for weekend stand-by.

   Try (a) Contacting ex Departmental Employees living adjacent to the plantations who would be willing to co-operate.

2. Establishment of a Field Control Centre during the early stages of the fire to handle the communications and ensure the guiding of incoming gangs to the fire.

3. The pony radios should be sent to all plantation fires and be left at the field control centre.

4. Replace existing Heavy Duties at Carinyah and Jarrahdale with 4 x 4 units.

5. Helmet lights for use of the night crews should be available in the Metropolitan Area for use at fires.

S. J. QUAIN.

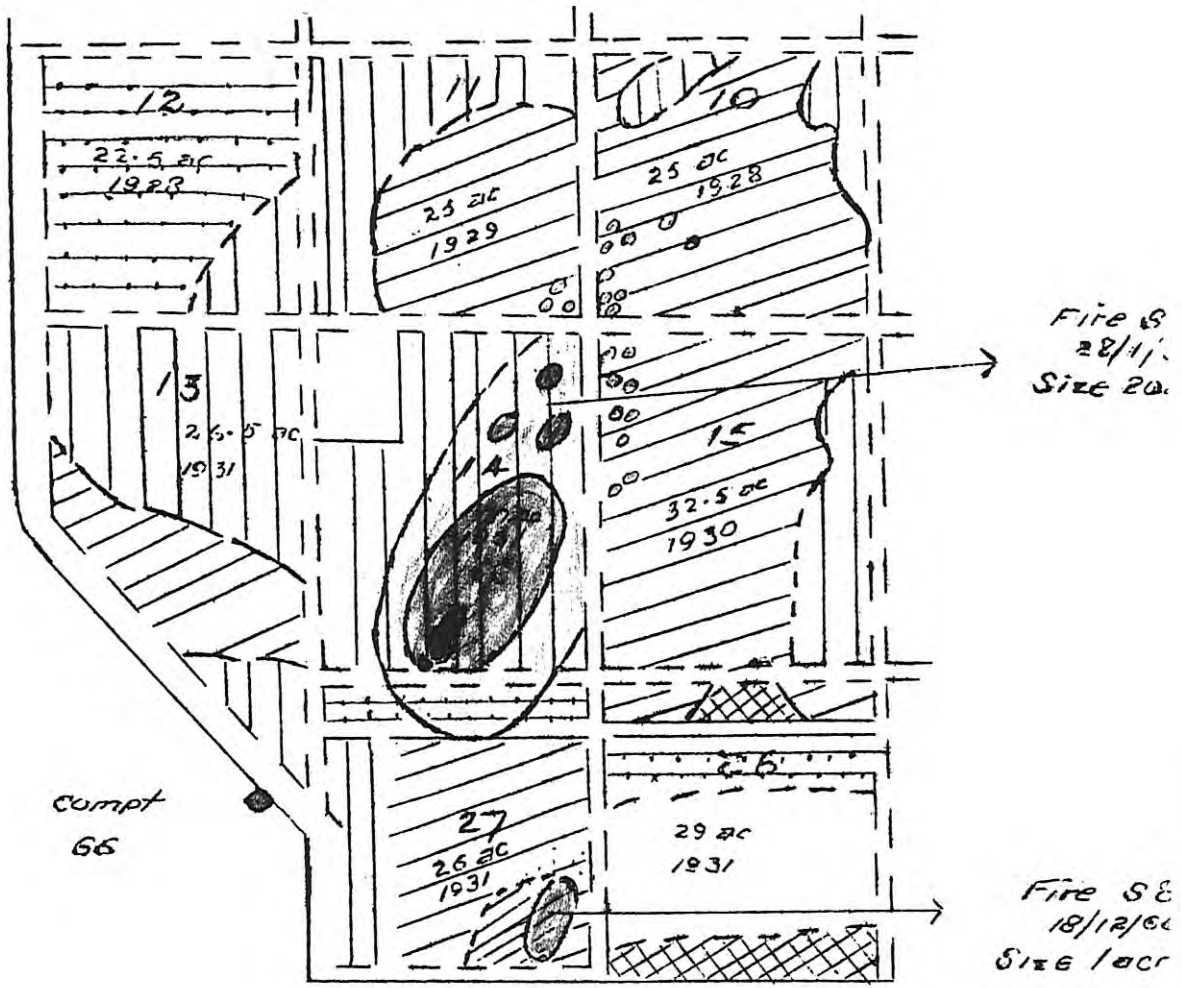
A. J. ASHCROFT.

Appendix 1.

Section of Somerville Plantation.

Site Quality

I
II
III
IV



Scale: 10 chns = 1 inch

Legend

... Spot Fires

Fire size at 1535 hrs on 28th 64

" " " 1610 " " " "

" " " 1630 " " " "

" " 1 acre on 18/12/66

APPENDIX 2.

Summary of Costs - Fire No. S 8 - Somerville.

18/12.1966.

Plantation.	Wages.	Vehicles.	Total.
Somerville	57.00	11.20	68.20
Collier	15.00	9.60	24.60
Gnangara	53.93	63.60	117.53
Wanneroo	18.60	47.54	66.14
Mundaring	19.15	13.52	32.67
Gleneagle	24.00	12.06	36.06
Hired Scoop - Soltoggios		12.00	12.00
TOTAL COST	187.68	169.52	357.20

Mundaring Weir.
8th February, 1966.

Conservator of Forests,
PERTH.

Somerville Plantation Fire - Feb. 6th 1966.

At 3;30 p.m. on Sunday, 6th February, 2 separate smokes were reported by the Somerville towerman, their position being given as Compartment 51.

The Somerville gang and Forest Ranger Bukelis left H.Q. immediately, and on arrival at the fire, found two separate fires lit about 2 chains apart in Compartment 49. The fires were attacked at 3:40 p.m. but the small force of four men were unable to control the fire. More assistance arrived at 4:00 p.m. when 3 firemen from the Melville Fire Station reached the fire, and S.F.C.F. Ashcroft arrived at about the same time. Assistant Forester O'Grady + 3 arrived at 4;30 p.m., and with the combined efforts of all forces then in attendance, assisted to some degree by a "drawing together" of the two initial fires, the running fire was stopped at approximately 4;50 p.m.

A moderate South-west wind was blowing, and caused a North Easterly movement of the head fire, together with a number of spot fires at distances up to 4 chains down wind.

A further hop-over occurred in Compt. 46 approximately 13 chains from the headfire, and this was suppressed by the timely arrival of the Wanneroo heavy-duty at 5:05 p.m.

Outside Assistance.

Divisional Headquarters at Wanneroo, Mundaring and Gleneagle were notified by Somerville tower and all centres despatched a gang and pumper unit. Arrival times of these units at the fire were as follows:

Wanneroo (ADFO + 2 + pumper)	4:50 p.m.
Gnangara (F/Guard + 2)	5:05 p.m.
Mundaring (O/S + 4 + pumper)	5.30 p.m.
Gleneagle (O/S + 3 + pumper)	5.30 p.m.
Fire Brigade Landrover + 3 (Perth)	5.45 p.m.
Soltoggios Cat 669 Scoop	4.20 p.m.
Officers.	
S.F.C.F. Ashcroft arrived at	4.05 p.m.
A.D.F.O. Keene arrived at	4.50 p.m.
D.F.O. van Noort, D.F.O. HEwett	5.00 p.m.
Supt. J.C. Meacham	5.00 p.m.
F/Gh Quicke	5.05 p.m.

The rubber tyred Cat 669 Scoop was employed on cleaning up the 1½ chain grid of access tracks around the North-West flank, and after deploying the Wanneroo and Gleneagle gangs to watch for spot fires in Compts. 46, 47 and 48, all other personnel were engaged in suppression of this N-West flank.

Mopping up commenced at 6 p.m. and the main gangs left the fire at 7.45 p.m.

The fire was about ¾ acre in extent when the Somerville gang arrived at the fire, and the final size of the fire is 3 acres. The estimated loadage is 40 loads marketable pine per acre on a total volume of approximately 120 loads.

Costs.

Detailed costs will not be available for a couple of weeks but the approximate suppression costs have been estimated as follows.-

a) Firefighting man hours 114 @ $1.50 per hour	=	$171.00
b) 490 miles vehicles @ 12c/mile	=	58.80
c) Somerville gang 16 hours	=	16.00
" vehicles 46 miles	=	69.00
d) Sol Boggio Scoop 2 hours	=	48.00
		$362.80

Say. $370.00

OBSERVATIONS & RECOMMENDATIONS.

1. I believe that the O.I.C. and men from Somerville and Collier are to be congratulated on a good effort. This is one of the few pine fires which, while burning in heavy thinnings slash has been suppressed within the compartment.

2. There may be some significance in the fact that our previous big fire at Somerville was lit exactly 1 year ago (Sunday 7th Feb. 1965) only 2 compartments away.

3. The action of two fires drawing together modified fire intensity at the head, and assisted suppression of the headfire. This feature has been noticed before, especially in the Compt. 14 fire.

4. The routine instructions for the towerman functioned effectively, but the following suggestions may improve the system.

(a) Manning of Como HQ as despatcher is slow when the duty officer lives away from the job, and the VHF set in Como office is often unreadable at Somerville. The despatcher situation cannot readily be altered but an improved VHF system e.g. at the Research Centre may be much more effective.

(b) If the VHF set in Somerville tower could transmit on Channel 1, he would be able to contact Dale Tower direct, and leave Dale to despatch aid from Mundaring and Gleneagle.

(c) Assuming that Ranger Bukelis and Sen. Forester Ashcroft will normally be the first officers at the fire and will be fully occupied with the actual suppression, the next officer to arrive should be detailed to remain in continuous radio contact from a 4 x 4 vehicle to provide a certain line of communication at the fire itself. Immediately this officer mans his "control point" he should notify his name, and a familiar call sign (I suggest Mr. Ashcroft's call sign "YOKE GEORGE", which is familiar to all Northern Division personnel) to Somerville tower and all mobiles. This should facilitate guiding incoming gangs to the fire and minimize the time wasted calling mobiles which are not attended.

(d) Plant Inspector Reynolds arrived at the fire by about 6 p.m. and valuable assistance with some faults in heavy duty pumper units. This should become a standard practice if possible.

(e) Superintendent Meachem should be contacted at an early stage since he can be at Somerville within the vital first ten minutes for any fire that occurs outside normal working hours.

(f) The new design pumpers from Wanneroo have proved to be superior unit in sandy conditions and allowance on the 1966-67 estimates should be made for one of these units at both Collier and Somerville.

P.N. HEWETT.
D.F.O.

SOMERVILLE PLANTATION FIRE - 6TH FEB. 1966.

Weather data taken at the Perth Met. Bureau was obtained for 6th February and is given below:-

	Temp.F°	RH%.	D.P.	Wind Direction.	Wind Strength (Knots)
0900	81	55	63	W.N.W.	2
1200	82.8	49	62	W	5
1500	78.9	66	67	W.S.W.	6
1800	72.1	76	64	S.W.	12

Compartment 49 in which this fire occurred was planted in 1926 (Leira).

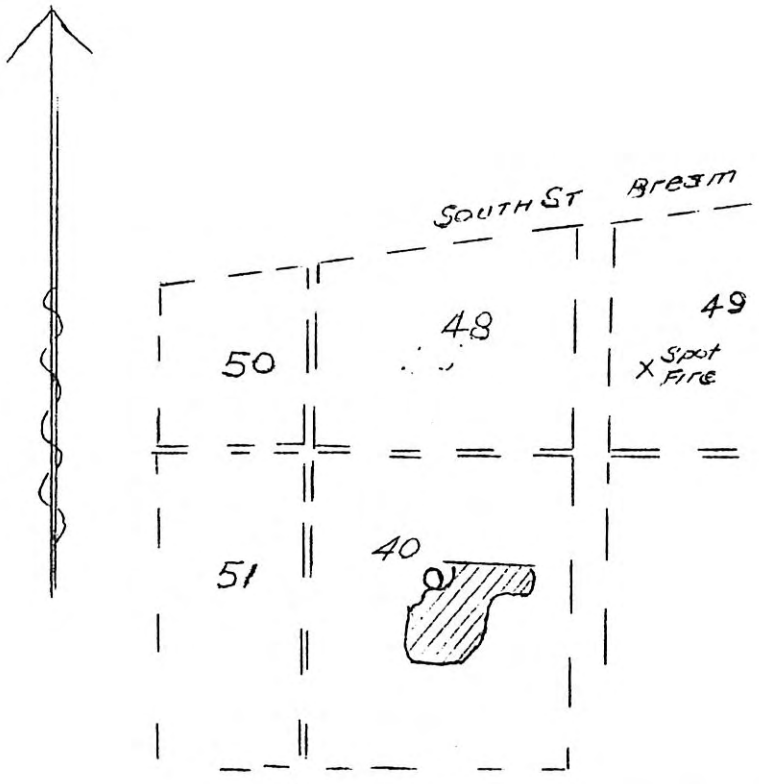
Site Quality 1.

Twice thinned. Most recent thinning was approximately five years ago.

Stocking of 280 trees per acre - 100 sq.ft. Basal area.

Height of 60 ft.

It is estimated that ground fuel would approximate 12-15 tons per acre.



Scale 10 chs. = 1 inch

Somerville Fire
6/2/66

REPORT ON FIRES IN SOMERVILLE PLANTATION ON 26.11.65.

Four fires occurred in the Somerville Plantation on the afternoon of the 26.11.65.

It is suspected that these were deliberately lit by person or persons unknown.

Hilton Park Police are making inquiries. Below find a summary of action taken and results.

14.20 hrs.

Somerville Towerman observed white smoke on a bearing of 58°.
Como Tower's bearings at first indicated that fire was in private property adjoining plantation.
Subsequently placed in Campartment 61.

14.25

Towerman notified Overseer Boyd by radio and also Como Office.
O/Seer Boyd instructed Towerman to despatch two heavy duty pumpers, light duty gang truck and Somerville gang to fire.
Como Office advised Melville Fire Brigade of Fire in Plantation.

14.40

Second fire reported from Somerville Tower, Bearing 28° - Collier 222 - Compartment 64.

14.45

Mr. van Noort and SFCF Ashcroft notified of fires.

14.48

Mr. Ashcroft left for Somerville. Somerville gang (Girando) reports (ZW) that No. 1 fire is being brought under control.
Mundaring alerted.
Hilton Park Police called in.

15.00

O/Seer Boyd one H.D. pumper and two men arrive at Fire No. 2. Fire No. 1 now under control. O/S Feast and two men with pumper leave Collier for Somerville.

15.10

F/C Forester Ashcroft arrives at fire No. 2. Mr. Eastman has been alerted and on way to Somerville.

15.15

Somerville Tower reports two more fires (No. 3) 356° and No. 4 358°. Compartment 62.
Mundaring sends gang and heavy duty pumper.
Central Fire Brigade 4 x 4 unit arrives at Fire No. 2.
Arrangements made with Fire Brigade unit to complete control of fire No. 2, and Ashcroft with O/Seer Boyd, H.D. pumper and two men left in search for fires 3 and 4.

15.18

Police arrive and start investigations at No. 2.
Ashcroft and Boyd locate fire No. 3, send in H.D. (now low in water) with two men, to attack this fire.

15.21

Ashcroft located fire No. 4 and finds two members of Melville Fire Brigade in attendance with knapsacks and shovels. The Brigade had a chipped trail almost around the fire.
These members were asked to continue their efforts until further help could be given them.

15.30

Fire Brigade 4 x 4 unit (less two men to mop up Fire No. 2) transferred to No. 3 to assist F.D. pumper now low in water.
O/S Feast in Collier pumper arrives Somerville and go to Fire No. 1.

15.40

C/S Feast with H/D pumper arrives from fire No. 1 now under control and sent in to fire No. 3 as F.D. unit now out of water and returns to HQs. to fill.
Mr Eastman arrives after viewing fires from Somerville tower.
Wanneroo H.D. pumper arrives at Somerville HQs. and sent to Fire No. 3 area.

15.45

Mr. van Noort, having arrived some minutes earlier at Fire No. 4 asks for help as fire running again on northern side, eventually stopped on extraction track.

15.50

F/G D, Walton and A.M.E. Reynolds arrived at Fire No. 3.

15.50

O/seer Lindley and Wanneroo gang of 7 men arrived N.W. corner of plantation and directed into Fire No. 4 and then redirected to Fire No. 3 for mopping up operations as No. 4 now under control with O/seer Feast and pumper crew now in attendance.
Fire Brigade Units leave fire areas.

16.15

Mundaring gang arrive at Somerville Headquarters sent to No. 2 for mopping up operations.
Mr. Eastman left fire after conferring with police.

16.30

Mr. van Noort leaves for Wanneroo.

16.45

Mundaring H.D. arrives, directed to No. 1 for mopping up purposes.

All gangs eventually move to Fire No. 1 as each fire mopped up -- This fire in heavier tops requiring more work in clea ning up.

18.00

F/C Forester Ashcroft leaves fire.

18.10

Mundaring, Wanneroo and Collier teams leave for home, Somerville gang with O/seer Boyd do final patrols arriving at Headquarters approximately at 19.00 hrs.

Area of Pine Burnt $3\frac{1}{2}$ acres.

Fire No. 1	=	Cpt. 61	=	$1\frac{1}{4}$ ac.
No. 2	=	Cpt. 64	=	$\frac{1}{2}$ ac.
No. 3	=	Cpt. 62	=	1 ac.
No. 4	=	Cpt. 62	=	$\frac{3}{4}$ ac.
				$3\frac{1}{2}$ acres

MAN AND EQUIPMENT.

Somerville	2 Heavy Duty Pumpers 1 Light Duty Pump and gang truck Overseer and five men plus assistance from a local resident.
Collier	1 Heavy Duty Pumper Overseer and two men.
Wanneroo	1 Heavy Duty Pumper (W.A. Pump). 1 Light Duty Gang Truck Overseer and nine men.
Mundaring	1 Utility 1 H.D. Pumper Six Men.
Fire Brigades.	Four wheel drive pumper and five men Two wheel drive pumper and three men?

These Officers also attended:- Mr. Eastman, Mr. van Noort, Mr. Ashcroft, Mr. D. Walton and Mr. J. Reynolds.

The Fire Brigade assistance was most valuable and appreciated. They virtually suppressed fire No. 4 and made significant contribution in suppressing Fires No. 2 and 3.

The Departmental gangs performed creditably in view of the multiple lightings and divergence of attack.

A.J. ASHCROFT.
S.F.C.F.

Como
30.11.65
AJA:RHS

SOMERVILLE PLANTATION FIRES - 26.11.65.

Weather data taken at the Perth Met. Bureau was obtained for the 26.11.65 and is given below:-

	Temp.F°	RH%	D.P.	Wind Direction	Wind Strength (Knots)
0900	67.3	69	56	S.E	03
1200	75.2	52	56	S.S.E.	05
1500	79.6	47	57	W	10

Fire No. 1.

Compt. No. 61 in which this fire occurred was planted in 1947 (Leira).

Site Quality 3.

Twice thinned - First thinning apparently very light. Recent thinning took place in 1961 and heavy slash remains.

Stocking of 200 trees per acre - 90 sq.ft. basal area.

Height of 45 ft.

Estimate of ground fuel 12 tons per acre.

Fire No. 2.

Compartment 64 (Leira) planted 1950.

Site Quality 3.

Pruned but unthinned, with a stocking of 500 trees per acre.

Estimate of ground fuel 7 tons per acre.

Fire No. 3.

Compartment 62 (Leira) Planted 1952.

Site Quality 2.

Pruned but thinned with a stocking of 500 trees peracre.

120 sq. ft. Basal Area - Height 35 ft.

Estimate of ground fuel 4 tons per acre.

Fire No. 4.

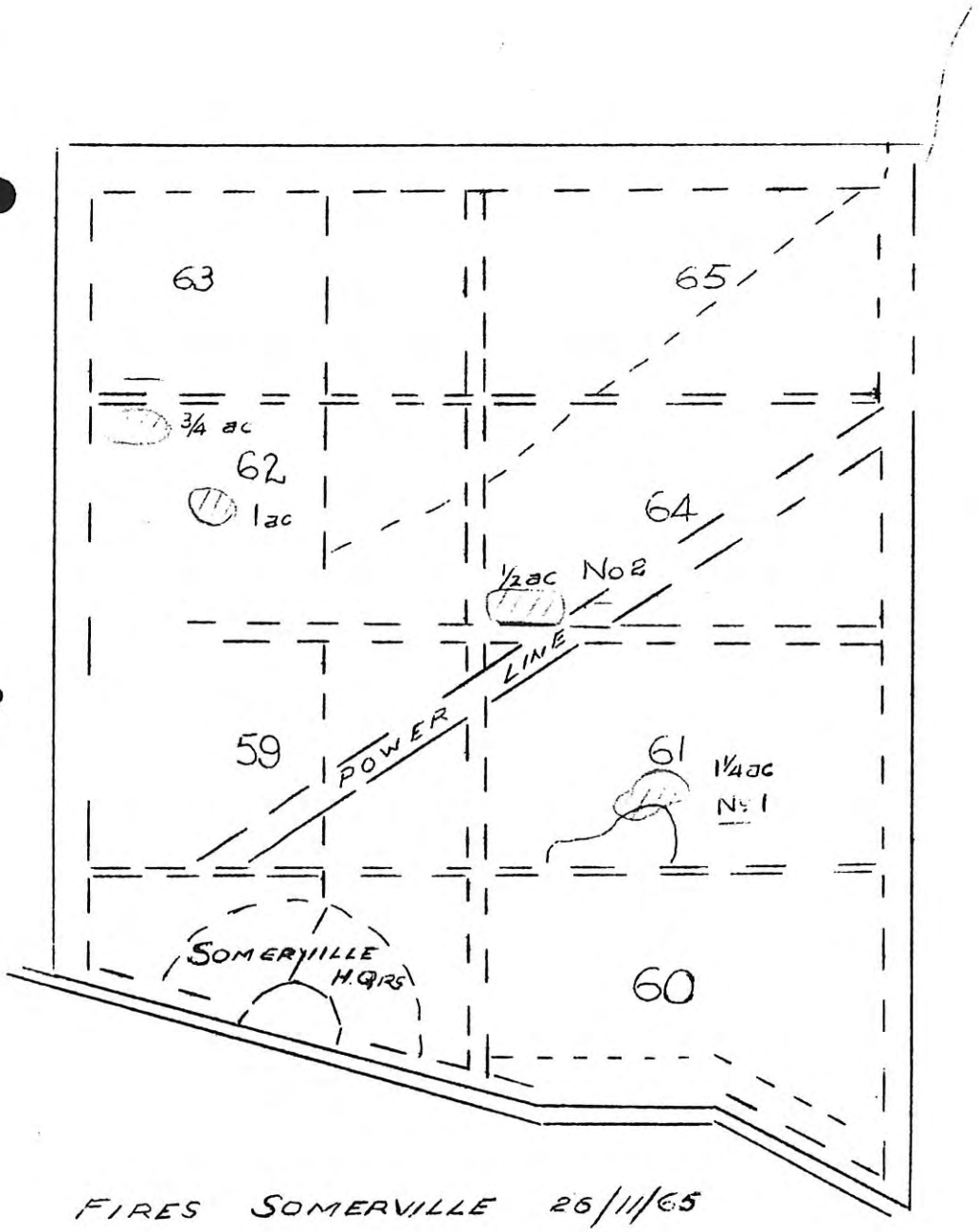
Compartment 62 (Leira) Planted 1952.

Site Quality 3.

Pruned but unthinned with a stocking of 500 trees per acre.

Height 30 ft. - Basal area of 75 sq. ft.

Estimate of ground fuel 4 tons per acre.



FIRES SOMERVILLE 26/11/65

SOMERVILLE PLANTATION FIRE - 7TH FEBRUARY, 1965.

A serious fire occurred in the Somerville Pines on February, 7th, 1965, and the following is an outline of its history.

Time and Point of Origin.

12.33 hrs. The fire was reported by Somerville Tower (Bill White) at 1233 hours, whilst the Collier Towerman was down to lunch, and in the absence of a crossing bearing was placed provisionally in either Compt. 48, 51 or 50. Somerville gang was called out and, with F/G Foot, proceeded to the fire, arriving at approximately 1248 hrs. The fire was found to be along the Northern fringe of the swamp in Compt. 45 and was burning on a front of about 5 chains.

Cause.

It is believed that the fire was lit by school children who often swim in a pool at this swamp, and who are thought to have had matches and cigarettes. The police have two names, and their investigations are proceeding.

1248 hrs. Fire Attack.

The Somerville gang with light duty unit (WAG.3345) and Heavy Duty (WAG.1332) commenced their attack on the fire at 1245 hrs. but the fire, helped by a fresh South Westerly wind, was already spotting into Cpt. 44. Both tankers ran out of water, and hand tools proved unable to maintain the line while the tanks went away to refill.

1310 hrs. (O/S Feast) H/Duty The Collier Heavy Duty with 2 men arrived and tried to hold the fire, which was then being fought in Compt. 44. Extensive spotting was occurring due to the hot fire and fresh South-Westerly breeze; this operation eventually proved to be unsuccessful with the forces then available.

1315 hrs. S.F.C.F. ashcroft arrived at the S.W. corner of Cpt. 30, leaving his vehicle at this point and commenced to walk into the fire. He was closely followed by A/F Gorringe (1318 hrs.), who also walked in. Mr. Ashcroft arrived at fire at 1330 hrs, and assumed control of the still small work force - seven men, two pumpers and one light duty unit. Spotting was occurring in Cpt. 42 and the Collier pumper was directed to deal with these. Almost immediately spot fires appeared in Cpt. 38, and these were widespread by 1345 hrs.

1345 hrs Soltoggio Scoop.

Soltoggio's (Cat. 966A) Scoop arrived and started work on Western edge. He was re-directed to scrape the firebreaks along the North and East side of Compt. 38,

1350 hrs. (Mr.O'Grady) H/Duty)

where an attempt was then made with two pumpers, and the small gang to contain the fire in Copt. 38. This was not successful due to spotting in Compt. 36, and especially Compt. 37, where a spot fire was going well at 1400 hrs. when Mr. Meachem arrived.

1400 hrs. (Mr. Meachem)

The troops were then withdrawn to the S.E. corner of Cpt. 21 shortly after Mr. van Noort arrived at 1415.

1415 hrs. (Mr.v Noort)

A Control Centre was established at this S.E. corner of Cpt. 21 and fire fighters were dispersed into Cpts. 21 and 22 to handle spot fires, while Mr. Garringe and a small gang remained at the S,E. coner of Cpt. 35 to handle spot fires.there. Soltoggio's scoop was at work cleaning up access tracks along the Northend of the Western Flank, having been used on this work since its arrival at 1345 hrs.

1430 hrs. (Wanneroo gang, D.Keene & H.D.)

A Wanneroo gang with A.D.F.O. Keene and a Heavy Duty unit arrived at 1430, closely followed by Hewett and Robley, T. Ashcroft plus 2 men from Gleneagle, and 4 men from Mundaring.

1450 hrs. (Hewett,Robley T.Ashcroft)

Note: 4 x 4 H/Duty from Mundaring had arrived at Collier 1445.

1455 hrs. (Mdg.Gang)

1500 hrs. (Conservator)

Helpful advice was received at this stage from Mr. Harris, who had been cruising and investigating the Western Flank of the fire in Cpts. 36 and 38.

1500 hrs. (W.A.Fire Brigade)

The additional men arriving up to 1500 were deployed into Cpt.21 and 22 to handle spot fires, and the W.A. Fire Brigade tender was stationed near the Control Point.

1500 hrs. (Gnangara Gang)

The Gnangara Gang arrived at 1500 hrs., followed by a second group from Gleneagle and from Mundaring. These men were put to work with hand tools along tracks on the Western flank, to be aided by tracked machines when they arrived.

1515 hrs. Gleneagle Gang.

1545 hrs. Mundaring Gang.

1600 hrs. Wind change.

The South West wind dropped in strength at 1600 hrs. and a weak South Easterly drift caused several "flare-ups" on the Western flank, but few serious spot fires resulted, due to the raking work and the work of Soltoggio's scoop.

1615 hrs. Houlahan TD18.
1630 hrs. Dwellingup 2 H.D., 2 gangs.
1700 hrs. D4, D6, Fergie 35.

A TD18 bulldozer (Houlahan) arrived at 1615, 2 gangs and ten men (10) from Dwellingup at 1630 and a D4, D6, and Ferguson 35 Tractor arrived at 1700. All were utilised for cleaning tracks and pushing trees along the perimeter of the fire, working down the Western, Southern and Eastern flanks in that sequence.

1700 hrs. Mundaring 6 x 6.

A 6 x 6 heavy duty and 3 men arrived from Mundaring at 1700 hrs., and the Carinyah gang was held in Reserve at Collier Headquarters.

1800 hrs.

A running fire was fully held by 1800 hours and arrangements were then made for releasing surplus men and equipment, and rostering gangs for duty on Monday 8th February.

1830 hrs.
1930 hrs.

Dozers etc. 3 Crawler dozers and Soltoggio's scoop were stood down by 1930. The Ferguson 35 was retained for use after dawn on Monday 8th.

Night Watch.

2000 hrs.

1) All gangs not required had been despatched by 2000 hours.
2) Night Patrol and Mop-up crew were as follows:-

Controller	-	P.N. Hewett
Fire Boss	-	A. Ashcroft
Sector Boss	-	T. Ashcroft and Gleneagle 9
Sector Boss	-	F.M. Law and Dwellingup 10
		Five (5) Heavy Duty Units.

2400 hrs. Hewett left.

8.2.65 0130. Sector Bosses left in control.

8.2.65 0600. S.F.C.F. Ashcroft and Wanneroo gang arrived.

0605 hrs. A.J. Ashcroft to pick up Mr. Foot and pump fittings at Somerville H.Qs.

0615 hrs. Somerville gang, E. Foot and A. Ashcroft returned.

0800 hrs. VanNoort, Hewett, Robley and Mundaring Gang and Wanneroo gang arrived to relieve O/night teams.

0830 hrs. O/Night teams returned to base.

Miscellaneous Assistance.

1. South Canning Volunteer Bushfire Brigade assisted on a voluntary basis. 5 men in S.W.B. Jeep assisted throughout the afternoon, until 1945 hrs.

Miscellaneous Assistance. Cont'd.

2. Melville Fire Brigade assisted from 1400 to 1700 hours.

3. Mr. Milesi arranged for hiring of dozers
   - Atkinson D4 1700 - 1930
   - Bell Bros. D6 1700 - 1930
   - Houahan TD18 1615 - 1930

   Also use of Shell Tanker was water supply.

4. Soltoggio Bros: engaged the use of their Caterpillar 4 wheel scoop from approx. 1345 to 1830 hrs.

5. Police control of private vehicles entering the plantation from High Road greatly assisted the movement of plant and equipment along this access route.

Personnel (estimated)

	Officers	O/S	Men
Somerville	1	1	5
Collier	2	1	1
Gnangara	1	1	5
Wanneroo	2	1	6
Gleneagle	1	1	7
Carinyah	-	1	4
Dwellingup	1	2	7
Mundaring	2	2	9

Equipment Used.

Gang Transport

1 Willys 1 ton
2 Inter. 4 x 4
5 Gang Trucks
4 Landrovers etc.

Heavy Duty Units:

1	6 x 6 HD	WAG.4853 Mdg.
	4 x 4 HD	WAG.1333 Como.
	4 x 4	1332 Somerville.
	4 x 4 to Collier	4549 Mdg.
	4 x 4	5403 Como
	4 x 4	1267 Wanneroo

Not Used:

2 4 x 2 HD ex Dwellingup.

Officers Attending:

Conservator of Forests (Mr. Harris)	
J.C. Meachem	Reg. Inspector
A.J. Ashcroft	S.F.C.F.
E. Foot	F.G.
L.D. O'Grady	A.F.
A.C. van Noort	D.F.O.
D.L. Keene	A.D.F.O.
F. Gorringe	A.F.
J.A.W. Robley	A.D.F.O.
P.N. Hewett	D.F.O.
T. Ashcroft	F.G.
F.M. Law	F.G.
G. Reynolds	F.G.

Overseers:

J. Moore
A. Warren
J.R. Thompson
R. Parkinson
R. Linley
D. Walton
J. Feast
F. Postens
(W. Saunder) at Como

Areas Burnt.

	(Planted Pine) Visual est.	Dot Grid.
Cpt. 45	2 acres	2 acres
44	13 "	13 "
42	22 "	22 "
38	19 "	19 "
39	12 "	12 "
36	7 "	7 "
37	29 "	29 "
	104 "	104 "

Recommendations:

1. Dwellingup fire hazard forecast for 7.2.65 was Moderate Summer, E.M.T. 75°, E.M.R.H. 50%. Even though allowance should be made for higher temperatures North of Dwellingup, it is clear that the key to fire control difficulties in pine plantations is wind strength. It is suggested that wind strength forecast, as well as

Recommendations cont'd.

fire hazard, should form the basis for standby determinations in Metropolitan plantations.

2. The number of men on stand-by at Collier and Somerville is too small for effective control on days when a strong breeze exists. (Somerville gang were at the fire within 15 minutes of the report from Somerville tower).

Three possible alternatives could be considered:

a) Maintain O/S plus 4 men plus Heavy Duty unit at a central point (Collier) at overtime rates and ready to move at a moment's notice.

b) Maintain similar group at Mundaring or Wanneroo on shift work basis.

c) Increase standby complement at all centres plus 6 men (Wanneroo, Mundaring, Metro).

The relevant costs per week for these three alternatives are:

a) $120 per week.

b) $120 per centre per week.

c) $48 per centre per week.

The third alternative is cheaper by $72 per centre per week, but is less efficient insofar as the stand-by men are not immediately available. However, I recommend that alternative (c) be applied at both Mundaring and Wanneroo for all weekends when fire hazard is Average Summer or above, or where predicted wind strength is 15 m.p.h. or greater at hazards above Moderate Summer.

3. Considerable delay occurred at this fire because of infrequent and misleading reports at the early stages. The Mundaring and Wanneroo gangs were delayed for more than 1 hour because of this. These additional men must be despatched (in radio equipped transport) immediately the pine fire is reported.

In addition, it is essential that a field control point, complete with operator (signals) and at least one messenger, be established at the earliest possible stage. Valuable man hours were lost in this fire when men and vehicles milled round at the Control Point. This can be effectively countered by the early elucidation of chain

of command and clear directions through an informed and organised field control.

It is essential that Large and Serious Fire Organisation receive more attention, by discussion and training schedules.

Chain of Command in the field to be clearly defined, at least down to Sector Bosses.

A full scale (training) alert should be carried out as far as embarking gangs and vehicles from distant centres to the placing of local gangs in the field and the setting up of a Field Control Point. Sectors arranged and command allocated.

Back-up assistance such as plant maintenance and repair (mechanics and fuel) - Communication (Radio Technician and spares). General supplies including messing arrangements (storeman etc.) should be arranged or catered for in this exercise.

It is suggested that any weaknesses in organisation would be revealed, as well as giving staff the opportunity of making themselves familiar with the routine.

Regular Fire Control meetings or conferences should take place between officers likely to be implicated in these fires (e.g. two monthly intervals during the fire season, i.e. October - December - February - April).

Discussion to take place on such topics as Tactics and Fire Behaviour in Pines - Reports on training and equipment.

4. Plant and Equipment.

(a) After an unsuccessful initial attack on a fire in a pine stand, there appears to be a lack of mobility with the Heavy Duty 4 x 4 vehicles in coping with the resultant numerous spot fires that occur. It is suggested that a number of International 4 x 4 light duty type vehicles, backed up by the Heavy Duty Pumper, as a tanker, would give more mobility to this type of suppression.

(b) Suitable wind meters to be fitted to major towers in Coastal Plain Plantations.

4. Plant and Equipment cont'd.

(c) Radio from Somerville gang truck to be placed in F/G Foot's landrover, when he is on duty at weekends and public holidays.

(d) Collier Landrover to be wired for V.H.F. (already arranged) and to be taken to a fire at Somerville from Collierby Duty Officer.

(e) The use of Soltoggio's Caterpillar 966A Scoop at this fire, proved to be an efficient fast and mobile unit. This and similar machines to be located and arrangements be made for possible hiri ng for subsequent pine fires.

(f) The procuring of suitable type and numbers of the portable citizen band transceivers,for use in field control at fires in plantations.

(g) Supplying of helmet lamps to Heavy Duty Units for use by the hose men in Pine Fire Night Mopping up operations.

5. Consideration to be given to the following suggestions:-

(a) Increasing the width of the narrow compartment firebreaks at Somerville, by removal of one or more rows of pines.

(b) Provide frequent gravelled or marl bays, to allow the turning of passing of vehicles along all roads improved for conventional vehicles.

(c) Sign posting of roads named and classified for use of vehicle type.

(d) Truncation of intersections of access tracks in compartments, by removal of trees.

This will facilitate travel of the heavy 4 x 4 vehicles with a wide turning lock.

Note: This has been modified slightly from my original report due to correction of some times and compartment numbers.

In addition, the summary has been extended following discussion with S.F.C.F. Ashcroft.

P.N. HEWETT.
D.F.O.

SOMMERVILLE PLANTATION FIRE
OF 7th FEBRUARY, 1965.

Table of Contents.

Report on the Sommerville Plantation
Fire of 7th February 1965.

1. Summary.

Sommerville Tower reported a fire in the plantation at 1233 hours on 7th February 1965.

The Sommerville gang was dispatched within 7 minutes of detection, and found the fire burning in a swamp in Compt. 45. An attack was mounted on the headfire, which was 3 to 4 chains in width and progressing in a north east direction, but heavy spotting prevented success and the fire moved into Compt. 44.

A control centre had been established at Como and fire fighting units from Collier, Wanneroo and Mundaring dispatched to the fire. Support units had been requested from both Gleneagle and Dwellingup.

Despite attacks on the headfire by both Collie and Sommerville units intense spotting for distances of up to 25 chains prevented control of the headfire, which finally burnt out on the eastern flank of the plantation.

The Wanneroo and Mundaring units commenced to arrive shortly after 1400 hours and the attack was concentrated on the northern and western flanks. These units held these flanks until support units from Dwellingup and Gleneagle arrived. The fire was finally contained at 1830 hours. At this time there were seven Forests Dept. gangs, two local Brigades, nine heavy duty pumpers and five tractors, working on the fire edge.

The area burnt was approximately 112 acres of P.pinaster aged between 26 and 30 years, and included 90 acres of SQ4 and 22 acres of SQ3.

The quantity of ground needle fuel approximated 20 tons to the acre, to which must be added a considerable volume of fuel in slash heaps.

The day was of moderate fire hazard and the wind SSW with an average open velocity of 20 m.p.h.

The average rate of forward spread of the headfire was 31 chains per hour, and its flame height varied between 4 and 60 feet.

From the experiences of this fire the Gnangara Fire of January 1962 a dispatch table has been compiled, and the possibility of fuel reduction has been discussed.

2. Cause.

Children are suspected of causing the fire while playing in the swamp in Compt. 45.

3. Detection and Subsequent Action.

The fire was detected at 1233 hours by Sommerville Tower, and the Sommerville gang dispatched by 1240 hours.

Following this action messages were sent to Mr. Milesi, Mr. Meacham, Mr. Ashcroft, Wanneroo and Mundaring Forests Depts., Como and Fremantle Fire Brigades, and the Hilton Park Police, advising them of the fire.

At 1310 hours a control centre had been established at Como, Collier units at or dispatched to the fire. Mundaring and Wanneroo units were dispatched, at 1351 and assistance had been requested from Dwellingup and Gleneagle.

The first of these additional units, from Wanneroo, arrived at the fire at 1415 hours.

4. Action to Suppress the Running Fire.

The Sommerville gang found the fire near the northern boundary of Compt. 45. The headfire was 3 to 4 chains in width, progressing in a NE direction, driven by a SSW wind. The fire was held along the northern break for a short period but finally spotted heavily in Compt. 44.

Despite a sustained attack by both Collier and Sommerville units, under the direction of Ashcroft, these spot fires developed quickly and the fire again spotted ahead into Compt. 38, and then into 37. The headfire burnt out on the eastern flank of the plantation at 1500 hours.

During this period supporting units were arriving and the forces were regrouped and concentrated on the north and north western flanks. As further forces arrived the south east flank was attacked.

The distribution of forces in the various sectors is shown on map 1. This force contained the flanks until additional support arrived and the fire was controlled. The units at each sector are listed below.

Sector 1. (Northern flank).

Two F.D. gangs and two heavy duty pumpers.

Sector 2. (North western flank.)

Three F.D. gangs, one Fire Brigade unit), three H.D. pumpers two bulldozers and one earth moving scoop.

Sector 3. (South eastern flank).

One F.D. gang and one bulldozer.

Additional units were arriving from Wanneroo, Mundaring, Gleneagle and Dwellingup, and by 1700 hours a comparatively large force had arrived under the direction of van Noort, Hewett and Ashcroft. Control of the fire was obtained by 1800 hours and was achieved by a force of seven F.D. gangs equipped with fast attack vehicles, two local brigades i.e. one Bushfire Brigade (South Canning) and one Fire Brigade, which totalled approximately 64 men excluding F.D. officers. In addition there were nine heavy duty pumpers, three bulldozers (TD18, D6 and D4) a Michigan earth moving scoop, and a wheel tractor fitted with scraper blade, at the fire.

The sequence of arrival of these various units is listed in the Diary of Events at the end of this report.

4. Mopping up.

Mop up of the fire area continued throughout the night of the 7th and 8th February, under the direction of Hewett and Ashcroft, and throughout the 8th February under the direction of van Noort and Ashcroft.

During the night three F.D. gangs (two Dwellingup and one Gleneagle), and five heavy duty pumpers were used on mopping up. 0810 hours on 8th Feb. this crew was relieved by three fresh gangs (one each from Sommerville, Wanneroo and Mundaring.)

5. Organization of Assistance.

Initial organization of fire fighting was carried out by Sommerville Tower and Mr. Foote. These duties were later taken over by the Como Control Centre.

Collier units were immediately dispatched followed by Wanneroo and Mundaring. Calls were made to Dwellingup and Gleneagle for further assistance, two local brigades were active at the fire, and the police assisted in control of the public. Units from the Mechanical and Radio Branches were present to assist with breakdowns.

6. Area Burnt.

Approximately 112 acres of 26 to 30 year-old P.pinaster was burnt by the fire, in Compts. 36, 37, 38, 39, 42, 44 and 45. The area comprised 90 acres of SQ4 and 22 acres of SQ3.

It was estimated that 3,800 loads of timber were killed, which is valued at an average royalty of 15/- per load and an average sale value of 81/6 per load.

7. Fuel Type.

As is common in the older P.pinaster plantations there was a heavy accumulation of needles and twigs in the ground fuel layer, and heaps of thinning slash 2 to 3 feet in height.

From previous sampling in this plantation the volume of ground needle and twig fuel has been estimated at 20 tons per acre. There is probably an additional 10 tons per acre of fine fuels in the slash heaps.

8. Weather Conditions

Weather data taken at the Perth Met. Bureau was obtained for the 7th February. The maximum temperature was 79.5°F the minimum relative humidity 52%, while the fire hazard was moderate (5.3.) Weather data for Perth on 7th Feb. is shown on Table 1.

Table 1. Weather Data - Perth - 7th Feb. '54.

Time	Temp. °F	RH%	D.P.	Wind Direction	Wind Strength
0900	69.2	80	62	SSW	10
1200	75.6	62	61	"	22
1500	77.0	57	61	"	20
1800	74.3	60	59	"	18

9. Fire Behaviour.

(a). General.

The headfire was intense and burnt all available fuel leaving the ground bare and the trees with fully browned and in some patches defoliated crowns. The height of bark blackening varies between 15 and 25 feet.

Fire intensity in the unpruned unthinned area (part of SQ4) was considerably greater than in the treated area. The fire crowned at several points and the tendency to crown appeared to be pronounced near the edges of major fire breaks.

(b) Rate of Forward Spread.

A rate of spread plan is shown on map 2 giving the approximate position of the fire at 1235, 1415 and 1500 hours. Rates of forward spread, from this plan, are shown on table 2.

Table 2. Rates of Forward Spread.

Time	Total Forward Spread chains	Average forward spread chains/hour
1235 to 1340	20	18
1340 to 1415	25	43
1415 to 1500	23	31
		Average 31 chains/hour

(c). Flame Height.

Reports from fire fighters indicate gusty wind conditions and the flame height of the headfire varied between 4 feet to 60 feet when the fire crowned. The average flame height of the headfire was 8 to 10 feet and the average flank fire flame height was 4 feet.

(d) Spotting.

The pattern of spot fire development was similar to previous pinaster fires, except that the maximum spot distance was greater than recorded in the last Sommerville and Gnangara fires.

Spotting was intense within five chains of the headfire and intensity decreased markedly at distances greater than five chains. Spots did however devlop 25 chains in front of the headfire, which was a greater distance than experienced at either the Gnangara 1962 fire or the Sommerville 1964 fire. The long spot distance is probably due to a higher wind velocity than was experienced at the previous fires.

10. Dispatch Table.

Combining the experiences of the Gnangara Fire of 22/1/'62 and this fire a dispatch table has been drawn up for two points in the fire danger range.

The dispatch table was drawn up as follows:-

(a). As mentioned earlier the force that finally controlled this fire comprised.

Nine gangs (including two brigade units.)
Nine heavy duty pumpers.
Five tractors (taken as the equivalent of bulldozers.)

At this time the headfire had burnt out of the plantation but a smaller force held the flanks until support arrived. It has been assumed that the final force would hold and control a fire of the proportions shown at 1500 hours on map 2.

(b). The fire perimeter at 1235 hrs. was approx. 30 chains
at 1340 " " " 70 "
at 1415 " " " 150 "
at 1500 " " " 200 "

(c). The length of fire line controlled by gangs, heavy duties and bulldozers is:-

1 gang to 22 chains of fire line
1 H.S. pumper to 22 chains of fire line
1 bulldozer to 40 chains of fire line

The dispatch table was compiled by combining the perimeter spread and the suppression force achievement shown inc.

This table can be compared with a similar table which was compiled for the Gnangara Fire which occurred on a day of Severe S fire bazard.

The purpose of these tables is to provide a guide to dispatchers when determining the number of gangs, H.D. pumpers and bulldozers, which they should aim to have at the fire within certain specified periods from detection.

Dispatch Table for Coastal P.pinaster Plantation Fires.

(a). Moderate Fire Hazard with a 20 m.p.h. Wind = Blue Fire Danger

Dispatch to arrive within * of detection	Number of Gangs	Number of H.S. Pumpers	Number of Bulldozers
* 10 minutes	1	2	-
* 1 hour	3	3	2
* 1½ hours	7	7	4
* 2 hours	9	9	5

(b). Severe S. day with 13 m.p.h. wind = Brown Fire Danger

* 10 minuts	3	3	1
* 1 hour	11	8	3
* 1½ hours	16	12	4
* 2 hours	22	16	6

11. Discussion.

It is probable that fuel conditions in the older P.pinaster plantations are approaching the conditions that occurred in the jarrah forest prior to the era of area controlled burning i.e., the accumulation of fuel has reached such proportions that even heavy expenditure on the fire fighting organization will fail to control fires under severe weather conditions.

Significant indications of this fuel accumulation have occurred during the last three major plantation fires i.e. the headfire was only controlled on one of these fires.

Under the rotational burning regime the maximum fuel quantity retained over the bulk of the jarrah forest area is barely 1/7 of the fuel accumulation in the P.pinaster plantations. In high risk areas, such as Sommerville and Collier, it is considered imperative to reduce this fuel if fires are to be controlled quickly.

On present indications the only economically feasable method of fuel reduction is through controlled burning, and research has commenced on this project. Experience at Grimwade, Gnangara and Scadden indicates that burning under pines has an excellant chance of success, providing sufficient attention is paid to selection of correct weather and burning techniques. Despite a general lack of wide experience of burning under pines I am of the opinion that it may be advisable to burn a buffer strip through the centre of Sommerville Plantation, and extend the burnt area as the practise and information develops.

Such burning could be safely based on the weather conditions selected for the Gnangara experimental fires i.e.:-

(a). Burn in August to early September.
(b). Immediately after $1\frac{1}{2}$ to 2 inches of rain.
(c). With a max. temp. range of 60 to 68°F.
(d). With a min. RH range of 55 to 65°F.
(e). With an open wind velocity of 5 to 10 m.p.h.

To minimise the risk of smouldering, logs and stumps should be raked. The area should be edged as soon as possible after the rain, and the burn extended into the buffer when the flash surface fuel is dry enough to ignite. Under these conditions the duff layer and heavy wood will not burn, and it may be advisable to repeat burn in order to get the maximum benefit.

The present figures from the Grimwade and Gnangara growth trials indicate that mild burning has had little significant effect on rate of girth growth of 20 y.o. P.radiata or 15 y.o. P.pinaster.

Photos taken by the "West Australian" reporters have been ordered and will be forwarded when they arrive for appending to this report.

G.B. PEET.
A.D.F.O.

12. Diary of Events.

Sommerville Plantation Fire of 7th February 1965.
(Time indicates time of arrival at the fire unless otherwise stated.)

Time	Event.
1233 hrs	Sommerville Tower reported a fire in the plantation thought to be in Compt. 48.
1240 "	Somm. gang (8 men) with H.D. pumper and fast attack unit dispatched with Mr. Foote.
1235 to 1255	The following personnel were advised:- Mr. Milesi. Mr. Meacham. Mr. Ashcroft. Forests Dept. Wanneroo Forests Dept. Mundaring Como and Fremantle Fire Brigades Hilton Park Police
1255 "	Como H.D. pumper and 2 men at the fire.
1300 "	Control centre established at Como by Milesi, Meacham and Watson.
1310 "	Assistance requested from Wanneroo and Mundaring.
1325 "	Ashcroft and Gorrindge arrived.
1326 "	Request to Soltoggio for earth moving equipment.
1350 "	Second Como H.D. Pumper with O'Grady arrived.
1351 "	Major alert by Ashcroft - assistance requested from Dwellingup and Gleneagle.
1415 "	van Noort and gang (4 men) and H.D. arrived.
1428 "	Dwellingup and Gleneagle gangs dispatched.
1450 "	Hewett with Mundaring crew (3 men) arrived.
1450 "	Michigan scoop from Soltoggie arrived.
1451 "	South Canning Bushfire Brigade advised that they were sending 12 men with truck and hand tools.
1452 "	Tower spotted a hopover in Compt. 37.
1455 "	Mundaring gang (4 men) with H.D. arrived.
1500 "	Gnangara gang (7 men) with H.D. arrived.
1505 "	Mundaring second H.D. held at Como as an emergency Unit.
1530 "	Gleneagle gange (6 men) arrived.
1545 "	Second Mundaring gang (7 men) arrived.
1600 "	Carinyah gang held on stand-by at Como.
1615 "	Two Dwellingup gangs (10 men) plus 2 H.D.'s arrived.
1620 "	TD18 bulldozer arrived.

1700 hrs D4 and D6 bulldozers arrived.
Ferguson and scraper arrived.
Mundaring 6 x 6 H.D. (3 men) arrived.

1830 " Running fire stopped and break established around the fire - Michigan scoop stood down.

1930 " Three other dozers stood down also the S.Canning Brigade.

2000 " Four gangs stood down i.e. two Mundaring, Wanneroo and Gnangara.

2030 " Collier and Sommerville gangs stood down.

2030 - Dwellingup and Gleneagle gangs mopping up with 5
0810 8th H.D.'s Supervised by Hewett and Ashcroft plus two Forest rangers.

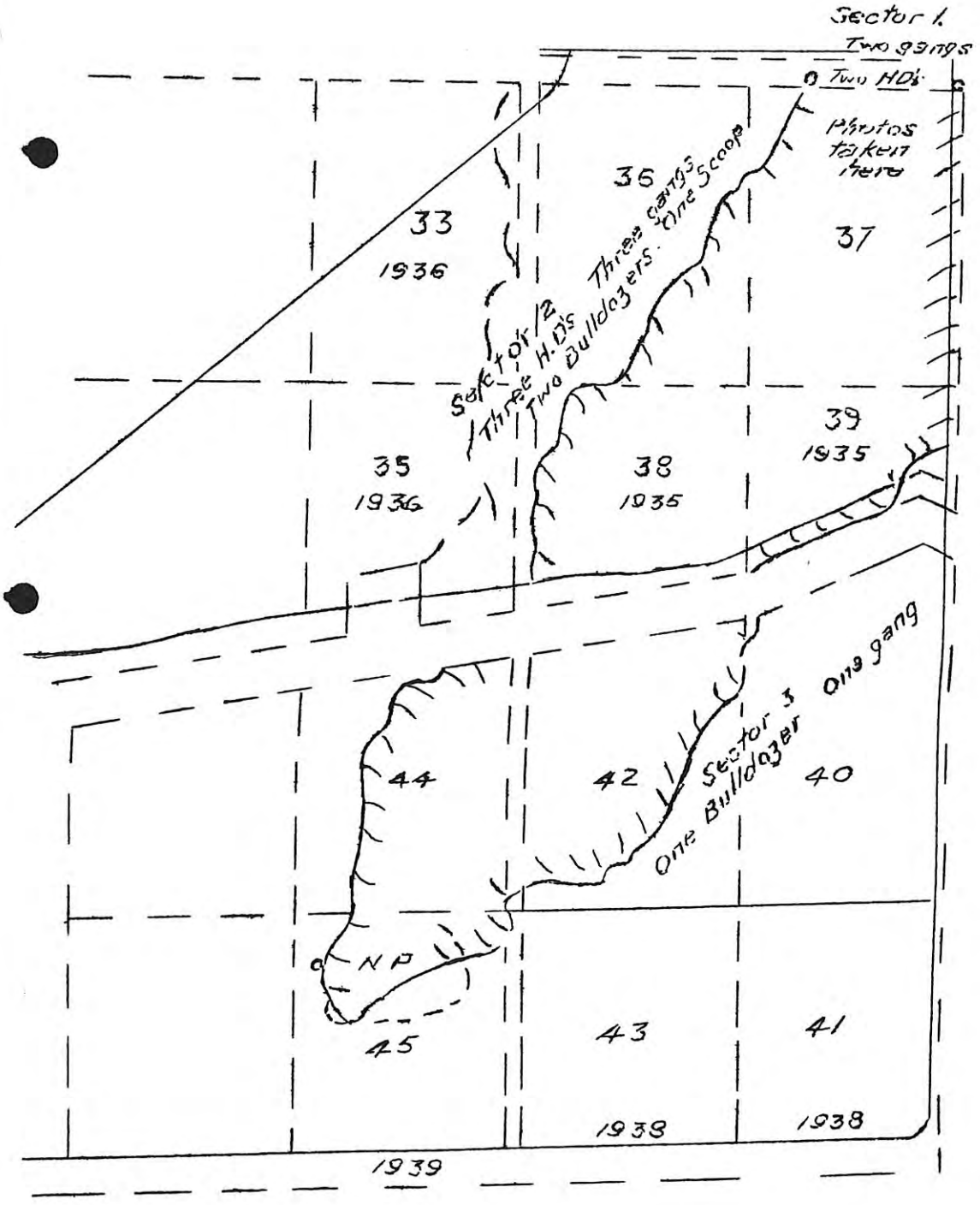
0810 on 8th Night shift crew relieved by gangs from Sommerville, Wanneroo and Mundaring (3 gangs) van Noort, and Ashcroft supervising.

Somerville Fire of 7/2/65

Map 1 Scale: 100 ins = 1 inch

Distribution of Suppression Forces.

//// shows the fire edge



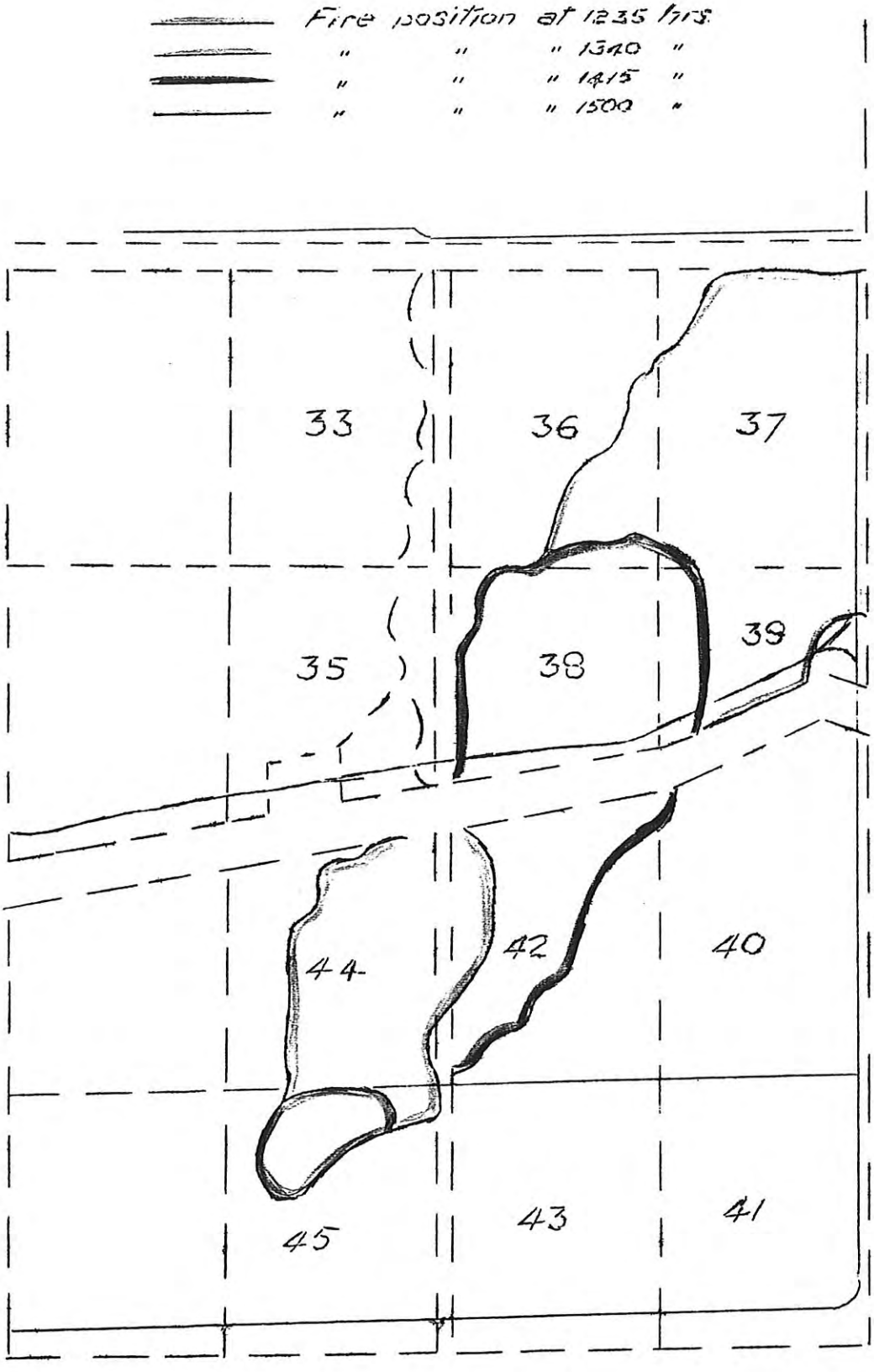
Somerville Fire of 7/2/65

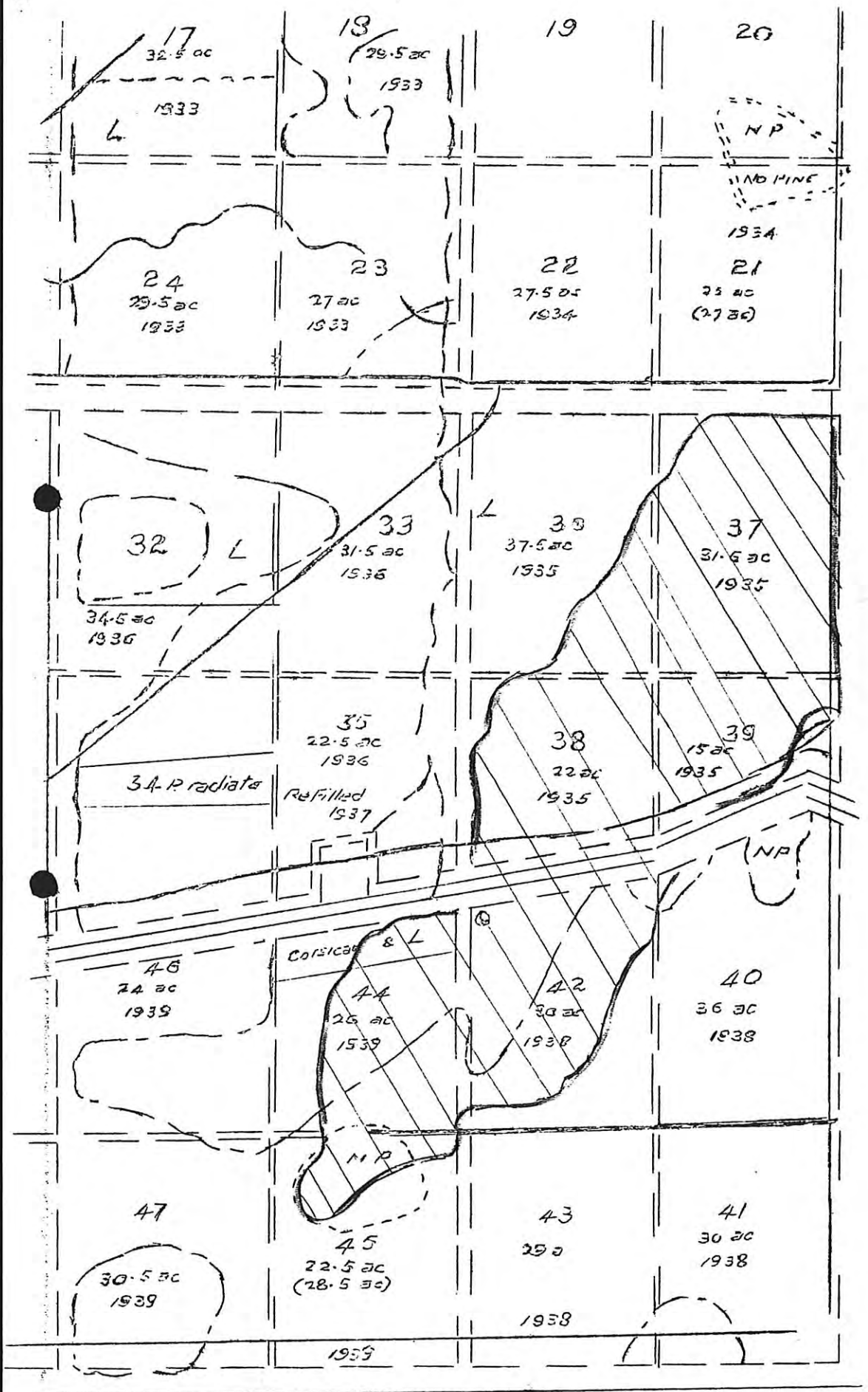
Map 2

Scale: 100 ohms = 1 inch

Rate of Spread Plan

Fire position at 1235 hrs.
" " " 1340 "
" " " 1415 "
" " " 1500 "





Plan of Somerville Fire of 7/2/65

\\\ = Burnt Area

REPORT ON PLANTATION FIRE AT SOMERVILLE ON JANUARY 28th 1964.

SUMMARY.

At 1509 hours, on January 28th, Somerville tower reported a fire in Compartment 66, of Somerville plantation. An F.D. gang was working in close proximity, and reached the fire within 10 minutes of the report.

At 1525 hours another fire was reported, in Compartment 14. The gang left the fire in Compartment 66, which was under control, and went to the fire in Compartment 14.

An attack was made on the headfire, supported by additional forces arriving from Collier. The attack was unsuccessful, due to frequent spotting in front of the main fire. The suppression force withdrew to the northern and eastern firebreaks surrounding the Compartment, and supported by units from Wanneroo, and local volunteer assistance, contained the headfire in Compartment 14. The main headfire reached the firebreaks at 1630 hours, and spotted heavily into Compartment 10, 11 and 15. Activities in suppressing these spot fires, prevented the transfer of part of the suppression force, to the flanks of the fire.

The arrival of dozing machines, from local sources, and gangs from Mundaring, and Gleneagle, permitted control of the flanks and back fire. A complete break around the fire had been constructed by 2000 hours, and the running fire stopped.

The approximate area burnt is 20 acres of SQ3 P. Pinaster, (33 years old) in Compartment 14, and $\frac{1}{4}$ of an acre of 14 year old P. Pinaster, in Compartment 66.

Mopping proceeded during the night, and the major work had been completed at 1600 hours, on 29th January, and assisting outside forces were dispatched to their respective headquarters.

Weather conditions were mild when the fire outbreak occured, and can be described as a Moderate fire hazard, with a moderate S.W. wind.

CAUSE.

Children are the suspected cause of the fire, in Compartment 66. A childs tracks were found near the scene of the fire.

The cause of the fire in Compartment 14 is in doubt. There are two probabilities:

(1) The fire in Compartment 14 is in direct line, with wind direction, from the fire in Compartment 66. This orientation suggests that the fire in Compartment 66 spotted into Compartment 14.

(2) The distance between the fire in Compartment 66, and the origin of the fire in Compartment 14, is 10 chains. From measurements within the area contained by the fire break (constructed in the first attack), the size of the fire in Compartment 66, when spotting into Compartment 14, was approximately 3 chains long and 2 chains wide. The fire has fully browned the crowns, but only 3 to 4 trees show evidence of the crown burning, hence it was not an intense fire.

The fire in Compartment 14 was slightly larger than the fire in Compartment 66, when first attacked. Spotting was frequent within 3 to 4 chains, but at this stage no 10 chain spotting was recorded. There is no evidence of any other spot fires from Compartment 66, other than the one fire in Compartment 14.

Spotting over a 10 chain distance does not appear likely, under these conditions, and if this hypothesis is accepted, the fire in Compartment 14 was deliberately lit.

DETECTION.

At 1509 hours Somerville tower reported two fires, in Compartment 66 of Somerville plantation, to Collier headquarters. It is improbable that one of those fires reported, was the fire in Compartment 14. The tower panorama shows a distinct crown level difference between the two compartments.

At 1525 hours suppression of the fire in Compartment 66 was well advanced, and the tower detected another black smoke, directly in line, but behind, the fire in Compartment 66. This was the fire in Compartment 14. Field observation showed that in fact, the two fires were in direct line, with the line of sight from the tower.

Action to suppress the Running Fire.

This section is divided into two parts.

(a) Commentary on the course of suppression during the fire.

(b) Resume of the suppression forces at the fire, during certain periods of its development.

COURSE OF SUPPRESSION.

On the afternoon of January 28th, the Somerville gang was pruning in Compartment 64. The fire in Compartment 66 was reported at 1509 hours, to Collier, and by 1515 hours the Somerville gang had reached this fire.

Suppression action was prompt, and shortly after arrival, the overseer reported the fire under control.

At 1525 hours the smoke in Compartment 14 was detected, and the Somerville gang transferred to this fire, arriving at 1530 hours. The headfire was attacked, and support from Collier i.e. Mr. Ashcroft and 2 pumpers, arrived between 1535 and 1540 hours.

The Somerville gang and pumper, plus the two Collier pumpers attacked the headfire, under the direction of Mr. Ashcroft, At this time the fire had developed in a long narrow tongue, 3 to 4 chains in length, ½ chain wide, and was spotting 3 to 4 chains ahead. Almost immediately the suppression force was depleted by a breakdown in Collier No.1 pumper. This machine was removed from the fire, partially repaired, and transferred to the suppression of the fire in Compartment 66.

The remaining two pumpers, and gang, continued with suppression efforts on the headfire in Compartment 14, but due to continual spotting, were unable to establish control.

At 1610 hours the forces were withdrawn to the northern and eastern firebreaks, surrounding the Compartment, and concentrated on preventing spot fires developing in adjacent areas. The main headfire reached the firebreaks at 1430 hours, and was accompanied by heavy spotting into Compartments 10, 11 and 15.

The suppression force was bolstered by the arrival of a Fire Brigade 4 x 4 at 1630 hours, the Wanneroo gang and pumper at 1440 hours, and a Michigan Scoop from Sol Togios. The scoop was assigned to cutting a break around the eastern flank, but the remaining force was concentrated on the headfire. The headfire, and spot fires in adjoining Compartments, was contained by this force.

Between 1630 and 1715 hours a D6 bulldozer from the Melville Town Council, and the Mundaring gang, arrived at the fire. The bulldozer commenced cutting a break on western flank, and was followed by the Mundaring gang.

On arrival of the Gleneagle gang at 1830 hours, the Mundaring gang was transferred to the western flank, and their position filled by Gleneagle. At 1945 hours the Somerville gang was transferred from the headfire, to the eastern flank.

At 2000 hours a complete break had been established around the fire, and the running fire was stopped.

(b) Resume of suppression forces.

The following notes refer to the concentration of suppression forces required for the control of the fire in Compartment 14.

(1) 1535 hours.

Fire size was 3 to 4 chains long, and ½ chain wide. Spotting was occuring 3 to 4 chains in front of tne headfire.

Suppression forces.

1 gang
2 effective pumpers
Fire not contained

(2) 1640 hours.

Headfire held on the eastern and northern breaks. With the exception of Michigan scoop, which had just started work, no attack yet made on flankfire.

Suppression force which held the headfire.

3 F.D. gangs
4 pumpers
4 members of the fire brigade
3 local volunteers
Headfire brought under control.

(3) 1715 to 1830 hours.

Effective suppression of the whole fire commenced.

The strength of the force.

1 Michigan scoop
1 D6 bulldozer
1 light grader
5 F.D. gangs
5 pumpers

MOPPING UP.

Mopping up was designed to fully douse all ignited material, within the fire area, which approximated 20 acres. A cool edge was established first, then the units worked progressively deeper into the fire, until the whole area had been covered.

Mopping up commenced immediately after effective control of the fire in Compartment 14 had been established. The fire in Compartment 66 had been suppressed by Collier No.1 pumper, and was mopped up at the sametime.

Most of the critical mopping up had been completed by 1100 hours on 29th January, and by 1600 hours the objective had been achieved, and outside assistance was dispatched to home headquarters.

On the night of the 28th and 29th the force engaged on mopping up was

5 F.D. gangs
1 D4 bulldozer
4 pumpers

AREA BURNT.

The fire is Compartment 14 burnt a strip approximately 20 chains long and 10 chains wide. The estimated area is 20 acres. The fire in Compartment 66 is estimated at ¼ of an acre.

FIRE DAMAGE.

Only isolated trees have burnt crowns, but most are fully scorched. Tree bark has been blackened for a height of 15 to 25 ft. All fuel was burnt, i.e. mineral soil exposed.

FOREST TYPE.

The fire in Compartment 14 burnt through 33 year old SQ 3 P. pinaster. The fire in Compartment 66 involved 14 year old P. pinaster.

FUEL TYPE.

The needle layer in both compartments was 3 to 4" in depth, and approximates 20 tons to the acre of fuel.

Above the needle layer were frequent heaps of thinning slash. These heaps were 3 to 4 ft. in height, and contributed greatly to both fire intensity, and difficulty of suppression. Trees in Compartment 66 carried clusters of needles in branches, fairly close to the ground, but fortunately, in most cases these did not ignite.

All fuel was extremely dry, and fully consumed by the fire.

WEATHER CONDITIONS.

Weather readings for the afternoon of the 28th January, were supplied by the Bureau of Meteorology in Perth, and should approximate the conditions at Sommerville.

Recordings of wind direction, strength in knots, temperature and relative humidity are given in table 1.

Table 1 - 28th January, 1964.

Time	Wind Velocity Knots	Wind Direction	Temperature	Relative Humidity
1200 hours	12	SW	81	55
1400 "	14	SW		
1500 "			77	58
1600 "	13	SW		
1800 "	12	SW	73	67

Using Hatch's tables as a basis of classification, the temperature and relative humidity readings fall within the Moderate fire hazard rating. The wind direction is Moderate, hence fire danger was not high, when compared to usual summer weather.

FIRE BEHAVIOUR.

A rate of spread plan, showing the approximate size of the fires at different times, has been prepared. The rate of forward spread is estimated at 17 chains per hour in Compartment 14. The average headfire flame height, on this fire, was 8 to 10 ft., and average flankfire height 3 to 6 ft.

Spotting developed quickly, once the fire had reached a length of 3 to 4 chains. At this size the distance of spotting, in front of the headfire, was restricted to 3 to 4 chains. At the final fire size three distinct zones of spotting intensity were defined.

(a) Within 3 chains of the headfire.
Spot fires frequent, estimated that one spot fire occured every 36 sq. ft.

(b) 4 to 6 chains infront of the headfire.
Four major spot fires were found, in Compartment 10.

(c) 6 to 10 chains in front of headfire.
Two major spot fires were found, both in Compartment 10.

Spot fire development was frequent, up to 2400 hours on the 28th January. In the early morning of January 29th, intensity decreased markedly, only two active spot developments being recorded, one at 0230 and one at 0630 hours.

ORGANIZATION OF OUTSIDE ASSISTANCE.

Collier headquarters formed the control centre for this fire.

Wanneroo headquarters was alerted at 1525 hours and Mundaring and Gleneagle at 1535 hours.

Assistance was drawn from all three divisions, and on the 29th January, Dwellingup was requested to assist with mopping up.

A diary showing time of arrival of various units was prepared by D.F.O's van Noort and Hewett. This diary is given in the appendix.

DISCUSSION.

It would be difficult to envisage a more efficient attack on these fires. The initial attack unit arrived within 10 minutes ofthe report, and supporting forces had arrived within 25 minutes. The initial attack was supported by fast follow up action from three divisions, and it is doubtful whether any major improvement in efficiency, could be achieved.

The fire danger at the time of fire outbreak did not exceed moderate to average, and in no way compared with peak fire danger conditions during the summer months.

The officers attending these fires did not indicate that the concentration of forces was excessive, in fact the force was fully extended to hold the fire.

These observations point to the question of what size of suppression force, would be required, to contain a plantation fire burning in similar fuel type, on a dangerous day. From observation of both the Somerville, and Gnangara fire of January 1963, it is contended that a massive suppression force would be required.

Accepting the real possibility of a plantation fire on a dangerous day, (Gnangara fire occured on a day of Severe S) it therefore becomes a matter of high priority to reduce the fuel concentrations, within the plantations, to a level which permits fire control on days of severe and dangerous fire danger.

Two methods of fuel reduction are presented, as worthy lines of investigation, for research.

(1) Controlled Burning.

Experimental burning under pines has been conducted in W.A., and in Eastern States by McArthur. The investigations are in a rudimentary stage at present, but this method is presented as one which may have real application. There is an obvious risk involved in this research, but by careful selection of weather conditions, during the winter months, the risk can be minimised. It is suggested that present evidence is insufficient to truly assess the value of controlled burning under pines, but that it presents a worthy line of research.

(2) Fuel reduction by Mechanical Methods.

Hogging, chipping and burying present possibilities as methods of fuel reduction. Current S.A. research should give indication of the value of these methods.

It is suggested that research into fuel quantity reduction, should incorporate an investigation into alternatives to current forest practise. Disposal of slash heaps is of prime importance in reducing both fire intensity, and difficulty of suppression. The various methods of slash disposal, and the economics of the operation, is one aspect of forest practise worthy of further investigation.

G.B. PEET.
A.D.F.O.

For further reference officers attending the Somerville fire were:- D.F.O.'s van Noort and Hewett, D.For. Ashcroft.

APPENDIX.

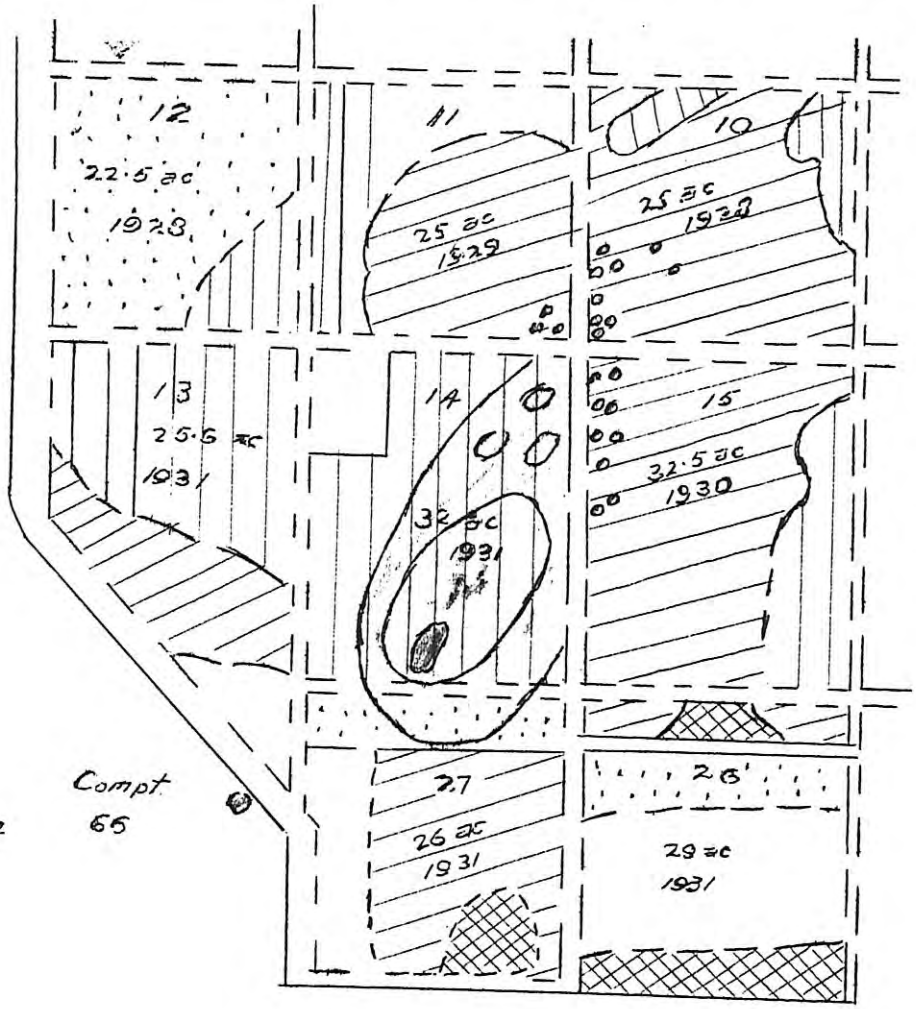
DIARY OF SUPPRESSION FORCE ARRIVAL TO SOMERVILLE PLANTATION FIRE

28th JANUARY, 1964.

1509	Hours	Two fires in Compt. 66 reported to Collier Headquarters
1515	"	Somerville gang arrived in Compt. 66 found one fire and commenced suppression action.
1525	"	Somerville tower reported a fire in Compt. 14.
1530	"	Ashcroft arrived.
1535	"	Two pumpers from Collier arrived.
1555	"	Foot arrived.
1610	"	O'Grady arrived.
1615	"	Greyhound grader (Pethick) arrived.
1620	"	Hewett arrived.
1625	"	Fire Brigade 4 x 4 pumper arrived.
1630	"	van Noort arrived.
1630	"	Michigan scoop (Sol Togios) arrived.
1645	"	Gorrindge arrived.
1640	"	Wanneroo gang arrived.
1640	"	Wanneroo pumper arrived.
1715	"	Melville Council D6 bulldozer arrived.
1725	"	Mundaring gang arrived.
1730	"	Edwards arrived.
1830	"	Mundaring pumper arrived.
1830	"	Gleneagle gang arrived.
1930	"	Pool D4 bulldozer arrived.

Section of Somerville Plantation Plan

Site Quality I II III IV



Scale: 10 chns = 1 inch.

Legend:

... Spot Fires

Fire size at 1536 hrs on 28 Jan 1962

" " " 1610 " " "

" " " 1630 " " "

Compt 66

442 m/h

REPORT ON PLANTATION FIRE AT GNANGARA ON JANUARY 22nd 1962.

SUMMARY.

CAUSE.

DETECTION.

ACTION TO SUPPRESS RUNNING FIRE.

MOPPING UP.

AREA BURNT.

SALVAGE.

ORGANISATION OF ASSISTANCE.

ASSISTANCE FROM OTHER DIVISIONS.

VOLUNTEER ASSISTANCE.

REPORT OF PLANTATION FIRE AT GNANGARA ON 22.1.62

SUMMARY.

January 22nd was a day of Dangerous fire hazard. A maximum temperature of 102° was recorded at Wanneroo.

The fire started at approx. 11.50 on the Eastern Edge of C.4 on Wetherell Rd opposite the old mill site.

It was caused by a McCulloch 47A chain saw while falling large edge trees. Evidence of scorching from the exhaust was found alongside other stumps in unburnt country. The fire must have smouldered for at least 45 minutes before burning noticeably, and did not ignite until after the fallers had left.

The smoke was observed by a bulldozer driver six miles away at 11.50 but was not reported by the tower. Gnangara H.Q. became aware of the fire at 12.05. This 15 minute delay was undoubtedly responsible for the fire becoming uncontrollable. When the first gangs arrived at 12.10 the fire covered half an acre and was burning fiercely.

The compartments burnt all carried heavy thinning debris producing a very hot fire which spotted heavily up to 12 chains in a moderate wind. A change in the wind to a fairly fresh south wester at 2 p.m. resulted in the fire crossing Wetherell Rd and burning out valuable experimental areas in C.19.

The running fire was stopped by 5 p.m. and the area burnt confined to 120 acres. An estimated 5,000 loads of timber are to be salvaged.

Much experience has been gained from this fire and the following detailed report has been prepared mainly to provide a basis for discussion so that any lessons learnt may be passed on.

CAUSE OF THE FIRE.

There is no doubt that the fire was started by a McCulloch 47A chain saw from the heat of the exhaust gases during a falling cut on a large edge tree. The needles must have smouldered for at least 45 minutes before igniting.

Faller Q. Delbianco was falling large edge trees along Wetherell Rd in C.4 until about 11.40 a.m., when he went home. The suspected starting point of the fire is at the butt of a tree felled before 11.00 a.m. For. Staley talked with faller at 11.00 Thirteen more trees were felled before the faller went home at 11.40 a.m. Of these, 9 are in unburnt country and at the butts of 3 of these, definite evidence of scorching of needles can be seen. There is a 3" circle of charred needles alongside the stump in each case.

The fallers, Delbianco and Leonard, and tractor driver R. Reynolds, left the area between 11.40 and 11.45.

NOTES:

Forester Staley has often looked for any evidence of burning by the exhaust of the chain saws after a falling cut but has never seen it before. These edge trees are probably the largest that have been felled at Gnangara and conditions were extremely dry. This evidence has been photographed.

The question of using chain saws in the pines must be very carefully investigated.

DETECTION OF THE FIRE.

There is evidence that at least 15 minutes were lost due to the towerman's failure to report the smoke. e.g.,

1. A dozer driver - saw the column of smoke from the marl pit 6 miles away at 11.50. He is reasonably sure of this time.

2. Children at Gnangara saw the heavy smoke before 12.00 and pointed it out to Mrs. Staley. She did not realise how close it was and felt sure the office would know about it.

3. F.G. G. Reynolds saw smoke from Gnangara office at 12.05, told staley and Quicke and immediately took H.D. to the fire.

4. An overseer saw smoke and on radio at 12.05 asked towerman where smoke was and this was the first the towerman knew of it. Haddrill was pruning pines in C.3 Nth Barlow, 2½ miles from the fire.

5. At 12.05 Mundaring rang Wanneroo, after trying to ring Gnangara, to report Gungin Lookout had sighted fire at 12.04.

At the same time Gnangara and the tower rang Wanneroo to report the fire.

The towerman was interviewed on the 24th. He had no explanation for his failure to report the smoke and was dismissed.

Apart from one incident - asleep on duty 2 years ago - this man had been very reliable and had given prompt reports of two fires in the plantation area already this season. He had 2 days relief a fortnight previously.

The towerman was replaced temporarily by F.G Quicke on Wednesday.

Ex-F/G E. Popham is interested in the towerman's job for the rest of the season. He has had experience on towers in the South-West and should be a good man for the job. He will start on the 20th January.

SUPPRESSION ACTION.

The fire started on the Western edge of C.4 in falling operations opposite the old mill. See map.
Known to start before 11.50.
Not reported until 12.05.
Fire hazard - Dangerous. M.T. 102°, M.R.H. 13%.

12.08 Staley inspected fire and returned to call for help. Fire covered half an acre when first seen and was burning fiercely with flames 12' high.
12.10 F/G Reynolds and Quicke arrived with H.D. No.1 and workshop gang and attacked S side of fire intending to work round to front. The wind was swinging E and SE.
12.20 Staley with H.D. No.2 (6x6) and 3 men attacked N side of fire but by this time fire was spotting 100 yards ahead to N.W.

Staley pulled out to N boundary of C.4 to watch for spotting into C.16 and C.15.

Reynolds continued on S and W side.

There was many hopovers into 16 and 15. These were attacked but developed into a strong fire on the S side of C.16 H.D. No.2 continued to fight it here.

A.D.F.O. van Noort, organising from Wanneroo, advised F.C.S. Milesi of assistance required.
12.30 Haddrill's gang arrived. Sent to W side of fire in C.4 without H.D.
12.45 F.G. Cooper arrived with Wanneroo H.D. and 1 man. Sent to fight fire on E and N sides in C.16, i.e. to support H.D. No.2.

(3 H.D.s and 20 men were at the fire within 40 minutes)
13.10 Units from West Swan Bush Fire Brigade arrived. Some sent to SS side in C.4 and others to C.16. A.D.F.O. van Noort arrived from Wanneroo after advising other Dept. centres and after relief by For. Clover from Pinjar.
13.30. The edge in C.4 quietened down. Reynolds and H.D. No.1 and B.F.B. gangs continued here.

Remainder i.e., 2 H.D.s and a large team of men, worked on the numerous spot fires in C,s 15 and 16. (Spot fires occurred at least 12 chains ahead of fire).

Wanneroo gang arrived from Pinjar. Sent to C.16.
Pinjar H.D. arrived but not immediately useable due to mechanical trouble. (The tail shaft jammed and the truck motor would not start due to a vapour lock. This is a 1942 Ford and will be replaced by a 4 x 4 Chev.)

13.45 Mundaring gang arrived. Sent to C.16 with hand tools.

Wanneroo B.F.B. Pumper arrived. Sent to C.16.

Wanneroo H.D. was out of action for 20 minutes due to fuel blockage in the pump motor.

D4 arrived from Marl Pit and break pushed around N side of fire in C.16.

Como H.D. arrived.

13.50 The wind appeared to be changing to the SW.

Two H.D.s started spraying water into C.19 opposite the burning section in C.16. NOTE: If more work could have been done in this section to control the fire in C.16, the jumpover into C.19 may have been prevented.

It is most unfortunate that 2 H.D.s were temporarily out of action at this critival time when the wind changed.

14.00 A fresh SW wind took the fire across Wetherell Rd. into C.19 and all efforts to stop it failed. In the very heavy slash from the recent falling the fire crowned temporarily on both sides of the road.

Lines were established through C.19 with two ploughs and one D4 and direct attempts made to stop the fire with H.D. outfits and gangs of men.

The fire spotted continuously with the SW wind and ran through to the E boundary of the plantation and was held on the N and W sides. The running fire was stopped by 17.00 hours and mopping up commenced.

NOTES

Fire Behaviour.

The area burnt carried heavy thinning debris, resulting in a very hot and fierce fire. The fire crowned several times, notably on both sides of Wetherell Rd. near C.19. Crowning was always temporary and depended on the presence of abundant fuel and a fresh following wind. It was found that the intensity of the fire varied a lot depending on the wind. It would surge up with every gust of wind and then go down again.

Generally the fire did not advance very rapidly and any fast progress was due to spotting ahead. Very heavy spotting occurred with spots up to 12 chains ahead with a moderate wind. A large number of men with pack-sprays and fast mobile light pumpers are needed to cope with these.

Methods of Attacking the Fire.

Direct attack with H.D. outfits was possible at the fire heads but very heavy volumes of water are needed to make an impression. The small shut-off nozzles are too small and all hoses should be fitted with $\frac{3}{8}$" or $\frac{1}{2}$" directors in the fire season.

Attack with hand tools was possible on the flanks and rear but heavy thinning debris makes this job slow and difficult.

A great deal of useful work was done in running lines with Ferguson ploughs and a D4 parallel to the edge. Rakes were also used extensively for this but it is slow work amongst the thinning debris. A special triangular blade on a D4 to push debris to both sides and leave a 4' track would be extremely valuable.

No burning back was attempted despite much advice from outside. It was seriously considered but it was felt that greater danger would result in the circumstances.

Access.

Access is all important and agrid system of extraction tracks is very necessary. Consideration should be given to the establishment of more cross tracks as well as outrows at planting time.

Early arrival at the fire is vital and fast light duty outfits carrying 100 gallons of water are needed.

MOPPING UP.

Mopping up commenced immediately the running fire was stopped. There was an acute danger from spot fires and flare-up along the edge.

Monday Night.

The edge was divided into 5 sectors, and 5 gangs with H.D. outfits and 4 dozers worked all night. Dozed lines were established around the edge and several outer lines parallel in the unburnt country. The H.D. outfits worked continuously along the edge, and a vigilant patrol was maintained for spot fires.

An adequate water supply was maintained by fitting an additional pump to the old Gnangara bore.

Tuesday.

Three gangs with 5 H.D.s worked continuously all day.

Tuesday Night.

Gnangara gangs worked two shifts to maintain a continuous patrol.

Wednesday.

Two gangs continued mopping up. Smouldering heaps and stumps were still being discovered.

From Wednesday onwards a continuous patrol was maintained by small parties. Smouldering material was still being discovered by the mopping up teams on Friday morning. Patrols were discontinued after rain fell on Sunday.

NOTES.

It was found in mopping up that the main problem was smouldering duff and roots on and below ground level. Great volumes of water are necessary and detergent is a great help. None of the pines continued to burn up in the air after the initial flare. It is estimated that 70,000 gallons of water were used on the fire.

The following points arose in discussion with Mr. Ashcroft:

Need for Lights.

All vehicles were equipped with lights byt the men found that there was no light from the fire to work by. Miners lamps would be very useful.

Due to the dark edge the dozer drivers found it difficult to maintain the correct distance from the edge. They need to be guided by men with torches.

Use of Dozers.

The heaps from the dozer trail gave a lot of trouble in subsequent mopping up. These heaps ofneedles and sand continued to smoulder until they could be scattered and watered. It would be better to make a dozer trial a few feet outside the fire edge and push out. The actual edge should be separated with hand tools and perhaps a plough.

A modified dozer blade of triangular shape to push the material to either side and leave a bare trail without having to push up heaps would be extremely useful.

D4s with narrow blades can get about in the pines much more easily than those with wide blades.

Use of Ploughs.

The disc ploughs on Ferguson tractors are very useful for clearing trails but care should be taken where possible to avoid ploughing access routes.

Use of Detergents.

Detergent was used in mopping up and appeared to be very effective. Further investigation is needed to decide the correct quantity to be used. One pumper had trouble with frothing. This affected the pressure in the pump and also the cooling system of the motor. The trouble was corrected by adding no detergent to the next 2 tankfuls.

The detergent used was Stanvac 4DE at the rate of 3-4 lbs per 600 gallons.

Marking of Hopovers.

Hopovers were numerous and the importance was stressed of marking areas where further mopping up is required.

High Stumps.

In places, high stumps made access difficult for vehicles. All stumps should be cut low.

AREA BURNT.

The area burnt is approx. 120 acres, made up as follows:

Compt.	(Age)	S.Q. I	S.Q. II	S.Q. III
4	(34)	5	20	10
16	(31)		2	15
19	(30)		14	20
21	(30)		3	31
		5	39	76

= 120 acres

Unfortunately a valuable experimental and demonstration area was destroyed.

SALVAGE.

It is estimated that there will be approximately 5,000 loads of pine to be salvaged.

calculated from Area by S.Q.s
Yield Tables
Thinning Cards

There will be a high proportion of over 7" and some over 10" logs.

The possibility of spraying the area to prevent Ips attack and the resultant rapid blue mould infestation is being investigated.

ORGANISATION OF ASSISTANCE.

The Wanneroo H.D. was despatched to the fire immediately the report was received.

The Wanneroo gang at Pinjar and the Pinjar H.D. were contacted by telephone and despatched straight away.

Mr. Milesi was advised of the fire and assistance requested. He arranged for the Como H.D. and 1 gang and 1 H.D. from Mundaring to be sent as soon as possible.

Mr. Eastman arranged for further assistance to be sent from Mundaring, Dwellingup and Gleneagle during the afternoon.

Departmental assistance from other centres was as follows:

Como	1 H.D.	and 2 men
Mundaring	1 H.D.	3 gangs 1 dozer
Dwellingup		2 gangs 2 dozers
Gleneagle		1 gang

Assisting and relieving staff included:

F.C.C. Eastman

F.C. For. Ashcroft

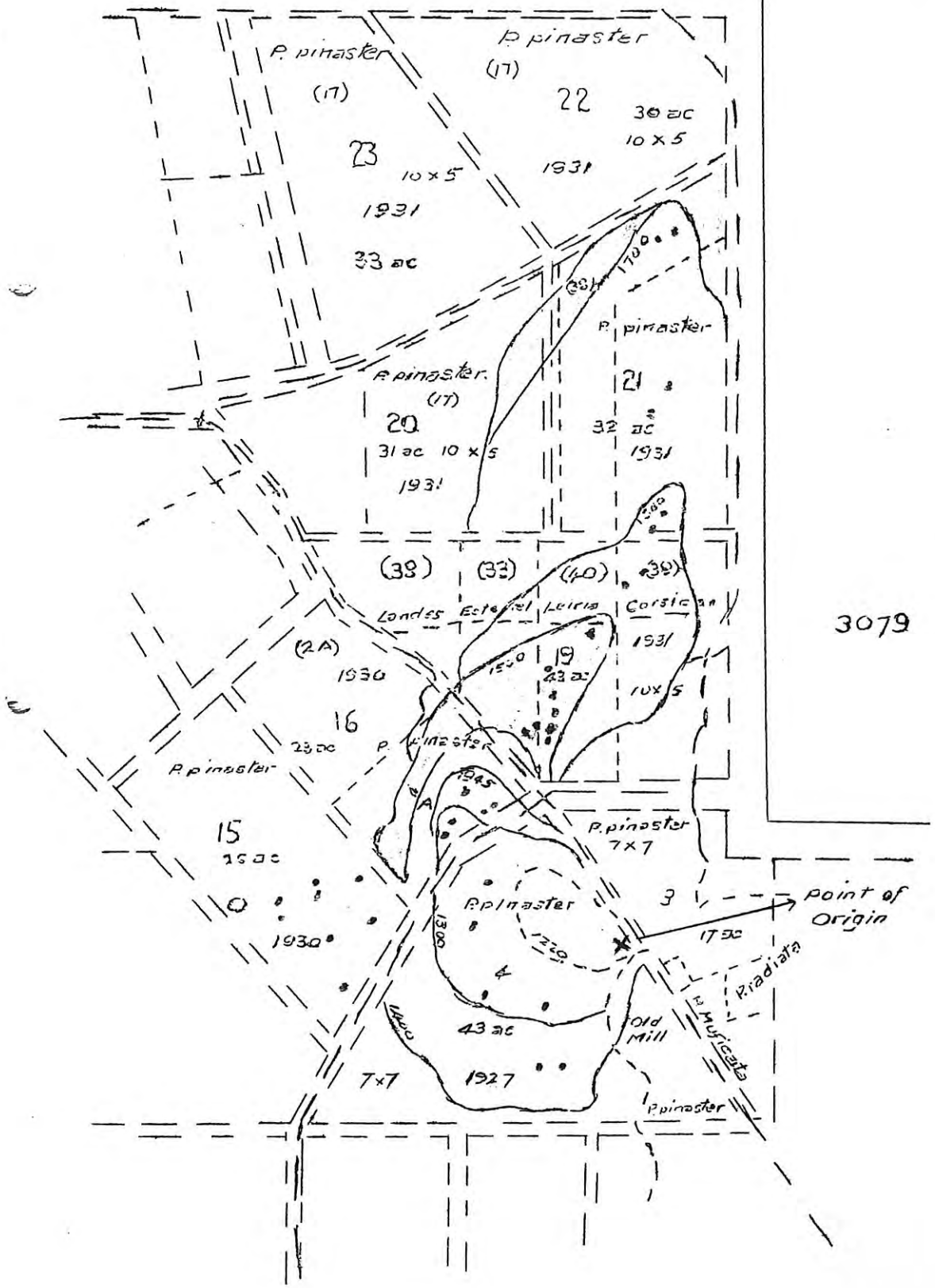
A.D.F.O. Hewett

A/F Watson.

GNANGARA FIRE 22-1-62

Plan of Rate of Spread

10 chains = 1 inch



Dwellingup
25th January 62

Conservator of Forests,

PERTH

Report on Plantation Fire Gnangara 22.1.62

Attn: Mr. Wallace
Mr. Eastman

I enclose a report on the fire at Gnangara which occured on the 22.1.62 and burnt portion of Compartments 4, 16, 19, 20 and 21.

Meteorological conditions on 22.1.62 from the Perth Observatory were -

Time	Screen Temp.	R.H.%	Wind
12 a.m.	97.4	18%	E - 8 m.p.h.
3 p.m.	99.0	15%	SW - 13 "
5 p.m.	94.3	19%	SW - 13 "

Fire detected at 1205
Fire Suppressed at 1700
Approximate Area Burnt 115 acres (perimeter 165 chains.)
Forest types burnt.

30 acres 26 year old P. pinaster, treatment 3 thinnings.
85 acres 31 year old P. pinaster, variety Esterel, Lieria Corsican, treatment 2-3 thinnings.
The distribution of Site Quality is given on Map 1.

Fire Behaviour Analysis

Refer to Map 2 which illustrates the progress of the fire with time. Perimeter were derived from estimates of the fire control officers at the scene of the fire.

Rate of Forward Progress of the headfire has been divided into 2 headfire attack classifications.

(A) Unrestricted by attack. Section 1, 4, and 5
(B) Progress restricted by attack. Section 2.

Table 1

Fire Spread

Period	Reduced to Hrs.	Headfire Forward Progress Chain per Hr.	Perimeter Spread Chns. per Hr.	Headfire Attack Classification	Flank Fire Attacked	Maximum Spotting Distance	Wind
0-1 hr.	1	15	56	A	Yes	4-6 chns.	E
1-2 hr.	1	6	17	B	Yes	-	SE
2-4 hr.	1	12	60	A	Yes	4-6 chns.	SW
4-5 hr.	1	22	48	A	Yes	4-6 chns.	SW

From Table 1.

Classification A.

Mean perimeter increase = 55 chains per hour.

Mean forward progress of headfire = 16 chains per hour.

Classification B.

Perimeter increase = 17 chains per hour.

Forward Progress of Headfire = 6 chains per hour.

Fire Characteristics

Flame height was between 4 and 20 feet on the flanks. The headfire caused only intermittent crowing but spotted 4-6 chains ahead, only in section 2 hours was the headfire attacked directly. For most of its run the headfire was to hot and spotting to far ahead for direct attack.

The increase in forward progress of the headfire between 4 and 5 hours was assisted by an increase in slope.

Suppression of the Fire.

(1) The initial attack was carried out by two Forests Department gangs with one heavy duty which arrived within 15 minutes of detection. By this time the fire was approximately 1 acre in extent.

(2) The main suppression force comprising the following units arrived within 1½ hours of detection-

3 more Forests Department gangs } Considered as five gangs.
2 Fire Brigade }
4 Heavy duty tankers
1 D4 Bulldozer
1 Wheel Tractor and disc plough.

This force contained the fire by 1700 hours on 22.1.62

(3) Mop up of the fire continued throughout the night with the following force -

5 Forestry gangs
5 Heavy Duties.
3 D4 Bulldozers.

The following points are pertinent to the equation of suppression force to rate of fire spread.

(1) During the run of the fire i.e. when flanks only were attacked, the perimeter increase was 55 chains per hour.

(2) The suppression force controlled 165 chain of edge in 5 hours.

From this basis the suppression force has been broken into its components, and each component rated on a work output per hour i.e.

1. Each gang controlled 5 chains of fire edge per hour.
2. Each heavy duty pumper controlled 7 chains of fire edge per hour.
3. Each bulldozer controlled 17 chains of fire edge per hour. (considers tractor and plough equal to one bulldozer in work output).

From this information a despatcher guide for a fire occuring under the given weather and forest conditions has been drawn up.

Despatcher with * of detection	Gangs No.	Heavy Duties No.	Dozers No.	Approx. Suppression Time.
* 1 hour	11	8	3	$1\frac{1}{4}$ hours.
* 2 hour	22	16	6	2 hours.
* 3 hour	33	24	9	-

This despatcher table assumes

(1) That the suppression force worked over the final perimeter of 165 chains.

(2) Suppression time has been calculated from a ratio between the perimeter spread of Cl A and B and the work output of the actual suppress on force against estimated required suppression force.

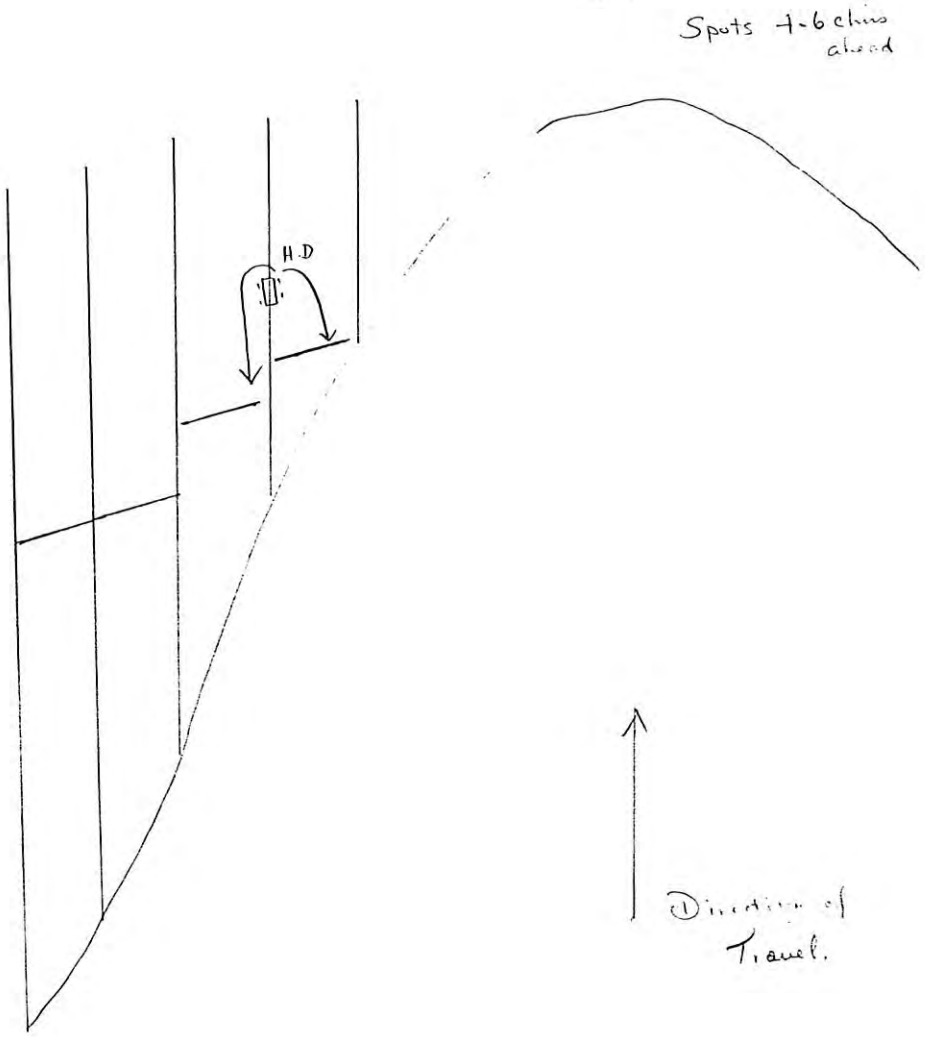
Method of Attack.

(1) The flank of the fire were controlled by running a series of parallel breaks along the fire edge. Each successive break reduced fire intensity; until the edge could be directly attacked by pumpers and gangs.

(2) The wheel tractor and plough was used effectively both in running breaks parallel to the fire edge and in the method now described.

The extraction tracks on the west flank of the fire in Compartments 19 and 20 ran directly into the fire edge. These tracks were ploughed as fire breaks, breaking the fire edge into approximately 2 chain sections. Each sector was controlled in its sequence by the heavy duties proceeding south along the fire edge. See diagram.

Method of attack using disc plough and heavy duty.



1 2 3 4 sequence of attack by pumper - fire stopped by pumper in each sector and comprising the controlled fire edge. Estimation of the Effectiveness of breaks in reducing the fire area.

(1) If allowed to burn unrestricted the slope of the fire in section 2 hours can be extrapolated using the following assumption.

The shape of a fire is symmetrical about its long axis.

From this assumption it is estimated that the presence of breaks reduced the fire area in section2 hours by 50%.

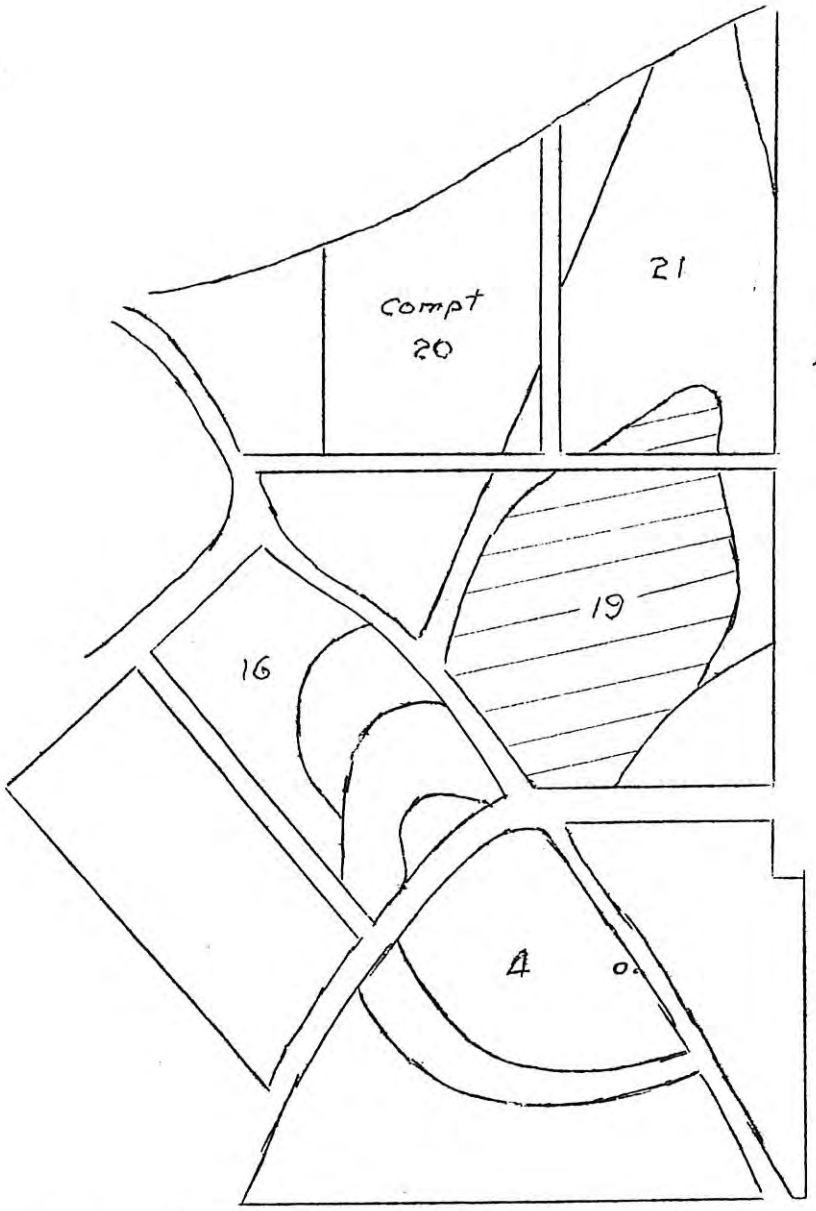
G.B. PEET
A.F.F.O.

Spread of Fire from Time of Detection to Suppression.

Map 2

ref: Gnangara Group ap Sect: A.

Scale: 10 chns = 1 inch



Legend:

Colours indicate fire size at a given time

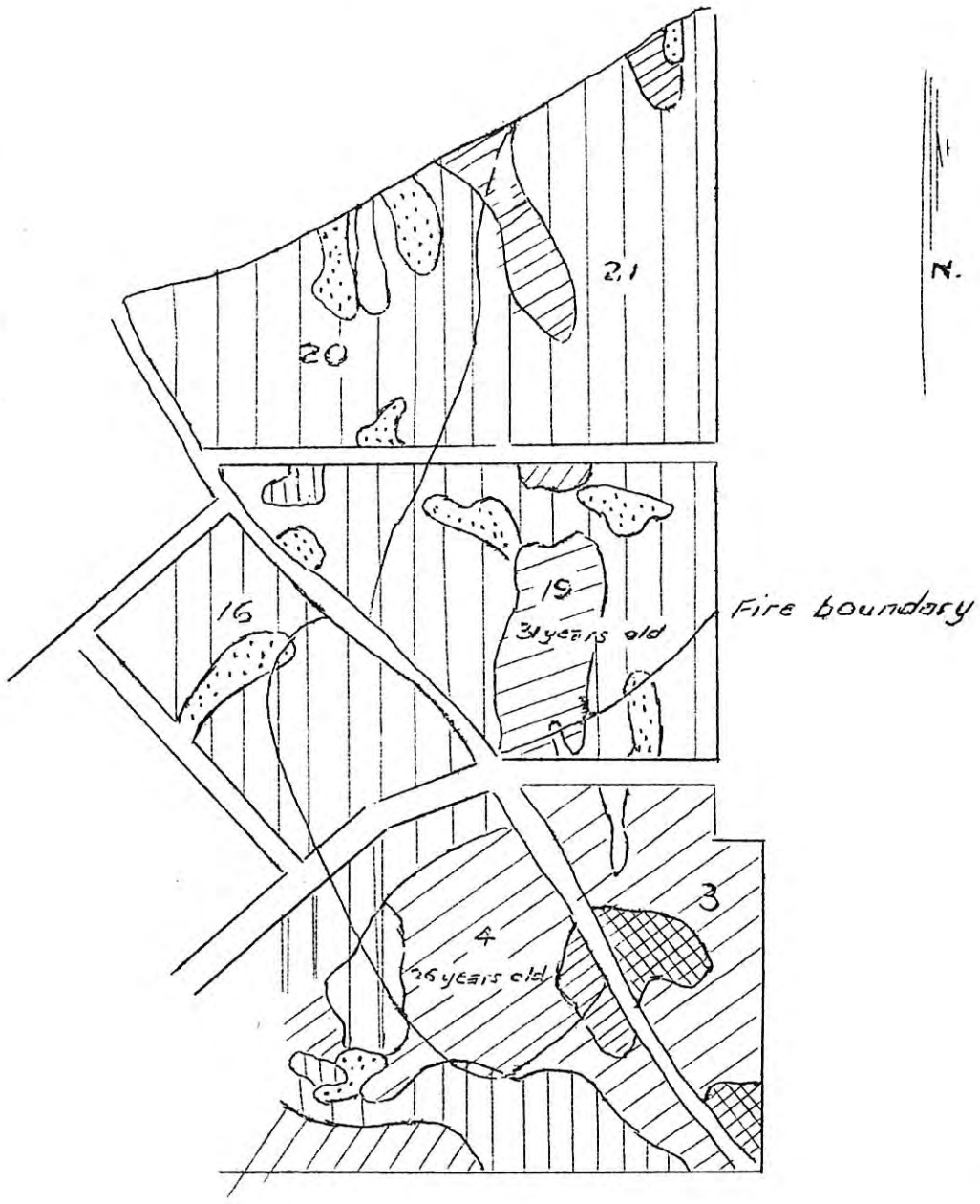
° Start of fire - Detected 1205

Section / hours	Fire area / hour from detection
2	" " 2 " " "
2-4	Fire formed between 2nd 3rd 4th hours from Detection (started from hopover at 1400)
5	Fire area formed 5 hours from Detection.

Forest Type

Map 1.

Scale: 10 chns = 1 inch



Legend:

Sq. 1

2

3

4

5

6