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Defending our
National Parks

10th February 2020

Submission to the NSW Bushfires Inquiry

by Park Watch NSW – Ross Constable

Preamble

Park Watch NSW (PW) thanks the NSW Government for the opportunity to contribute to this important inquiry and respectfully provides the following submission based on the inquiry's Terms of Reference (ToR) that are considered relevant to the management and suppression of fire in NSW national parks.

PW is a small organisation comprised of former NSW National Parks and Wildlife Service (NPWS) employees who are concerned about the rapid increase of external threats to the NSW national park system and the organisation that manages it; the NSW National Parks and Wildlife Service (NPWS).

Many PW members, including the undersigned were employed by the NPWS as Rangers, Area and Regional Managers, all of which encompassed professional firefighting, incident and fire management roles. Each have gained many decades of experience in those roles at state, national and international levels and were instrumental in developing science based fire management plans across NSW national parks.

The extraordinary 2019/20 bushfire events offers the NSW Government and this inquiry a once-in-a-generation opportunity to determine what was done well and what needs to be improved in all aspects of landscape fire management, detection, response, suppression and recovery. This opportunity is especially relevant given the advances in landscape fire science, firefighting equipment, training, technology and incident management. These advances provide the inquiry with the means no previous inquiry or Royal Commission has had; and that is to provide the NSW Government and fire authorities with evidence based, best practice fire management and suppression recommendations.

Bushfire is a natural event within the Australian biota and is a complex 'driver' of evolutionary processes and biodiversity within natural ecosystems. However, landscape fire research has revealed 232 years of European based attempts to mitigate fire in NSW has changed the structure of many forest types and not reduced bushfire intensity (Bentley and Penman 2017). These changes have, in some forest classifications increased forest flammability which will continue to increase if the present scale and frequency of fuel hazard reduction (HR) burning is maintained and increased, especially within NSW national parks (Zylstra 2018).

Given the complexity of the fire/landscape inter-relationship and the priority to protect human life and property, Park Watch supports hazard reduction (HR) burning in a strategic Asset Protection Zone (APZ) context.

In regard to maintaining and increasing the scale and frequency of HR burning in NSW, PW urges inquiry members to fully consider and apply the latest landscape fire management science to its recommendations, especially those relevant to managing landscape fuels on the NSW national park estate. To do otherwise and apply the populist 'burn-more' approach will not only increase NSW landscape flammability across many forest classifications, it will accelerate the already high species extinction rate in NSW, cause ecological collapse and severely degrade NSW water catchment quality.

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Submission

ToR 1. Causes of, and factors contributing to, the frequency, intensity, timing and location of, bushfires in NSW in the 2019-20 bushfire season, including consideration of any role of weather, drought, climate change, fuel loads and human activity

1.1 Cause/s and ignition points

Rural Fire Service (RFS) fire records indicate there are 4 causes of wildfire in NSW: men, women, children and lightning.

The same fire records prove the primary cause of the 2019-20 bushfires was due to positive lightning strikes from about October 2019 onwards with only 2% of all fires that occurred in the 2019/20 fire season ignited by arsonists.

Australian Bureau of Meteorology (BoM) data and fire mapping data sighted by PW indicates the following factors contributed to 2019-20 fire frequency

a) Positive lightning strikes caused by dry storm activity across the state, especially along the higher elevations of the Great Dividing Range.

b) Long distance spotting, sometimes recorded as separate fires, caused by unprecedented fire intensity.

c) Long distance spotting from backburning operations across containment lines and through suppression resources.

Recommendation 1.1

Given the high number of escaped ground and aerially ignited backburns during the 2019-20 bushfires, the use of fire (backburning) as a suppression tool to control high intensity bushfires should be critically reviewed by the inquiry.

1.2 Fire intensity

BoM data indicates the 2019/20 extreme fire intensity was due to high fuel availability brought about by unprecedented low soil, forest and grassland fuel moisture, high temperature, wind velocity and periods of very low relative humidity, day and night. Unfortunately, many political commentators, including some in the media saw the cause for the extreme fire season being 'accumulated fuel loads'

Recommendation 1.2

The NSW Department of Education and RFS to develop and deliver a 'Fire in the Australia Biota' learning package for secondary school students and NSW communities. The package to incorporate the basics of fire and its important inter-relationship with the natural environment, biodiversity, forest flammability and water catchment quality. It should also include a basic understanding of bushfire physics, landscape fire management and suppression in order to minimise public confusion that presently exists in regard to fire management and suppression.

1.3 Timing of the bushfires

The 2019-20 bushfire season moved north to south as it usually does in the Australian eastern states. However, this season saw a highly unusual situation where very active fire fronts occurred from border to border. This extent of fire required fire authorities to spread fire resources north and south, instead of being able to focus resources to one region of the state, as has occurred in past seasons. In early January, this resourcing issue became very apparent with aircraft availability.

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Recommendation 1.3

That a national approach be developed to determine and act-on medium term drought/fire season prediction and movement modelling across Australia which would drive the strategic acquisition, sharing and positioning of critical resources according to season movement and fire activity.

1.4 Location of the bushfires

RFS positive lightning strike data sighted by PW indicated the location of the fires was due to the occurrence of lightning from dry storm events from about October 2019 onwards that formed along or near the higher elevations of the Great Dividing Range.

RFS/NPWS fire records indicate over 40% of all 2019/20 NSW fires started on private property, including agricultural lands. The same records show only 12.5% of the 2019/20 fires started on and escaped from NSW National Park estate.

PW accepts that NSW fire resources were thinly stretched across NSW. However, based on observations by PW a number of fires, such as the Badja/Tuross Falls fires were not detected until the optimum window for initial attack had long passed.

Recommendation 1.4

The inquiry to investigate the extent, accuracy and plotting capability of existing land based, positive lightning strike detection and the use of high resolution, satellite thermal sensing technology for all fire authorities.

1.5 The role of weather, drought and climate change

According to BoM, a decade of severe drought, culminating in a long, hot dry 2019-20 summer was the most significant 'driver' in regard to the intensity and scale of the bushfires. Drought, underpinned by climate change essentially made higher quantities of existing fuel available to fire, which is supported by the following data:

a) BoM records show 2019 was the hottest recorded year since official weather recording began in 1900. Penrith, NSW Australia also recorded the hottest temperature on Earth (48.9°C) in December 2019.

b) The NSW Combined Drought Indicator (CDI) was in long term, severe drought range across most of the state, mostly due to a blocking of the Indian Ocean Dipole (monsoon season).

c) The Keetch-Bryam Drought Index (KBDI) was in the high ranges across most of NSW for successive years in the last decade. The KBDI indicates soil dryness, forest fuel moisture and is an important indicator of fire danger.

d) The long term prevalence of high inland temperatures recorded by BoM over the last 10 years that were continually moved into eastern Australia by westerly air streams.

e) NPWS firefighters observed little to no diurnal variation in fire ground relative humidity or soil/fuel moisture which maintained a continuous high fire intensity and movement.

f) The BoM recorded the highest number of pyro-cumulus events across NSW during the 2019-20 fire season. Many of these events occurred in the early hours of the morning, which is unprecedented in NSW.

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Recommendation 1.5

The NSW Government must address the symptoms of climate change (severe drought, catastrophic bushfire and weather events) by adaptation. In doing so, it must accept that adaptive measures have practical limits. This acceptance will require the underpinning causation (human induced climate change) to be considered and managed as a state, national and global emergency. This reality must be emphasised in the inquiry's recommendations. To do otherwise and not effectively address climate change, means severe drought, more 2019/20 fire seasons and other catastrophic symptoms will be imposed in intensified form, on future generations.

1.6 Fuel loads

Many who have commented the 2019-20 fires call for an increase in the scale and frequency of HR burning in NSW, especially within NSW national parks. On the other hand, many landscape fire scientists conclude that frequent, broad area HR burning increases flammability, causes eventual ecological collapse and degradation of soils and water catchments in some forest classifications. The inquiry must examine the effectiveness of broad area and strategically located Asset Protection Zone (APZ) fuel management against the best available science (Zylstra 2018).

There is compelling evidence that supports the claim that broad area HR burning completed within 12 months of the 2019-20 fires had little to no effect on fire intensity or movement (See map below).

Recommendation 1.6

That the NSW Bushfires Inquiry investigates the claims that NSW forest fuel loads have increased above scientifically accepted forest fuel deposition curves and, compares the fire mitigation effectiveness of broad area and APZ based fuel management when the latter is located close to 'at-risk' assets.

1.7 Human activity and the effectiveness of broad HR burning

The human management of forest fuels conducted over the 10 years to 2019 in NSW saw the amount of hazard reduction (HR) burning more than double (2.3 times) the burning conducted in the decade before. Even with this doubling there is little to no evidence indicating any of the 2019/20 fire events were stopped or significantly reduced in intensity at the height of their intensity by HR burning (RFS public fire mapping. RFS Commissioner's comments to the media 2020).

The 2019-20, 315,512 hectare Badja fire started on Forestry land and later joined with the Tuross Falls fire which started in Wadbilliga National Park.

The ineffectiveness of broad area HR burning is clearly evidenced in the aerial photo (below) which covers a 220^2km section of the NSW Eastern Escarpment, 40kms east of Narooma. The area includes, Badja State Forest, Deua and Wadbilliga National Parks and the rural inholdings known collectively as 'Belowra', (shown at centre). All of the land shown in the photo, except for small mature, old growth forest sections of Wadbilliga and Deua National Parks were burnt by the Badja fire. (Six-Maps 2020).

The yellow lines shown on the map approximate the boundaries and areas of several, broad area HR burns conducted by the NPWS within the Wadbilliga and Deua National Park areas shown during the 7 years to 2018. Two of these areas were burnt previously by the author in 2010. At least one of the western burns was conducted in 2018. The GIS shape fire data used as the basis for the burn areas shown was obtained from a public domain source (SEED PORTAL 2020).

Based on publicly available fire mapping information and on-ground observations by PW, none of these burns had any observable effect on the movement or intensity of the Badja fire. Tragically, three persons died as a result of this fire, not to mention the destruction of many homes and outbuildings.

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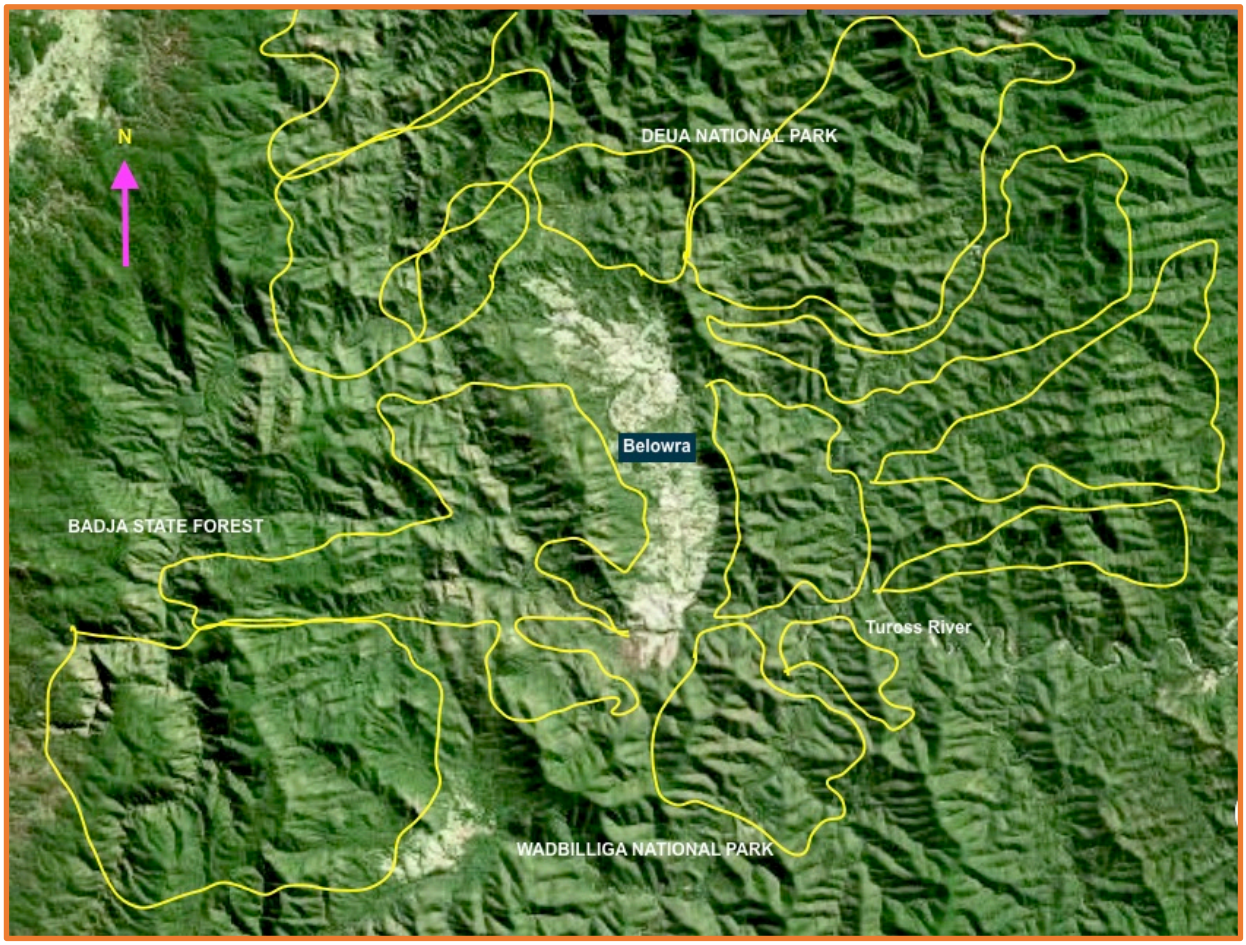

Between 50-75% of all burning in NSW was conducted by the NPWS in the decade before the 2019-20 bushfires despite the fact NPWS manages only 9% of the NSW land area. This 'focus' on burning NSW national parks has to be seriously questioned given fire records indicate over 40% of all 2019/20 fires in NSW started on other fire prone land tenues and burnt into and/or through NPWS estate (RFS/NPWS records)

Recommendation 1.7

That the inquiry investigates the extent and frequency of HR burning on NSW national parks in the last 10 years and its effectiveness as a fire mitigation tool.

The investigation should also consider all 2019-20 fire ignition points in relation to the extent and frequency of fuel management across all land tenues in NSW.

That broad area HR burning must not be increased in NSW national parks until its effectiveness as a fire mitigation tool has been scientifically established and compared to the effectiveness of strategically located APZs located close to NSW 'at-risk' assets across all land tenues.

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ToR 2. The preparation and planning by agencies, government, other entities and the community for bushfires in NSW, including current laws, practices and strategies, and building standards and their application and effect

2.1 Current laws

The *Rural Fire Service Act 1997 No.65,* Section 66 and Section 66 Notice process requires reviewing. The review should consider the requirement of (private) land owners adjoining Crown or managed lands to use fire for the purpose of joint '*bushfire hazard reduction work*", especially within APZs where similar fuel types exist across both land tenues.

Recommendation 2.1

Section 66 and the Section 66 Notice process within the Rural Fires Service Act be reviewed in order to allow more effective 'cross-tenue' fire management activities to occur especially where broad APZ based fuel reduction is required across remote land tenue that does not have hard control line/s on their boundaries.

2.2 Practices (landscape fuel management)

Park Watch NSW supports the continuation of HR burning as one small component of the state's fire mitigation strategy in the form of strategically located APZ within all fire prone land tenues, not just national park estate.

Park Watch NSW also supports and encourages the continuation of scientifically based, broad area prescribed burning within NPWS estate (outside of APZs) by the NPWS using best ecological burning practices with the aim to improve biodiversity, maintain water catchment quality and minimise forest flammability.

Park Watch NSW can find no published evidence that the 2019-20 fires were the result of increased forest or grass fuel loads in NSW. The intensity of the bushfires was due to an increase in fuel availability.

Park Watch NSW does not support an increase in frequent, broad area HR burning in NSW national parks for the following reasons:

a) Landscape flammability science indicates frequent, broad area HR burning increases flammability, reduces fire tolerance and resilience with many forest vegetation regimes, especially mature, old growth forests. It also contributes to species extinction and severely impacts biodiversity, soil and water catchment quality (Zylstra 2018).

b) The longer bushfire seasons, narrower HR burn windows may also have a significant impact on public health in NSW and Australia.

Park Watch NSW considers the present hectare-based HR burning targets are a poor indicator of the actual percentage of available fuel reduced by HR burning within given areas of the NSW landscape. All HR burn performance indicators must be based on ground-truthed, pre and post-burn fuel assessments and modelling to better understand and risk manage landscape fuels.

RFS fire records clearly indicate landscape fuel management responsibility should not be focused just on NSW public managed lands. Nor should NSW national parks be used as an easy-means to meet the hectares burnt performance targets. Landscape fuel management, especially within the APZ context is an 'all-land-tenure/owner' responsibility and a means to integrate APZs with the multitude of other bushfire mitigation measures available across NSW.

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Recommendation 2.2

HR burning in NSW national parks must be restricted to APZ. There should be an increased emphasis on science based, broad area ecological burning in NSW national parks with the aim of increasing biodiversity, maintaining water catchment quality and minimise landscape flammability.

The NSW HR burning hectare based performance indicator be changed to percentage of post-burn fuel availability or, residual risk based indicator.

All NSW rural land owners and land managers must be encouraged to participate in the state's Bushfire Risk Management Planning processes via their local Bushfire Management Committees.

2.3 Preparation by other entities (utilities)

PW was appalled at the complete and repetitive failure of the NSW grid power, telephone (land and mobile), TV and emergency radio (ABC South East) services across the NSW Far South Coast during the 2019-20 bushfires. These failures limited the communication to and from fire impacted communities and all emergency services in evacuation, community support and fire suppression efforts. Concern is also held for the privatised utility companies' inability to plan for and risk manage such events and 'harden' and/or build redundancy into their infrastructure that supports public disaster and emergency information services at times when they are needed the most.

Recommendation 2.3

NSW utility companies (power and telephone) be required, by legislation if necessary, to significantly 'harden' or build redundancy into their infrastructures across all bushfire prone areas within NSW.

2.4 Building standards

Building asset and landscape based fuel connectivity can occur in three ways:

a) Ember attack.
b) Radiated heat.
c) Direct impingement of flame.

Building asset and landscape fuel connectivity may be reduced and/or broken in four ways:

a) Physically reducing or eliminating the landscape fuels within close proximity APZs.
b) Physically distancing the asset from landscape fuels.
c) Thermal hardening of the asset by building design, construction and building materials.
d) By direct (on-site) fire suppression.

Recommendation 2.4

NSW local government's regulations regarding urban bush-interface and rural building set-back distances from landscape fuels needs to be significantly increased to cater for increased future fire intensity. The setback areas to be cleared, grassed and interspersed with appropriate trees species to act as ember filters and windbreaks to reduce fire generated wind velocity.

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ToR 3. Responses to bushfires, particularly measures to control the spread of the fires and to protect life and property

Despite the massive amount of discussion and commentary on the 2019/20 fires, very little has been mentioned about the significant benefits associated with the early fire detection and initial attack (IA) of bushfires.

3.1 Initial attack (IA) as a means to control the spread of fire

Publicly available RFS line scan mapping revealed the spread of the fires on the Great Dividing Range may be attributed to their remote locations, delayed detection, slow or nil initial attack response/s and lack of specialised resources needed for remote area fire suppression operations.

Remote area, aircraft based, IA firefighting is a highly specialised, high risk form of fire suppression originally pioneered in NSW by the NPWS. IA operations need to be undertaken by professional officers due to the high levels of training, currency and physical fitness required.

There is already approximately 400 Remote Area Fire Team (RAFT) and Rapid Aircraft Response Team (RART) qualified staff in the NPWS who have unique terrain familiarity, allied skills and knowledge, gained via their management of NSW national park remote areas to perform this type of firefighting.

IA is not considered a suitable role for volunteer firefighters given the arduous, high-risk nature of the work, high levels of physical fitness and skills currency requirements needed to maintain competency.

In order to be effective, IA must be well resourced, closely supported by water bombing aircraft and coordinated at state and regional levels. Effectiveness also directly relates to response; ie: time from fire ignition, to detection, to on-site attack; which will largely depend on the density and location of IA teams across NSW (Plucinski, McCarthy, Hollis, Gould 2011 et.al).

Recommendation 3.1

The inquiry to examine whether IA could have been an effective means of fire suppression during the 2019-20 fires, if resources were available.

The existing capacity of NPWS professional RAFT and RART should be significantly increased within the NPWS given their allied skills, knowledge and experience.

ToR 4. Other matters

The lack of evidence supporting the claims that the introduction of salvage logging in NSW national parks will mitigate fire.

Recommendation 4.1

'Salvage logging' must not be permitted in any NSW national park as there is no evidence supporting the claim this practice mitigates fire impact or intensity in forested areas.

The lack of evidence supporting livestock grazing in NSW national parks, or in any other forested area as a means to mitigate fire.

Recommendation 4.5

The grazing of livestock must not be permitted in any NSW national park as there is no evidence supporting the claim this practice mitigates fire impact or intensity.

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List of Recommendations to the NSW Bushfires Inquiry by Park Watch NSW

ToR 1. Recommendations

1.1 *Given the number of escaped backburns during the 2019-20 bushfires, the use of fire (backburning) as a suppression tool to control high intensity bushfires should be critically reviewed by the NSW lead bushfire authority, NSW Rural Fire Service.*

1.2 *The NSW Department of Education and RFS to develop and deliver a 'Fire in the Australia Biota' learning package for secondary school students and NSW communities. The package to incorporate the basics of fire and its important inter-relationship with the natural environment, biodiversity, forest flammability and water catchment quality. It should also include a basic understanding of bushfire physics, landscape fire management and suppression in order to minimise public confusion that presently exists in regard to fire management and suppression.*

1.3 *That a national approach be developed to determine medium term drought/fire season prediction and movement modelling across Australia which would drive the strategic acquisition, sharing and positioning of critical resources according to season movement and fire activity.*

1.4 *The inquiry to investigate the extent, accuracy and plotting capability of existing land based, positive lightning strike detection and the use of high resolution, satellite thermal sensing technology for all fire authorities.*

1.5 *The NSW Government must address the symptoms of climate change (severe drought, catastrophic bushfire and weather events) by adaptation. In doing so, it must accept that adaptive measures have practical limits. This acceptance will then require the underpinning causation (human induced climate change) to be considered and managed as a state, national and global emergency. This reality must be emphasised in the inquiry's recommendations. To do otherwise and not effectively address climate change, means severe drought, more 2019/20 fire seasons and other catastrophic symptoms will be imposed in intensified form, on future generations.*

1.6 *That the NSW Bushfires Inquiry investigates the claims that NSW forest fuel loads have increased above scientifically accepted forest fuel deposition curves and, compares the fire mitigation effectiveness of broad area and APZ based fuel management when the latter is located close to 'at-risk' assets.*

1.7 *That the inquiry investigates the extent and frequency of HR burning on NSW national parks in the last 10 years and its effectiveness as a fire mitigation tool.*

The investigation should also consider all 2019-20 fire ignition points in relation to the extent and frequency of fuel management across all land tenues in NSW.

That broad area HR burning must not be increased in NSW national parks until its effectiveness as a fire mitigation tool has been scientifically established and compared to the effectiveness of strategically located APZs located close to NSW 'at-risk' assets across all land tenues.

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ToR 2. Recommendations

2.1 *Section 66 and the Section 66 Notice process within the Rural Fires Service Act be reviewed in order to allow more effective 'cross-tenue' fire management activities to occur especially where broad APZ based fuel reduction is required across remote land tenue that does not have hard control line/s on their boundaries.*

2.2 *HR burning in NSW national parks must be restricted to APZs. There should be an increased emphasis on science based, broad area ecological burning in NSW national parks with the aim of increasing biodiversity, maintaining water catchment quality and minimise landscape flammability.*

The NSW HR burning hectare based performance indicator be changed to percentage of post-burn fuel availability or, residual risk based indicator.

All NSW rural land owners and land managers must be encouraged to participate in the state's Bushfire Risk Management Planning processes via their local Bushfire Management Committees.

2.3 *NSW utility companies be required, by legislation if necessary, to significantly 'harden' or build redundancy into their infrastructures across all bushfire prone areas within NSW.*

2.4 *NSW local government's regulations regarding urban bush-interface and rural building set-back distances from landscape fuels needs to be significantly increased to cater for increased future fire intensity. The setback areas to be cleared, grassed and interspersed with appropriate trees species to act as ember filters and windbreaks to reduce fire generated wind velocity.*

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3.1 *The inquiry to examine whether IA could have been an effective means of fire suppression during the 2019-20 fires, if resources were available.*

The existing capacity of NPWS professional RAFT and RART should be significantly increased within the NPWS given their allied skills, knowledge and experience.

ToR 4. Recommendations

4.1 *'Salvage logging' must not be permitted in any NSW national park as there is no evidence supporting the claim this practice mitigates fire impact or intensity in forested areas.*

4.2 *The grazing of livestock must not be permitted in any NSW national park as there is no evidence supporting the claim this practice mitigates fire impact or intensity.*

END OF SUBMISSION

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RFS Fires Near Me app. fire mapping & data 2019-20
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