Submission No 36

INQUIRY INTO PLANNING SYSTEM AND THE IMPACTS OF CLIMATE CHANGE ON THE ENVIRONMENT AND COMMUNITIES

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Planning system and the impacts of climate change on the environment and communities.
Submission by John O'Donnell 1 November 2023

1 Introduction and TOR

That Portfolio Committee 7 inquire into and report on how the planning system can best ensure that people and the natural and built environment are protected from climate change impacts and changing landscapes, and in particular:

(a) ***developments proposed or approved****:*

(i) in flood and fire prone areas or areas that have become more exposed to natural disasters as a result of climate change,

(ii) in areas that are vulnerable to rising sea levels, coastal erosion or drought conditions as a result of climate change, and

(iii) in areas that are threatened ecological communities or habitat for threatened species

(b) ***the adequacy of planning powers and planning bodies****, particularly for local councils, to review, amend or revoke development approvals, and consider the costs, that are identified as placing people or the environment at risk as a consequence of:*

(i) the cumulative impacts of development,

(ii) climate change and natural disasters,

(iii) biodiversity loss, and

(iii) rapidly changing social, economic and environmental circumstances

(c) ***short, medium and long term planning reforms that may be necessary to ensure that communities are able to mitigate and adapt to conditions*** *caused by changing environmental and climatic conditions, as well as the community's expectation and need for homes, schools, hospitals and infrastructure*

(d) alternative regulatory options to increase residential dwelling capacity where anticipated growth areas are no longer deemed suitable, or where existing capacity has been diminished due to the effects of climate change

(e) any other related matters

Areas marked in bold are the main areas I have submitted on under the headings below.

2 Bushfire safety, people, communities and preparedness

Before this submission responds to the individual TORs, it is important to consider key issues in **relation to bushfire safety, people, communities and preparedness:**

2.1 Current poor land and fire management increasing community disasters

Prescribed burning programs are at very low levels in all states except WA, often of the order of 1-2 % of forested areas per year. The current inadequate prescribed burning policy and implementation environment reinforces a shift towards more widespread high intensity fire regimes in the same areas where prescribed fires are restricted. In addition, the focus on suppression of bushfires, often at the expense of mitigation, exacerbates this problem.

As a consequence, **large and intense bushfires have mega social, economic and environmental impacts and can travel across landscapes over long distances, devasting communities, large areas, ecosystems and flora and fauna, including over 17 million hectares during the 2019/ 20 Australian bushfires.** These 2019/ 20 bushfires were also very costly, estimated by AccWeather to be $110 billion in terms of total damage and economic loss. These large and intense bushfires have social, economic and environmental impacts, including massive impacts on greenhouse gas storage and emissions.

The photograph below clearly highlights the massive impact of intense bushfires, including on long term greenhouse gas storage and release over very long periods. This photo isn't atypical, I have far worse.

Photograph. South of Tumbarumba in August 2022, 2.5 years after the 2019/ 20 bushfires, highlighting the massive impact of these bushfires, including on tree death, understorey fuels, greenhouse gas storage and release over very long periods.

2.2 Inadequate fire and bushfire risk and mitigation and consequent impacts on communities

There have been a very large number of bushfires in Australia's history. In relation to the disastrous 2019/20 bushfire season, as noted in the paper Filkov et al. (2020):

… A total of 18,983,588 hectares were burned, 3,113 houses and 33 lives lost in 15,344 bushfires in Black Summer fires; and

Damage from the bushfires is estimated to have had a $20 billion impact to the economy, greatly exceeding the record A$4.4 billion set by 2009 Black Saturday fires.

Most of these bushfire areas were located in south eastern Australia.

There are many important risk and mitigation issues in relation to fire and bushfire management in south eastern Australia:

- There is a poor consideration of the fuel load issue across forests and actual forest fuel loads in forests, at very high levels, strata and heights and increasing. There is inadequate action addressing the fuel load issue and reducing community, infrastructure and fauna impacts from bushfires.
- There is totally inadequate funding, focus and commitment for reducing fuel loads, undertaking prescribed burning, forest thinning and community protection. There is inadequate state funding for prescribed burning and minor federal funding to increase prescribed burning, noting areas of prescribed burning are very small and decreasing and communities are at risk.
- There have been losses of bushfire skills over the last 30 years. This applies with bushfire control, backburning, prescribed burning and in some cases the use of aircraft in prescribed burning.
- Many communities have limited fire mitigation with inadequate bushfire protection.
- There is little active community involvement in fire management across Australia, only in a small number of cases. The bushfire impacts on towns and cities across Australia has been large over long period. Major investment in avenues such as the fire adapted communities, firewise, local fire safe councils is important to increase community safety.
- In a number of local government areas there has been limited funding and, in some cases, will to resolve fire issues and mitigation.

- Risks at each location vary and solutions will vary depending on extent of the bushfire problem, extent of impacts, funding, extent of mitigation opportunities and community input to solutions.
- Improved bushfire protection opportunities and approaches to protect communities need to be tabled for each town and city and discussed with each community and then at state and federal levels.
- Focus on low intensity burning for protection of towns and cities at the expense of landscapes is increasing the bushfire problem with long run fires across landscapes.
- Bushfire insurance costs are going up.
- Infrastructure protection from bushfires is a sleeping disaster area.
- There is limited funding and actioning for improving resilience in Australia's forests and protecting communities. There is generally very poor actioning in regards to forest health and the decline of forest health across Australia's forests, mild fire is an important component of improving forest health and setting up healthy and landscapes.

There are many barriers and restrictions to the use of low intensity prescribed and ecological maintenance burning in south eastern Australia, further increasing bushfire risks to communities and the same ecosystems where low intensity fire is restricted. Barriers occur within the following category areas, including funding: community and infrastructure; risk management; expertise; advice source; bureaucracy and leadership and on the ground barrier issues in need of resolution. It is important to consider barriers in optimising low intensity burning programs in south eastern Australia in order to optimise fire management.

One state leads the way in regards to undertaking low intensity burning of forested areas. As outlined in The Truth About Fuel Reduction Burning on the Bush Fire Front website, the graph below is the result, not of junk science modelling, but of real data gathered from almost 60 years of historical data from the forests of south west WA. These data unequivocally show that when the area of prescribed burning trends down, the area of uncontrolled bushfires (wildfires) trends up. There is a simple explanation: bushfires are more difficult to put out in long unburnt, heavy fuels. The area annually burnt by bushfire escalates exponentially when the area of prescribed burning in a region falls below 8 percent per annum. Burning about 8% per annum results in about 40 % of bushland carrying fuels 0 to 5 years old.

In conclusion, it is essential that we allocate greater funding to bushfire mitigation to reduce the extent of bushfire risks and crises, and consequent need for disaster resources. This includes prescribed burning and forest thinning, as widely used in the US. The Disaster Ready Fund (DRF) of $1 billion dollars over the next five years to improve Australia's resilience and reduce the risk of natural disasters is not adequate to address this massive fuel load issue.

In addition, expanding the prescribed burning program to 8 % of forests per year provide a great training and expertise program that can be used in major bushfire crises where they occur.

3 Key submission points

3.1 (a) Developments proposed or approved natural and built environment protection (i) in flood and fire prone areas or areas that have become more exposed to natural disasters as a result of climate change

I have addressed four points here.

3.1.1 Effectively use mild fire to protect communities

There is clear evidence from around the world that megafires, forest decline, pestilence and loss of biodiversity are consequences of lack of ecological maintenance by gentle fire. Healthy and safe forests are extremely resilient to drought, and much less affected by megafires and pestilence. As a result of government policies, there are hardly any left.

One example is from WA. As outlined in **"The Truth About Fuel Reduction Burning" on the Bushfire Front website, real data gathered from almost 60 years of historical data from the forests of south west WA, the data unequivocally shows that when the area of prescribed burning trends down, the area of uncontrolled bushfires trends up.** There is a simple explanation: bushfires are more difficult to put out in long unburnt, heavy fuels. The area annually burnt by bushfire escalates exponentially when the area of prescribed burning in a region falls below 8

percent per annum. Burning about 8% per annum results in about 40 % of bushland carrying fuels 0 to 5 years old.

Another example is from the paper below, using mild fire for biodiversity and climate change benefits. Russell-Smith, Cook, Cooke , Edwards, Lendrum, Meyer, and Whitehead Managing fire regimes in north Australian savannas: applying Aboriginal approaches to contemporary global problems:

Savannas constitute the most fire-prone biome on Earth and annual emissions from savanna-burning activities are a globally important source of greenhouse-gas (GHG) emissions. Here, we describe the application of a commercial fire-management program being implemented over 28 000 km2 of savanna on Aboriginal lands in northern Australia. The project combines the reinstatement of Aboriginal traditional approaches to savanna fire management – in particular a strategic, early dry-season burning program – with a recently developed emissions accounting methodology for savanna burning. Over the first 7 years of implementation, the project has reduced emissions of accountable GHGs (methane, nitrous oxide) by 37.7%, relative to the pre-project 10- year emissions baseline. In addition, the project is delivering social, biodiversity, and long-term biomass sequestration benefits. This methodological approach may have considerable potential for application in other fire-prone savanna settings.

Land and fire management is a critical component of reducing risks to forests, ecosystems and communities.

3.1.2 Incorporate smarter US bushfire approaches to protect communities

Other valuable information comes from the USA. They are focussed on establishing and managing policy and systems for creation and maintenance of resilient, low fuel, healthy and safer landscapes. They have implemented the USA Bipartisan legislation, optimising forest health using prescribed burning and where required forest thinning opportunities. The USA is way ahead of Australia in these areas.

Key points extracted from the Executive Summary of the US document by FEMA and the US Fire Administration (2022) and titled Wildland Urban Interface: A Look at Issues and Resolutions A Report of Recommendations for Elected Officials, Policymakers and All Levels of Government, Tribal and Response Agencies (June) include:

https://www.usfa.fema.gov/downloads/pdf/publications/wui-issues-resolutions-report.pdf

- *Wildfires are among the worst natural and man-made disasters currently facing our nation. The damage a wildfire causes is multifaceted as it affects multiple areas of civilization and the safety and health of responding firefighters. Today, factors such as climate change and reduced land management practices are significantly contributing to the cause, the increasing frequency and the greater intensity of wildfires, particularly in the WUI.*
- *….as the United States' population grows and development of wildland continues, the WUI expands, increasing vulnerability for thousands who choose to live in the space and the firefighters who respond to fight the fires that occur. This unique fire problem has become a high-risk public safety concern for life safety, public and responder health, private property and businesses, the economy, and the ecology in these regions.*
- *Without intervention, adverse consequences of wildfire in the WUI will worsen. Our nation is on the precipice of an all-hands moment in which landowners, citizens, communities, infrastructure organizations, academia, researchers, not-for-profit organizations, governmental agencies and others have critical roles in coordinating a collaborative approach to contain and control the threat of wildfire in the WUI.*
- *It is essential that elected officials and other government leaders allocate resources and support this imperative to address the WUI wildfire problem. FEMA/DHS/USFA developed the "Wildland Urban Interface: A Look at Issues and Resolutions" to stimulate action by raising awareness of the crisis that our nation faces related to wildfire in the WUI and lay out a unified, strategic approach to risk reduction at the national, state, regional and local levels.*
- *In developing this report, a cross-functional group of stakeholders and subject matter experts (SMEs) from across the nation convened to identify 33 challenges within 13 key WUI issues and develop recommendations to address each challenge. In total, 112 recommendations are presented. These recommendations address challenges in firefighter health and safety, public health and safety, evacuations, forest and rangeland health and resiliency, climate change, community planning and resiliency, infrastructure and utilities, communication strategy and*

engagement operations, socioeconomic impacts, recovery, emerging technology, data use and modeling, and risk management in wildland fire. The recommendations should be pursued together, forming a system of strategies that require urgent, sustained and actionable implementations. These recommendations are not quick fixes, but solutions for the long term. Leadership on and commitment to the implementation of these recommendations results in a safer America.

The above document is valuable reading for those involved in land and fire management in Australia, outlining the large number of challenges and recommendations.

The positives out of this detailed document and other recent US fire and land management policy developments and commitments for the US are many and include:

1. There is key federal legislation commitment in place for this work reducing fuel, increasing prescribed burning, improving forest health and expanding community mitigation work under the Bipartisan Infrastructure bill and other legislation.
2. There is firm commitment to this work through Confronting the Wildfire Crisis A Strategy for Protecting Communities and Improving Resilience in America's Forests and also the earlier National Cohesive Wildland Fire Management Strategy in place.
3. There is a good awareness of the forest fuel load issue across forests, at very high levels and changes in openness of forests since fire suppression became the focus.
4. There is improved funding to reduce fuel loads, prescribed burning, forest thinning and community protection.
5. Firefighter and public health and safety are critical issues.
6. Infrastructure and utilities protection are important issues.
7. There is active community involvement in fire management and this will increase. Forest Service partners include Firewise, local fire safe councils, the Fire Adapted Communities Learning Network, and the Ready, Set, Go! Program.
8. Optimising forest health and resilience is being actually considered and addressed.
9. Thinning is accepted as a sound option to improve forest health. Open forests from a century ago before fire restriction policies were put in place are important considerations.
10. Indian burning practices are being considered and addressed.

3.1.3 Strengthen flood resilience in NSW and Australia

Key information in a 2020 Menzies Research Centre report "Strengthening Resilience: Managing natural disasters after the 2019-20 bushfire season", includes:

- *Despite this relentless commitment to inquiries, in 2014, a report released by the Productivity Commission into Natural Disaster Funding Arrangements found that* ***government natural disaster funding arrangements had been inefficient, inequitable and unsustainable. 'They are prone to cost shifting, ad hoc responses and short term political opportunism.'*** *The Productivity Commission lamented that the funding mix was disproportionately recovery-based and did not promote mitigation. It observed that the political incentives for mitigation were weak, 'since mitigation provides public benefits that accrue over a long-time horizon,' and that over time this would create entitlement dependency and undermines individual responsibility for natural disaster risk management.'*
- *A report by the Australian Business Roundtable for Disaster Resilience & Safer Communities suggests that a mitigation expenditure in the order of $5.3 billion over the period from 2020 to 2050 (in present value terms) could generate budget savings in the order of $12.2 billion for all levels of government, or $9.8 billion when looking at the Commonwealth government budget only. If successfully implemented, it could see Australian and State Government expenditure on natural disaster response fall by more than 50 per cent by 2050.*

"*Australia's disaster relief strategies are underpinned by a cycle of underinvestment in resilience and adaptation. It's been estimated by the Productivity Commission that 97 per cent of all-natural disaster funding in Australia is spent after an event, with just 3 per cent invested prior to an event to reduce the impact of future disasters."*

These words highlight the huge importance of increasing pre disaster flood mitigation in Australia, opportunities to progress this, taking a long-term view and providing long term budget savings.

3.1.4 Apply CSIRO Northern NSW Rivers flood study approach across NSW

As noted in CSIRO flood research project expanded across NSW Northern Rivers ABC North Coast / By flood recovery reporter Bruce MacKenzie Posted Mon 20 Jun 2022 at 3:07pm, updated Mon 20 Jun 2022 at 6:08pm ABC News:

A study by the CSIRO was announced by the previous federal government in March after catastrophic flooding across the region and has been backed by the new government. Murray Watt, the new Minister for Emergency Management, said the project now had ministerial approval, and its budget had been increased to $11.2 million. Senator Watt said the initial $10 million proposal was focused on the Wilsons-Richmond River catchment, but the study would now be expanded to cover the catchments of the Tweed, Brunswick and Clarence rivers.

Senator Watt said expanding the study area was expected to produce better options that worked for the region as a whole.

"It's not just about one river. It's about how each of those rivers impacts the other, so we do need to be sure that we're taking a region-wide approach.

"We're expecting an interim report by November 30 this year, and that will largely be based on existing work that has been done already rather than new flood mapping.

These flood research projects must be expanded across Australia.

3.2 (b) the adequacy of planning powers and planning bodies

I have addressed two points here.

3.2.1 Inquiry investigation area too narrowly focussed

It is totally unclear to me why this inquiry is so focussed on climate change and not all aspects, including sound levels of mitigation funding and mitigation management to reduce the extent, severity and impacts of bushfires and floods and associated crises.

Putting extra resources and funding into bushfire, flood and storm management is the right approach, reducing the need for crises resources.

3.2.2 Increase use of mild fire and reduce carbon emissions

As outlined by Jurskis, Burrows, Roger Underwood, in A comment on Wilson, Bradstock & Bedward – Forest ecology and management (2021) 118701: “addressing carbon stock risk mitigation” raise important points in relation to resilient landscapes in Australia:

6. Implications for management

The top priority for forest management in ***Australia must be to restore sustainable regimes of mild burning throughout the landscape, including*** *very tall forests of mountain ash, where large avoidable carbon emissions from high-intensity fires are but one facet of environmental degradation including erosion, siltation and reductions in streamflow and biodiversity. Socioeconomic problems including losses of homes, infrastructure (with stored carbon) and human lives are equally concerning.*

We ***can re-establish healthy, safe and productive landscapes by using our long collective experience in sustainable fire management*** *as well as accurate information to assess our options and optimise the mix of ecosystem values and services (Bi et al., 2001, Jurskis, 2015, Jurskis et al., 2020, The Howitt Society, 2020). Given the unprecedented carbon emissions and environmental and socioeconomic destruction from our Black Summer of 2019/20, there is huge scope for improvement.*

It is important to understand that establishing resilient landscapes reduces the shocks of intense bushfires on communities, biodiversity and greenhouse gas emissions.

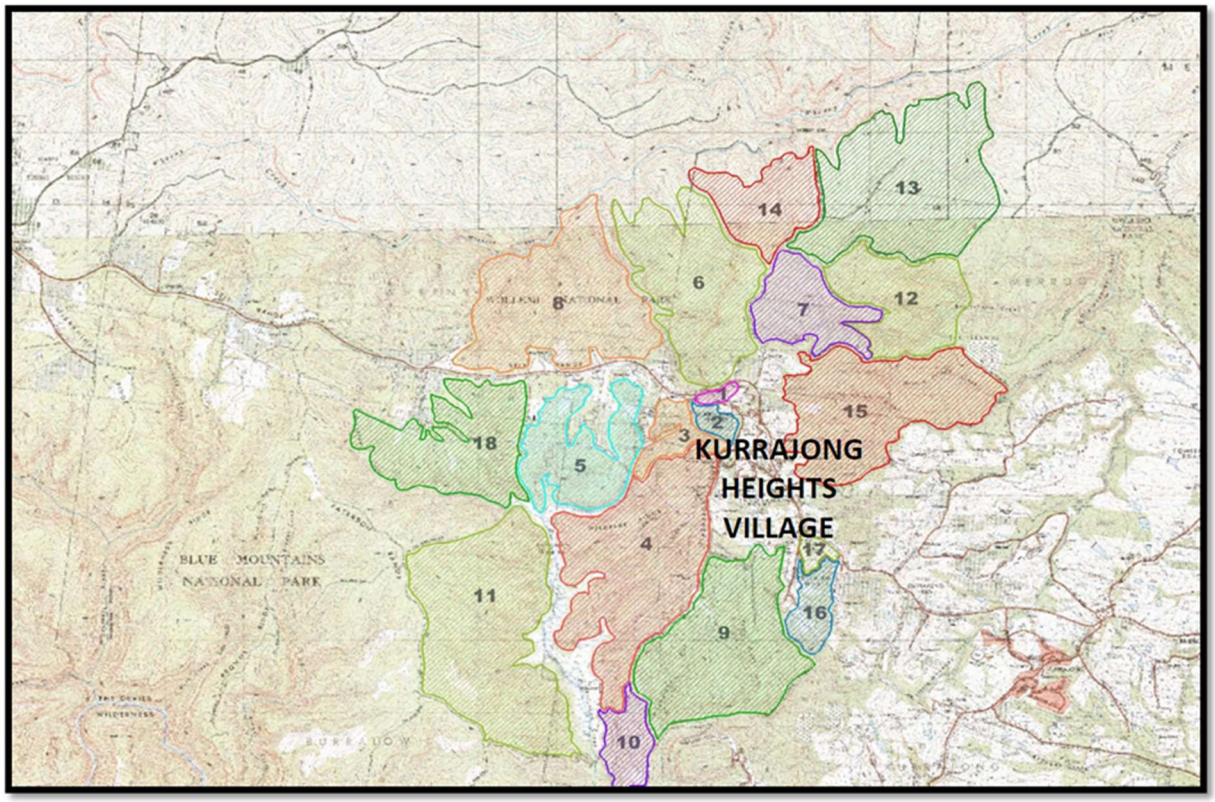
3.3 (c) short, medium and long term planning reforms

I have addressed eight points here.

3.3.1 Better prepare communities for crises to manage bushfire mitigation and reduce crisis resources, a case study

Extracted from Brian William’s submission to 2020 Bushfire Royal Commission, a very good submission:

Kurrajong Heights has a highly successful BFMP that has kept the community safe for 68 years. The Kurrajong Heights BFMP relies heavily on local knowledge.
Knowledge of terrain, fire behaviour and fire paths.
The Kurrajong Heights Brigade has developed and implemented a plan that hazard reduces blocks using a mosaic pattern. This strategy keeps low fuel areas as a blocking influence for approaching wildfire. Refer below



The approach used at Kurrajong Heights should be mandatory for all individual towns and cities in NSW.

3.3.2 Adopt safer town and city bushfire design

Many recent subdivisions I have visited have very dense housing, mulch landscaping, poor tree selection, timber fences and inadequate defendable space in relation to bushfire risks (refer two Figures below). Where bushfires and firebrand masses drop into these areas, I suggest that the outcome will be worse than the ACT 2003 fires, due to the very dense housing, mulch landscaping, poor tree selection, timber fences and inadequate defendable space. I understand the ecological issues but smarter choices need to be made in relation to bushfire risks, including avoiding mulch landscaping, improved tree selection, metal fences and revised defendable space.

Figures. Two photos above of a development with likely bushfire risks.

Blanchi et al. (2012) Life and house loss database description and analysis; Final Report. Bushfire CRC report to the Attorney-General's Department. CSIRO EP-129645, 92pp.

A CSIRO analysis of Australian wildfire fatalities over the past 110 years has found that:

- *50% of deaths happened within 10 metres of a forest,*
- *78% happened within 30 metres of a forest, and*
- *85% happened within 100 metres of a forest.*

This information highlights the importance of adequate defendable space.

In an article titled "Forest Leaves Trees and Fire - a forester's perspective" by Roger Underwood dated October 2023 notes:

In a letter to the editor of The West Australian newspaper not long ago, I suggested that people building new homes in bushfire-prone areas in south-western Western Australia should consider planting northern hemisphere deciduous hardwood trees rather than native eucalypts like jarrah (Eucalyptus marginata) and marri (E. calophylla), or that perennial Australian favourite, the lemon-scented gum (E. citriodora).

I have also opposed the planting of eucalyptus trees (especially the tall forest trees) as street verge trees in suburbs close to bushland.

The eucalypts not only drop their leaves and shed bark in the height of summer, filling gardens and gutters with dry leaves, bark and twigs, but contain volatile and flammable oils in their foliage which explode when ignited. For anyone who doubts this, it is a very instructive experience to place a leafy branch, freshly fallen from a eucalyptus tree onto a bonfire. It smokes momentarily, and then suddenly bursts into intense flame. This explains the phenomenon of the “fire ball” observed by many firefighters – the entire crown of a tree, bombarded with embers from an approaching bushfire, suddenly explodes en masse, and a ball of fire rolls through the air into the next tree, setting it alight, and so on.

A live eucalyptus tree instantly transformed into a fireball by an intense bushfire

Most non-eucalyptus hardwood trees (usually referred to in the Northern Hemisphere as “broadleaf” trees), on the contrary, are relatively non-flammable. The green foliage is very hard to ignite and smoulders rather than bursts into flame. These trees have the additional advantages of the lovely colours of the foliage in autumn, and (being deciduous), allowing access to winter sunshine.

There is a lot of merit in this advice, bushfires, bushfire design and landscaping are often poorly considered in new developments.

3.3.3 Adopt optimised choice of tree species for changed climate, optimum carbon capture and bushfire risks

ABC News reported on “Plane trees to be phased out in Sydney's parks and streets and replaced with more drought-tolerant species” on ABC Radio Sydney, by Declan Bowring Posted Thu 26 Oct 2023 at 6:26am, updated Thu 26 Oct 2023 at 9:53am:

Ms Sweeney said the city went through 400 species to find the ideal street tree that could thrive in Sydney with a climate featuring greater periods of drought and warmer conditions, similar to Grafton in northern New South Wales. e City of Sydney will replace the trees with other species that can handle the warming climate. (ABC News: Zalika Rizmal) To their surprise, the plane tree was one of the least well suited. "We looked at all of the research and did an extensive amount of work to futureproof our urban forest and our canopy cover," Ms Sweeney said. "Of the 400 species, the plane tree was found to be ranked the third most vulnerable to drought."

The city's plan is that when a plane tree needs to be removed, it will be replaced with a species better suited to the changed climate in the long term.

The replacements will be a mix of native and introduced species and have been chosen based on many factors including the side of the street they are on.

Some examples include native eucalyptus, bloodwoods and leopard trees and imported species such as rain trees.

"We really do need to have that balance between summer shade and winter sunlight in some locations," Ms Sweeney said.

This is common sense approach, reefing tree species over time. The same logic applies to bushfire tree and shrub selection outlined above, choosing species that are not major bushfire risks.

Increasing age of trees and bushfire destruction is increasing carbon emission as highlighted in https://healthyforests.org/2023/08/usda-forests-converting-to-carbon-emitters/ USDA: Forests Converting to Carbon Emitters healthy forests August 8, 2023 | News

A new report from the U.S. Department of Agriculture (USDA) finds American forests may convert from being carbon absorbers to significant carbon emitters. Researchers say the shift is due to the increasing destruction from natural disasters and the aging of forests, which is reducing their carbon

absorbing capabilities. Our forests currently absorb 11 percent of U.S carbon emissions, or 150 million metric tons of carbon a year, equivalent to the combined emissions from 40 coal power plants. However, starting in 2025, their ability to hold carbon may start plummeting and could emit up to 100 million metric tons of carbon a year as their emissions from decaying trees exceed their carbon absorption. Without action, forests could become a "substantial carbon source" by 2070, the USDA report says. Already, several states in the Western U.S. have incrementally emitted more carbon than they removed from the atmosphere each year, including those in Colorado, Idaho, Montana, New Mexico, Utah, Arizona, Nevada, South Dakota and Wyoming – states with large amounts of federally-owned forests. Untreated insect epidemics and disease are resulting in significant tree mortality, which directly contributes to massive carbon-emitting wildfires. In Colorado, for example, the mountain pine beetle killed trees across 3.4 million acres between 1996 and 2013 (photo, right). Between 2011 and 2020, Colorado faced an average 5,618 wildfires each year that burned more than 237,000 acres annually. The report also found that our forests are rapidly aging. Older, mature trees absorb less carbon than younger trees of the same species. Comparing forest management to prescribing the proper drugs to a patient, one researcher says one solution is cutting a small portion of aging forests to make ways for younger trees that absorb more carbon. The best solution for reducing carbon emissions is to maintain the cycle of forestry- the continuous planting, growing and harvesting- that results in net zero carbon emissions and discourages the conversion of forests to non-forests. Yet federal agencies continue to fall behind, despite billions of dollars in new government spending on hazardous fuels reduction and other management efforts.

Selection of bushfire safe trees and an ongoing replacement of older/ often unsafe trees is critical in relation to optimising carbon capture, heat reduction and reducing bushfire risks.

3.3.4 Address disaster management opportunities, including for floods

Note. If disaster management can be turned around and other opportunities seized on in relation to science, productivity, regional development and natural resources, huge savings and improvements in budgets and the economy can be made.

There are many opportunities:

- Address the flood and fire mitigation non focus, which is a national disgrace. Cease slow progress on flood infrastructure funding and cooperation across government layers.
- Address inadequate national vision for flood protection of all towns and cities.
- Incorporate all of the identified federal progress on flood infrastructure requirements into a national commonwealth expectations document in relation to required directions and allowable funding.
- Prepare an Australian disaster mitigation preparedness strategy, refocussing expenditure on mitigation.
- Prepare an Australia blueprint for better learning and more effective outcomes from disaster reviews, utilising experienced on ground disasters managers.
- Reduce flood disaster costs using expanded flood mitigation funding. Enable savings to be made by changing the focus of only 3 % spent on mitigation prior to flood disasters to much higher levels, reducing impacts and costs.
- Ensure greater involvement of the insurance sector in disaster planning and management, reducing risks.
- Reduce insurance premiums, ensure governments at all levels/ communities/ businesses work with the insurance industry on ways to achieve this.
- Reduce grant/ GST money to states that don't comply with flood requirements. Increase funding to those that do, noting that this would be a no overall change in that budget figure in each year.
- Refocus expenditure on flood mitigation from other road, rain and other infrastructure projects over the next 3-5 years to reduce costly flood disasters and associated recovery costs.
- Consider approaches such as Room for the River as used in the Netherlands to reduce flood financial, social and environmental impacts at 30 locations.
- Consider increased funding from other infrastructure sectors towards flood mitigation for the next few years to avoid and reduce large scale disasters. There are both positives and risks in doing this, but the reduction in disasters has huge financial and community gains.
- Communication and coordination of flood studies in each catchment, town and city flood mitigation needs and funding.

- Provision of documentation of all flood approaches available across Australia.
- Give Local governments two years to develop flood mitigation approvals with state governments, with federal support.
- Ensure the financial and human impact of megafires being considered combined with consequent changed rainfall patterns and consequent floods in the years after major bushfires, refer research by John Fasullo. This is a double whammy of impacts and costs.

There are many economic reform and productivity opportunities across the spectrum of mitigation, prevention, suppression and recovery, particularly in regards to flood issues. Some of these opportunities are outlined below:

- Implement cost effective opportunities as identified by Deloitte Access Economics (2013), "Building Our Nation's Resilience to Natural Disasters" for the Australian Business Roundtable for Disaster Resilience and Safer Communities.
- Implement key recommendations of the Menzies Centre report: including Government funding should prioritise risk reduction which will reduce the need to spend on disaster recovery.

Disaster flooding areas like Lismore, Ballina and many other communities in south eastern Australia need updated mitigation measures and recovery funding urgently, with a massive focus on design and build of flood mitigation measures to minimise risk of future flooding in those areas. Shovel ready projects need to be progressed urgently. Where there are potential options available, the social and environmental costs of ongoing repeat flooding is not an acceptable option and agreed solutions need to be actioned.

3.3.5 Suggested flood mitigation opportunities for Lismore and other areas using logical approaches and sound funding, an example

Additional mitigation of flooding is critical for Lismore, the social and environmental impacts of repeat regular flooding are just too great.

It is understood:

- The current levee system is based on a 10-year ARI.
- There are levees for Central and South Lismore.
- North Lismore is outside Lismore Levee scheme.
- Flood projects such as resolving the railway viaduct S of Lismore; lowering the riverbank south of Albert Park and widening the causeway of the Bruxner Highway have been considered, apparently as moderate mitigation projects. I am uncertain of the status of these projects, many were aimed at over 8 years.
- There is commentary in the press that there is nothing that can be done for larger floods, more below.

It is my belief Lismore flood mitigation approaches need major refinement:

- that additional mitigation of flooding should aim for above the 100-year ARI level and in light of current flooding higher, maybe 15 metres;
- all adopted solutions should be over designed and allow for additional works in the future;
- projects need to be completed over 2-3 years, over 8 years is too long, human will, funding, aims etc can all change;
- optimum selected shovel ready projects need to be approved and ready for available state and federal part funding; and
- preferably additional areas on the floodplain should not be developed for housing or industry.

Suggested potential additional flood mitigation projects for Lismore to maximise flood flow and reduce flood impacts on Lismore include:

- Widening of the Wilson River in strategic flood areas, preferably on one side, and removal of strategic flood choke points;
- Widening of the Leycester Creek in strategic flood areas, preferably on one side, and removal of strategic flood choke points;

- Removal of excess earth in strategic flood areas of the Wilson River to maximise flood passage, removing earth between approx. 3 to 10 metres AHD and re-establishing flood friendly contours, at lower levels. This would increase flood passage considerably. Attached floodplain mapping at various flood heights gives an approximate idea where earthwork locations would be;
- Removal of excess earth in strategic flood areas of the Wilson Leycester Creek to maximise flood passage, removing earth between approx. 3 to 10 metres AHD and re-establishing flood friendly contours, at lower levels. This would increase flood passage considerably. Attached floodplain mapping at various flood heights gives an approximate idea where earthwork locations would be;
- Transfer of high-level flood flows from Leycester creek along the western side of South Lismore and west of the airport. This may need gates so that downstream flood level impacts can be managed in conjunction with flooding impacts in Lismore; and # Utilisation of excess earthworks for a flood mitigation purpose wherever possible.

Hopefully, these mitigation options can be considered.

There is commentary in the press that there is nothing that can be done for larger floods, I wonder if this is true considering the opportunities raised above and the opportunities Council has considered. Looking at the Lismore Flood Events from 1870 to 2017, the 100-year design is 12.38m AHD, the highest floods in the past was 1954 (12.27 m AHD) and 1974 at 12.11 m AHD (other info 12.15m) and noting the levee is about 10.6 m AHD. The February 2022 flood in Lismore I understand was 14.37 m AHD. The differences in AHD may be resolvable with totally open minds and considering the full range of flood mitigation measures and options.

Environmental factors are important in planning and building the flood mitigation projects:

- Wetlands would be installed as part of the earthworks;
- High standard and ongoing restoration are undertaken by the contractor, including utilisation of retained topsoil; and
- High standard and ongoing revegetation are undertaken by Council, utilising endemic native tree species, and taking into account hydrology, potential walkways and recreation opportunities.

Some additional ideas/ opportunities include:

- The Army could undertake part of the work, assisting their training; # Council could undertake part of the work;
- Excess earthworks opportunities would need to be considered in detail;
- An alliance style contract could be beneficial to complete this work; and
- Discussion with the community, local members, State and Federal Government and the ICA of potential approaches, mitigation and ideas would be a good first step.

3.3.6 Lockyer Council flood information portal initiative for NSW

Lockyer Valley Regional Council, (2023) Media Release, 23 October 2023 Contributor, ARR.News 23 October 2023:

"Council has undertaken a significant amount of work, at a considerable cost, on the development and implementation of the Flood Information Portal (FIP) and finalisation of the Draft Lockyer Valley Planning Scheme for statutory community engagement to improve our understanding of the risks and impacts associated with these hazards.

"As a Council, we are committed to doing all we can to provide accurate and timely information to minimise the risk to people, life and property within our community.

Since its release, the FIP website page has been viewed 13,659 times and 2005 individual property reports have been downloaded, Mayor Milligan said.

“The FIP is the first of its kind for Local Government in Australia and provides specific GPS-point data on flood levels across a block of land so rather than make a blanket assessment of risk, the parts of the block that are dry should be assessed differently.

“*A significant number of queries have been received regarding whether the proposed changes in zoning and or flood mapping, as presented in the Draft Planning Scheme, will affect residents’ insurance premiums*.

3.3.7 Incorporate Room for the River projects for NSW

Important information is outlined in “How the Dutch Make "Room for the River" by Redesigning Cities Higher and higher dikes will not keep the waters at bay under climate change Knowledge within reach Shop Now By ClimateWire on January 20, 2012”:

"After 800 years of building dikes, we've been making them higher and higher," said GertJan Meulepas, project manager at Royal Haskoning, an engineering and environmental consultancy that developed the project. "But if something goes wrong, the damage will be greater."

After the floods in the 1990s, the government decided to no longer raise the dikes, but move them back. "We need to remain flexible in adapting to climate change, so now we try to remove the bottlenecks," Meulepas said.

In the early stages, there were 100 spots identified around the country where flood defenses may need an upgrade, and 39 have been selected for construction. One criterion was stakeholder involvement from local people and government authorities. The local government has the opportunity to change the waterfront, and the work is paid for by the national government.

"The Netherlands decided, as a national strategy, to deal with water in a different way, and the total budget is €2.2 billion [$2.85 billion]," Meulepas said. "The project has two goals: to increase safety and to add a spatial quality to the area around the rivers, reconnecting our country to the rivers." Royal Haskoning is working on half of the 39 projects, including four of the major ones.

There are huge opportunities in Australia to undertake projects like room for the river, including the Northern Rivers of NSW.

3.3.8 Importance of understanding, listening to and addressing Pacific cooling research from Australian bushfires and consequent rainfall impacts

A recent paper by John T. Fasullo*, Nan Rosenbloom, Rebecca Buchholz (2023) A multiyear tropical Pacific cooling response to recent Australian wildfires in CESM2 SCIENCE ADVANCES 10 May 2023 Vol 9, Issue 19 DOI: 10.1126/sciadv.adg121 highlights:

The climate response to biomass burning emissions from the 2019–2020 Australian wildfire season is estimated from two 30-member ensembles using CESM2: one of which incorporates observed wildfire emissions and one that does not. In response to the fires, an increase in biomass aerosol burdens across the southern hemisphere is simulated through late 2019 and early 2020, accompanied by an enhancement of cloud albedo, particularly in the southeastern subtropical Pacific Ocean. In turn, the surface cools, the boundary layer dries, and the moist static energy of the low-level flow into the equatorial Pacific is reduced. In response, the intertropical convergence zone migrates northward and sea surface temperature in the Niño3.4 region cools, with coupled feedbacks amplifying the cooling. A subsequent multiyear ensemble mean cooling of the tropical Pacific is simulated through the end of 2021, suggesting an important contribution to the 2020–2022 strong La Niña events.

Put simply, a vicious mary go round is being set up:

- Major bushfires occur with large emissions, such as the 2019/ 20 bushfires
- Then Pacific cooling and consequent increased rainfall impacts in E Australia making La Nina’s worse and increasing vegetation growth such as in 2020 to 2022.
- Consequent increased bushfire risks when an El Nino strikes such as in late 2023, with large areas of increased vegetation over Australia.

This research needs to be considered and actioned, there is one obvious solution in markedly increased prescribed burning across southern and E Australia, reducing both bushfire insurance costs and flood costs and better protecting communities and the environment.

3.4 (e) any other related matters

I have addressed four points here.

3.4.1 Factors in relation to people and the natural and built environment being protected from climate change impacts and changing landscapes

There are a large number of factors in relation to people and the natural and built environment being protected from climate change impacts and changing landscapes, in relation to bushfires these factors include:

- Inadequate prescribed burning programs around many at risk bushfire communities and often with slow approvals and very high fuel loads around communities, this issue always seems to be totally ignored as addressed above.
- Inadequate bushfire design, layout, removal of grass fuels, controls, mitigation and consideration of firebrand distribution in many towns and cities, in some cases with systemic failure in addressing sound safe bushfire protection of communities. Inadequate ongoing focus in many towns and cities on bushfire protection and reducing bushfire risks.
- Most towns/ cities do not have community bushfire protection plans, neighbourhood/ locality plans or other such plans, including sound annual mitigation focussed to adequately protect these towns.
- Virtually nil support and programs in NSW for community participation and preparedness for bushfires, noting Victoria, SA, Tasmania, SA and WA have community fire participation programs in place. This government support is critical, noting this issue has important link with the National Strategy for Disaster Resilience, critical infrastructure resilience strategies and emergency management arrangements. Establishment of fire adapted community groups in towns and cities would be another opportunity to improve community safety. There does not appear to be federal requirements for nationally consistent community protection plans.
- Limited implementation of household bushfire survival plans.
- Increased number of people living in regional and city locations, including at the wildland urban interface, also increasing risks of bushfires starting, including non-permanent residents, hobby farms and weekend retreats. This has become a bigger problem as people from the city often had very little knowledge on how to reduce the fire risk on their property and often do not ask key questions from the local owners.
- Missed opportunities for upskilling and fire mitigation upskilling for bushfires using coordinated prescribed burning programs to develop fire skills.
- Variation in regards to district/ community/ town/ city awareness of previous bushfire travel paths over the last 80 plus years and local town/ city bushfire plan members to progress this. This was essential information in order to plan mitigation and optimise escape routes.
- Evacuation and key road routes blocked by bushfires, restricting safe access and emergency escape in some cases, many having no mitigation treatment measures such as low intensity burning and fuel removal.
- Failure of communication systems during bushfire events, endangering safety.
- In many cases, limited local/ regional transparency with either prescribed burning planning, performance monitoring and annual mitigation and opportunity for public review of prescribed burning that had been undertaken to protect communities and schedules for upcoming periods.
- Unsafe landscaping around and within towns and around houses in many cases, increasing bushfire risks.
- Changed focus on air quality issues and smoke concerns in places, delaying or stopping prescribed burning programs, but increasing the risk of lingering smoke during major bushfire events. Land uses such as grapes and assets can result in restricted prescribed burning programs.

These factors highlight the extent of factors and complexity, the importance of fuel management and the futile approach in concentrating on climate change alone.

3.4.2 Importance of adequate investment in disaster resilience and safer communities to reduce crises, costs and resources

The Australian Business Roundtable for Disaster Resilience and Safer Communities report “We cannot prevent weather events, but that does not make disasters inevitable” (November 2017)

considered the total economic cost of natural disasters in each state and territory, finding that the forecast cost of natural disasters will reach $39 billion annually by 2050 noted the following:

“This report considers challenges for disaster resilience in the states and territories, and the role of each government in collaboration with other jurisdictions, community and business.

The report:

Confirms that further investment in disaster resilience – in both physical and community preparedness – is essential to lessen the forecast increase in costs.

Finds that investment in disaster resilience yields a double dividend. First, in the avoided impacts of disasters when they occur. And second, in the broader co-benefits that arise even in the absence of a disaster.

Shows that state and territory governments have several levels to directly build resilience.”

Deloitte Access Economics report “Economic reality check Adapting Australia for climate-resilient growth” from January 2022 notes:

“Australia’s disaster relief strategies are underpinned by a cycle of underinvestment in resilience and adaptation. It’s been estimated by the Productivity Commission that 97 per cent of all-natural disaster funding in Australia is spent after an event, with just 3 per cent invested prior to an event to reduce the impact of future disasters.”

The investment of just 3 per cent of all-natural disaster funding in Australia prior to disaster events to reduce the impact of future disasters is staggering. And considering that investment in disaster resilience yields a double dividend, avoided impacts of disasters when they occur and also the broader co-benefits that arise even in the absence of a disaster, major and increased investment in flood mitigation is essential.

There is further disaster funding detail in the Menzies Research Centre Policy Paper (2020), Strengthening Resilience: Managing natural disasters after the 2019-20 bushfire season:

“Despite this relentless commitment to inquiries, in 2014, a report released by the Productivity Commission into Natural Disaster Funding Arrangements found that government natural disaster funding arrangements had been inefficient, inequitable and unsustainable. ‘They are prone to cost shifting, ad hoc responses and short-term political opportunism.’ The Productivity Commission lamented that the funding mix was disproportionately recovery-based and did not promote mitigation. It observed that the political incentives for mitigation were weak, ‘since mitigation provides public benefits that accrue over a long-time horizon,’ and that over time this would create entitlement dependency and undermines individual responsibility for natural disaster risk management.’ At that time, it said, mitigation funding amounted to only three per cent of what is spent on post-disaster recovery and recommended that the Australian Government should gradually increase the amount of annual mitigation funding it provides to state and territory governments to $200 million.”

The paper pointed out that, in Australia, “one dollar spent on mitigation can save at least two dollars in recovery costs. Committing additional mitigation funding makes economic sense”.

The importance of adequate investment in fire and flood risk reduction and mitigation is critical, as well as reducing the extent and number of crises.

3.4.3 Address Government emergency disaster failures in NSW

Robert Onfray (2023) wrote a great article titled Another emergency disaster failure – the 2022 New South Wales floods in Northern NSW dated 3 March 2023 and noted:

The floods received extensive news coverage, and politicians, senior bureaucrats and “experts” were quick to label them unprecedented and something we could never anticipate. Wrong.

Simply put, preparing for flood events and responding to them was a massive failure in government policy.

The way the 2022 NSW flood emergency panned out is no different to the problems we have experienced with bushfire emergencies in the last 20 years. The failure to prepare, the wrong

information, advice and modelling relied upon, and the poor responses have all contributed to deaths and properties lost or damaged.

These words also highlight the huge importance of increasing pre disaster flood mitigation in Australia, opportunities to progress this, taking a long-term view and providing long term budget savings.

3.4.4 Address the increasing cost of insurance in NSW and across Australia

The information “Insurance crisis deepens for homes, business and local councils in flood prone areas of northern NSW 7.30 / By Leah White Posted Thu 9 Feb 2023 at 12:46pm, updated Thu 9 Feb 2023 at 2:24pm ABC News” highlights:

Almost a year after the country's most costly natural disaster, the hardest-hit areas in northern New South Wales are grappling with a future where many homes, businesses and even local councils are uninsurable.

The weather event, which caused record-breaking flooding, has been ranked the fourth most costly natural disaster in the world for 2022 – and the second most costly for insurers.

The Insurance Council of Australia says it's the most expensive in its history – with insurance losses totalling $5.7 billion

The couple have home insurance, but like many in this high-risk area, they opted out of flood coverage due to costly premiums.

"Per year it's about $16,000 for flood insurance — so there's not many people who would be able to afford that," Mr Allen-Bartlett said.

It’s well past time to plan and design for floods to reduce costs of flood disasters and consequent costs on public citizens.

4 Conclusions

I raise extensive concerns and opportunities in this submission in relation to matters raised in this NSW Inquiry.

Frankly, Federal, State and Local governments need to work together, soundly model all rivers with large numbers of people and adequately fund flood mitigation projects at levels way above current projects.

The research by Fasullo et al. needs to be considered and actioned, there is one obvious solution in markedly increased prescribed burning across NSW, southern and Australia, reducing both bushfire and flood disaster costs, deaths and insurance.

John O’Donnell

Grafton

1 November 2023