Bushfires that have left a deep and lasting lesson and teaching legacy across Australia over the last 70 years, the 1952 NSW bushfires

John O'Donnell

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Contents

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1 Introduction

The author reviewed bushfires that have left a deep and lasting lesson and teaching legacy.

The author has reviewed key lesson capture of effective fire and bushfire experience, expertise, and mitigation across Australia over the last 70 years and has identified a limited number of high standard example lesson/ teaching event case studies, especially in relation to effective mitigation capture combined with long term mitigation application longer than 10 years, bushfire suppression learnings, improved research and other areas of fire management.

A large number of cases, lessons were considered, including individual Australian bushfire disasters and management lessons; bushfire extent, suppression and behaviour lessons; bushfire commissions, inquiries or reviews; effective research and science; effective capture of bushfire mitigation and suppression research; development and utilisation the science of prescribed burning from the air; prescribed burning, mechanical treatment, active and adaptive management and grazing, as well as fire trail installation, water supply installation and cooperative mitigation approaches; and assessment of these cases and with post bushfire mitigation application, at least for 10 years.

In assessing a lot of these cases and lessons over time, a large number didn't involve effective mitigation capture, improvements in bushfire practice nor adequately capture and implement bushfire learnings, especially when long term mitigation application capture was also considered, ruling them out from further consideration.

This included most of the bushfires that have occurred in Australia, the lessons were not effectively captured or learnt and retained over the longer term. In a small number of cases, additional fire mitigation was proposed in bushfire commissions, inquiries or reviews, but then didn't eventuate or mitigation dwindled to inadequate levels, often in a short space of time.

Of all the major bushfires in Australia's history, the author believes that one bushfire that left such a deep legacy were the 1952 bushfires in NSW. They were not the deadliest fires Australia has seen but they were among the most influential. The 1952 NSW bushfires became an important case study for how bushfire was understood, managed, and mitigated in the decades that followed, but unfortunately did not last past the late 1970's.

An Annexure is included in this review, to assist in long term capture of information and reduce unnecessary text in the main review.

2 Major lessons from the 1952 bushfires in NSW, especially in relation to effective mitigation lesson capture and long term mitigation application

Major lessons from bushfires in NSW, especially in relation to effective mitigation lesson capture and long term mitigation application are outlined in Sections 2.1 to 2.2 below, with further detail outlined in Section 2.3 in relation to current preparedness and mitigation activities.

2.1 Lessons from the 1952 NSW bushfires, including the Mangoplah bushfire

2.1.1 Broad lesson capture

Duggin (1976) provides broad details on the 1951/ 52 bushfire season::

The 1951-52 Fire Season (January 1952}. The season could possibly be one of the worst on record for eastern Australia when more than 8 million ha were burnt and monetary damage was estimated at that time to be in the order of $100- $150 million (McArthur 1968). The season began in late October 1951 with a series of lightning fires in southern central Queensland around Charleville. About 2.8 million ha were burnt in these fires. These were followed by very large fires in northern N.S.W. in November and in late January and early February many fires were reported in southern N.S.W. and Victoria. The Mangoplah fire, which originated from railway burning-off operations south of Wagga Wagga burnt 390,000 ha, of which 340 000 ha were burnt in a 7-hour period of 25 January 1952

(McArthur 1968). On this day alone about 1.4 million ha of grass and forest land were burnt in N.S.W. and Victoria.

Extensive detail is outlined on one of these bushfires, the Mangoplah bushfire in O'Donnell (2022), this bushfire covered 390,000 hectares, mainly based on McArthur's 1968 estimate, but noting that this would be the upper limit.

The Mangoplah fire was of world significance at the time insofar as it was the largest recorded area bunt by a fire originating from a single source at that time. The scale and extent of this major bushfire was due to a long period of drought, 100 % grass curing, extreme weather on a number of days during the bushfire, very high wind speeds, with maximum GFDI reached 115, inadequate equipment in many cases, inadequate prescribed burning and other factors.

The fire continued to burn in timbered country until 10 February 1952 before it was totally brought under control. The Mangoplah bushfire started 22/ 1/ 52, 2 pm, was mopped up 10/ 2/ 52, 9.00 am and patrol ended 11/ 2/ 52, 1.00 pm. The bushfire activities lasted for 18 days, 19 hrs. Blow up days were January 24 (Thursday and Thursday night), January 25, January 31 and February 5.

Property damage in the Mangoplah bushfire included 37 houses; 203 sheds and dairies; 1,841 km of fencing as well as 110,000 sheep, with financial impacts estimated at $18 million adjusted to 1970 CPI.

The Mangoplah bushfire burnt from Mangoplah, north of Holbrook, NSW, to Corryong in north-eastern Victoria, a distance of 98 km, during two consecutive days of extreme fire danger. The fire commenced on the 22 January 1952 from fettlers burning-off on the Rock-Westby railway line near Mangoplah. The original fire was brought under control by local bushfire brigades after burning an area of 150 ha. However, on the 24 January, under extreme conditions (grass curing 100%, temperature 42.5°C, relative humidity 29%, wind speed 40 km/h, Grassland Fire Danger Index (GFDI) 60), the fire broke away from sparks from either a stump reported to be 350 m inside the burnt country or smouldering clover as the ignition point of the bushfire, the latter believed by the coroner. It spread under a strong north-westerly wind, and by midnight had burnt out an estimated at 27,000 ha. The wind continued to blow throughout the night, although abating somewhat, and thwarted attempts to hold the fire on the Hume Highway near Garryowen.

2.1.2 Broad identified bushfire lessons and improvements captured following the 1951/ 1952 bushfires across NSW by the Forestry Commission

A key report following the 1951/ 2 bushfires was Forestry Commission of NSW (1952) Report of The Forestry Commission of New South Wales for The Year Ended 30th June, 1952 (this was the Annual Report). Appendix A, Report on Forest Fire Protection in New South Wales During the 1951-52 Fire Season includes improvements (and lessons), These valuable lesson details are outlined in Annexure 1 of this report and in O'Donnell (2022), Annexure 4 of that report.

Based on its experiences.in the 1951-52 season, the Commission intends to proceed with future Improvements to its existing fire control organisation in terms of the following:

I) Intensified and regular training of field staff and employees in local fire control planning, pre-suppression and suppression work.

(ii) Training of a cadre of fire control specialists in the various fields of pre-suppression and suppression work, (fire danger and fire weather forecasting, public relations, equipment, communications, fire control planning, etc.).

(iii) The appointment to district staffs of officers experienced and trained in fire control work who will assist the 'District Forester in directing such work throughout the district.

(iv) Systematic coverage of fire control administrative units with fire maps, fire plans, etc.

(v) The planning and implementation of a systematic scheme of control burning over a period of years for each protection unit (individual forest or group of such' forests).

(vi) The determination and adoption of local time standards as an essential part of the fire control planning and suppression proposed for individual protection units.

(vii) Fire danger (including fire weather! rating and recording to be the subject of intensified central and local research.

(viii) Fire Spread and Behaviour studies to be instituted as research or other specialist staff is available

(ix) Improvements to existing fire equipment and the development of new equipment required for all stages of fire control work, from preliminary pre-suppression work to final mopping up. The range of this equipment covers items such as bulldozers, tractor-plow combinations, grading units, tankers, pumpers, radio and telephone kits, etc., in particular.

(x) Systematic extension of the existing lookout system to provide the greatest extent of "seen area" to' those localities of proven fire occurrence.

(xi) The Commission to extend its present service of reporting fires from lookouts, etc., to provide information to other firefighting, etc., organisations (governmental, bush fire, police, etc., authorities).

(xii) Further investigation into the uses of aircraft for scouting, transportation and other special uses in emergency.

(xiii) The planning and construction of forest road systems to meet the primary requirement of forest fire protection. Initial construction of roads into areas not yet accessible to provide for "stage" construction only the road standards being gradually improved as protection and management of these areas is intensified. In this way, limited funds available for construction to be spread over the greatest possible distance of roads to extend protection to the greatest possible area.

(xiv) To the extent that the financial position permits additional staff to be strategically deployed to provide fire protection facilities to areas not covered by existing facilities.

(xv) The formulation of co-operative fire protection agreements with other fire control authorities in New South Wales or in adjoining States, Territories, etc., covering the protection of Crown forests in such localities.

(xvi) Active co-operation with adjoining or neighbouring landowners in planning: and carrying out cooperative presuppression, reporting and suppression activities as and when necessary.

(xvii) Investigation into the extent of burning-off practices by grazing, etc., interests on State Forest areas and the more effective control of such practices by conditioning or eliminating the issue of Occupation Permits for grazing, etc.

(xviii) More effective co-operation by forest industries in minimising the risk of fire occurrence on State Forests, in reporting fire outbreaks and in actively assisting in fire suppression.

(xix) Means for the improved feeding of fire-fighting gangs, whether scattered or concentrated, to maintain the maximum efficiency of such gangs, with the least possible interruption to fire suppression.

(xx) Review of the provisions of the Forestry Act in regard to penalties applicable for breaches, neglect. etc., of precautions against the spread of the fire within State Forest areas.

(xxi) Co-operation with the Department of Agriculture in determining the merits, if any, of the periodic burning of ground vegetation (native grasses undergrowth etc.) on "marginal" areas of settlement.

Overall, these improvements were significant , practical, targeted key areas, included focus on mitigation, and demonstrated active ongoing lesson capture and implementation. Capture in the annual report straight after the bushfires demonstrated a very high level of ownership.

2.1.3 Other detail in relation to bushfire lesson capture by Forestry Commission

Other detail in relation to bushfire lesson capture by Forestry Commission following the 1951/ 52 bushfires are detailed in O'Donnell (2022) in Section 10 and include:

<u>Lessons learnt by Forestry Commission in regards to equipment:</u>

- *Earth-moving equipment in the form of bulldozers and graders, was given its first large-scale use in fire suppression because of its much more general availability and better serviceability than in previous years. Results were extremely successful particularly with medium graders and with tractors of up to 60 h.p. ……...Earth-moving equipment was used chiefly in the construction of fire breaks and lines, direct attack and in constructing access tracks for tankers and trucks.*
- *The Commission's sixty-five lookout towers or sites were mostly relied upon for fire detection but air-craft were used on several occasions for this purpose.*
- *Although pumps and tankers were used, for direct attack in many instances, this was not always possible. They were used extensively in rapid mopping up, in the control of spot fires and breakaways and to secure backburns. The rate of backburning was safely increased as more adequate control of hot spots and jump-overs was available with power equipment standing by. …… "La France" fire engines, because of their fast filling rate and high road speed were frequently used as water tenders to feed tankers and pumps on the fire line and ensure continuous supplies of water.*
- *Most districts reported adequate stocks of equipment for their needs. The limiting factor was probably the number of men and trained operators available. A considerable number of fire engines, pumps and supplies were despatched to different areas as the fire season progressed. These convoys drew heavily on the available pool of drivers and a number of clerical officers volunteered to assist in their movement and use of relief equipment.*

<u>Firefighting techniques used by the Forestry Commission:</u>

- There were improvements made in detection, earth breaks, attacking flanks of fires, fire access and machinery types used.
- It was noted that live hose reels using reinforced rubber hose would be fitted to all Forestry Commission tankers and slip-on units.
- *Under the circumstances officers had perforce to learn by experience the need for a planned attack with relays of reinforcements on major fires instead of unplanned battling to exhaustion. Logistics became a necessity. Valuable experience was gained in the use of pumping and earth-moving equipment.*

<u>Fuel and controlled burning:</u>

- As extracted from Forestry Commission “The Mangoplah Fire- 1951/ 2 fire season, Individual Fire Report”, fuel was abundant in both improved and timbered country.
- *In regards to forest areas across NSW, when the 1951-52 fire season had developed to a critical stage it was realised that the amount of controlled burning which had been carried out was insufficient to have reduced fuel to a really helpful degree.*
- *In those areas where controlled burning had been carried out prior to the fire season, Forestry Commission observed the extent of fire damage was generally less than on neighbouring untreated areas.*
- *Although the areas control burnt may not have been fully effective in stopping fires, it is generally agreed that they did afford valuable assistance in substantially reducing resistance to control.*
- *Despite improvements in fire control, provided there are heavy fuel loads and possible ignition sources, large fires will break out under conditions of extreme fire danger and will burn out of control for many hours. Under these circumstances any suppression technique is largely ineffective and the magnitude of the disaster can only be reduced by hazard reduction and fire protection measures undertaken at an individual level.*
- There are also important issues in regards to fuel loads in important road corridors, especially in regards to strategic fire control lines. It was noted that the wind did not abate sufficiently at night (24 January) to allow firefighters to bring the fire under control on the Hume Highway.

<u>Learnings in relation to planned bushfire attack and training:</u>

- As identified by the Forestry Commission: *The need for the complete training of staff became more than ever apparent as did the need for all phases of pre-suppression planning. Members of the staff now feel that they can deal better with any of the situations of an ordinary fire season, whilst they are equipped to organise against those of a major season.*

In conclusions, it is readily apparent that the NSW Forestry Commission learnt a lot of lessons from the 1951/ 1952 bushfires, captured these in their annual report and applied the lessons well into the future.

2.2 Late 1950's to 1970's fire mitigation refinements by the NSW Forestry Commission under Fire Prevention Schemes for unprotected areas at the time and other initiatives

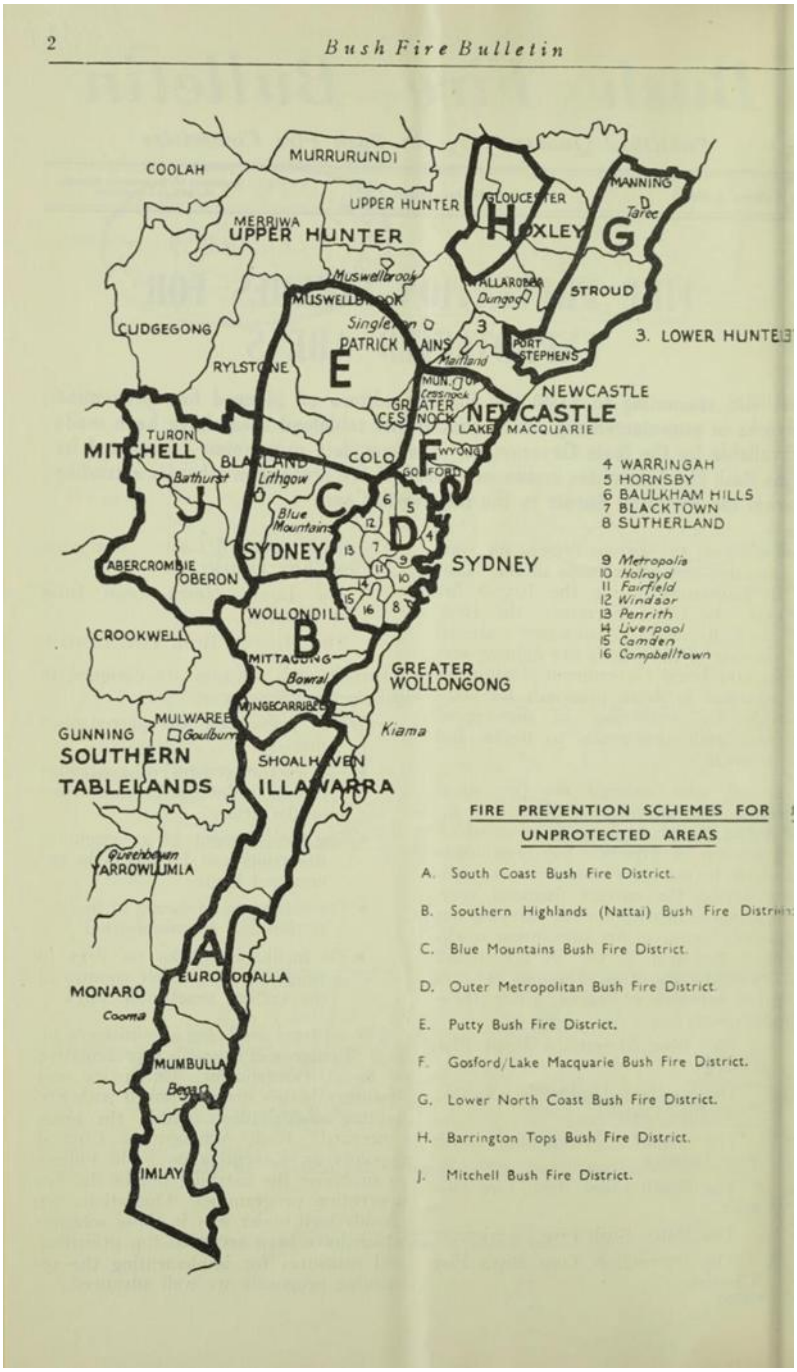
The NSW Forestry Commission continued the learning approach into the late 1950's, 60's and 70's.

As noted in a very good submission to the 2020 Bushfire Royal Commission by Robert John Williams NND.600.00025.01_0001, key points in the submission are extracted below:

- *From 1917 to 1997 the Forestry Commission of NSW (FCNSW), renamed State Forest of NSW (SFNSW) in 1993, had done all of the "heavy lifting" in fire management and bushfire control in NSW. It had not only been the main bushfire combat agency in NSW but had played an important role in developing State policy and legislation as well as providing experienced fire managers to manage the Fire Protection Associations; occupy the position of Chief Coordinator of Bush Fire Fighting established in 1970; and fill many of the Bush Fires Act section 41F and Section 17 emergency controller appointments from 1970 to 1990. This was achieved at little cost to the NSW Government as the revenue from timber harvesting, paid for the construction and maintenance of roads, fire trails, fire towers, prescribed burning and fire control. It was EFFECTIVE and was SELF FUNDED.*
- *Forester Harry Luke the FCNSW Fire Control Officer from 1946 to 1967 guided the development of the FCNSW fire policy and development of the NSW State policy and legislation. His philosophy on fire control was straight forward: cooperation, access and firebreaks. He believed in hazard reduction burning (HRB). This was the very successful model that was adopted by other Australian States.*

SETA (2021) outlines important detail in relation to hard won lessons almost forgotton:

A More Organised Approach to Bushfire Mitigation in NSW In NSW, there were large bushfires in south east NSW during 1951-52 and 1953-54. However, moves to undertake bushfire mitigation works on a large scale, including remote areas did not commence until late 1958, when 100,000 pounds ($200,000) was made available by the state government, to be used on planned fire prevention works in unprotected regions in coastal and tableland areas.7 Nine fire prevention schemes were established as shown on the map below.



Bushfire Prevention Schemes for Unprotected areas. Source SETA 2021.

Annual funding for an initial five year period, was committed, after serious fires in the Blue Mountains and other parts of the coast and tablelands in the summer of 1957-58. The schemes were designed to encourage controlled hazard reduction, develop a system of fire trails and fire breaks, set up fire detection and communication systems and facilitate early attack on fires in rough and inaccessible country.

The schemes were administered by local Management Councils representing Local Government Authorities and Statutory bodies linked with fire fighting bodies in each area. Local Councils and the NSW Forestry Commission, were the key agencies involved in administering the schemes. The layout of the nine schemes were based on surveys, carried out by the NSW Forestry Commission from 1954 to 1957.

More information on the fire prevention schemes is available in the link below:

https://nla.gov.au:443/tarkine/nla.obj-287432117

As further noted by SETA (2021) at over a decade of the schemes:

By 1970, there were 11 schemes and funding had been maintained at $200,000 per annum. In the first 5 year period up to 1963, 3,300 miles (5,300km) of fire trails had been constructed. By 1970, with funding continuing at about $200,000 each year, there were eleven schemes and the fire trail network had increased to 8,046 kilometers.8

Following the bad fire season of 1968-69, the focus was shifted from fire trail construction to more fuel reduction, particularly the use of fixed wing aircraft dropping capsules on a grid pattern over extensive areas of forest.

A legendary forester, Roy Free, wrote the initial Aero Aerial Hazard Reduction Plan for the Hume Snowy Bushfire Prevention Scheme in 1968, covering of the order of 800,000 hectares of land in the Kosciusko area of Southern NSW. This scheme was managed by forestry. As noted by Roy, the Hume Snowy Bushfire Prevention Scheme lasted for 30 years and was closed in 1986. Roy's submission to the 2003 Bushfire Inquiry is outlined in the A Nation Charred: Report on the inquiry into bushfires House of Representatives Select Committee into the recent Australian bushfires 23 October 2003 Canberra (Nairn Inquiry). It is a very important reference work, outlining the case of the Hume Snowy Bushfire Prevention Scheme, where a scientific and effective approach lost out, to the loss of NSW, the fauna in the forests and people impacted by those very large 2003 over much of Kosciusko and follow up bushfires in 2019/ 20.

The authors considers that the fire prevention schemes were successful, including expanded fire trails, fire breaks, prescribed burning, set up fire detection and communication and facilitate quick bushfire attack. The local fire administration was an added plus.

There are certainly huge areas of unprotected areas in NSW where such schemes could be used.

Unfortunately, most of the bushfire lessons were lost by the late 1970's, including effective fire fuel mitigation, down to paltry levels in NSW. Disastrous intense, severe and long duration bushfires are the new norm, a very poor outcome. Community and fire fighter safety is a massive ongoing concern.

2.3 Current preparedness and mitigation activities in SE Australia, including NSW

O'Donnell (2025) outlines major concerns in relation to current bushfire preparedness across SE Australia. Only 4.3 per cent of the NSW forested landscape has received fuel treatment over the last seven years, this is extremely low and inadequate to reduce bushfire areas and risks to communities, firefighters, ecosystems, threatened species, protected areas and sites heritage sites. This seven year outcome represents an average of 0.6 per cent of forests having fuel treatment per year.

Over time, shortfalls and inadequate fuel reduction add up and result in build-up of very high fuel loads and strata across contiguous landscapes. This was a critical factor behind the extent, intensity and duration of the 2019/ 20 megafires across SE Australia.

O'Donnell (2024) provides further detail in relation to assessment of fire management across south east Australia, including concerns, consequences, costs and opportunities. There are many opportunities that need to be captured and adopted.

3 Conclusions

Of all the major bushfires in Australia's history, the author believes that the 1952 NSW bushfires was an important "teaching event" in the history of bushfire management in Australia.

As outlined in Sections 2.1 and 2.2, a large number of very important lessons were learnt in and following the 1952 NSW bushfires; including training, mapping, systematic control burning, improved fire danger rating, improved fire spread and behaviour research, improvements to existing fire equipment and lookouts, further investigation into the uses of aircraft for scouting, transportation and other special uses in emergency, the planning and construction of forest road systems to meet the primary requirement of forest fire protection, the formulation of co-operative fire protection agreements with other fire control authorities in New South Wales or in adjoining States, Territories,

etc., covering the protection of Crown forests in such localities, active co-operation with adjoining or neighbouring landowners in planning: and carrying out cooperative presuppression, reporting and suppression activities as and when necessary, improved feeding of fire-fighting gangs, whether scattered or concentrated, to maintain the maximum efficiency of such gangs, with the least possible interruption to fire suppression and other measures.

Important lessons were captured in relation to the optimisation of bushfire suppression equipment, radio communications; firefighting techniques used by the Forestry Commission and learnings in relation to planned bushfire attack and training and other lessons.

Following the bad fire season of 1968-69, the focus was shifted from fire trail construction to more fuel reduction, particularly the use of fixed wing aircraft dropping capsules on a grid pattern over extensive areas of forest.

By 1970, there were 11 schemes and funding had been maintained at $200,000 per annum. In the first 5 year period up to 1963, 3,300 miles (5,300km) of fire trails had been constructed. By 1970, with funding continuing at about $200,000 each year, there were eleven schemes and the fire trail network had increased to 8,046 kilometers.8

The lesson capture was effective in relation to better protecting communities and fire fighters, but sadly didn't last. The 1952 NSW bushfires were an important case study for how bushfire was understood, managed, and mitigated in the decades that followed, but unfortunately did not last past the late 1970's.

O'Donnell (2025) outlines major concerns in relation to current bushfire preparedness across SE Australia. Only 4.3 per cent of the NSW forested landscape has received fuel treatment over the last seven years, this is extremely low and inadequate to reduce bushfire areas and risks to communities, firefighters, ecosystems, threatened species, protected areas and sites heritage sites. This seven year outcome represents an average of 0.6 per cent of forests having fuel treatment per year.

Over time, shortfalls and inadequate fuel reduction add up and result in build-up of very high fuel loads and strata across contiguous landscapes. This was a critical factor behind the extent, intensity and duration of the 2019/ 20 megafires across SE Australia. O'Donnell (2024) highlights that there are many opportunities that need to be captured and adopted.

Acknowledgements

Comments by Phil Cheney, Robert Onfray and Neil Burrows as part of the preparation of this review were greatly appreciated by the author.

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Williams RJ (2020) Submission to the 2020 Bushfire Royal Commission by Robert John Williams NND.600.00025.01_0001

Annexure 1. Broad identified bushfire improvements (and lessons) captured following the 1951/ 1952 bushfires across NSW by the Forestry Commission

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Fuel and controlled burning:

- As extracted from Forestry Commission "The Mangoplah Fire- 1951/ 2 fire season, Individual Fire Report", fuel was abundant in both improved and timbered country.
- *In regards to forest areas across NSW, when the 1951-52 fire season had developed to a critical stage it was realised that the amount of controlled burning which had been carried out was insufficient to have reduced fuel to a really helpful degree.*
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- *Despite improvements in fire control, provided there are heavy fuel loads and possible ignition sources, large fires will break out under conditions of extreme fire danger and will burn out of control for many hours. Under these circumstances any suppression technique is largely ineffective and the magnitude of the disaster can only be reduced by hazard reduction and fire protection measures undertaken at an individual level.*
- There are also important issues in regards to fuel loads in important road corridors, especially in regards to strategic fire control lines. It was noted that the wind did not abate sufficiently at night (24 January) to allow firefighters to bring the fire under control on the Hume Highway.

Learnings in relation to planned bushfire attack and training:

- As identified by the Forestry Commission: *The need for the complete training of staff became more than ever apparent as did the need for all phases of pre-suppression planning. Members of the staff now feel that they can deal better with any of the situations of an ordinary fire season, whilst they are equipped to organise against those of a major season.*

In conclusions, it is readily apparent that the NSW Forestry Commission learnt a lot of lessons from the 1951/ 1952 bushfires, captured these in their annual report and applied the lessons well into the future.