



Professor Mary O'Kane AC & Michael Fuller APM
Submission to the NSW Flood Inquiry
<https://www.nsw.gov.au/flood-inquiry-submissions-portal>

20 May 2022

Dear Professor O'Kane and Mr Fuller APM,

We represent the recently formed Richmond Riverkeeper Association, convened to give the rivers of the Richmond River catchment a community voice. Our founding members include community representatives, academics from Environmental Science, Earth Law, and Environmental History disciplines, Landcarers with over 30 years experience in riparian restoration, teachers and land stewards with deep connection to the rivers of the Richmond catchment and with direct experience of these floods. We respect and celebrate the unique relationship of Indigenous peoples to the land and waterways of the Richmond River catchment.

Our vision is for the rivers, sub-catchments and tributaries of the Richmond River catchment to be healthy, ecologically sustainable, respected by policy and decision-makers, managed actively, and valued by the community. Our Mission is to make the rivers of the Richmond River catchment drinkable, swimmable and fishable again, ensuring the return of the iconic Eastern Freshwater Cod. The Richmond Riverkeeper Associations submission centres around the following *Terms of Reference for the NSW Flood Inquiry: 1a - The causes of and factors contributing to the frequency, intensity, timing and location of floods; 1c - Responses to floods, particularly measures to protect life, property and the environment; and 1d - Recovery, including housing, clean-up, financial support, community engagement and longer-term community rebuilding.*

The Richmond River catchment, unceded lands of the Bundjalung and Githabal peoples, is the sixth-largest catchment in New South Wales covering an area of nearly 7,000 km² (Hydrosphere Consulting, 2011a) with a large coastal floodplain covering approximately 1000km² (Hydrosphere Consulting, 2011b) (Figure 1). Historical information suggests that flood water can persist on the floodplain for around six days and in some places for several weeks (ABER, 2008). The Richmond River estuary is the seventh-largest (by surface area) estuary in NSW (19.73 km²), with the fifth-largest finfish catch in the region (ABER, 2006). Considered a poorly flushed system, the Richmond River experiences water quality issues because of its highly modified, and large floodplain (ABER, 2007).

The Richmond River catchment was once extensively timbered from the top of the catchment, down the hill slopes across the extensive floodplain to the sea. Dramatic changes in land use have occurred across this catchment over the past 250 years since European settlement, with the historic clearing of the catchment, drainage, and unsustainable land management practices leading to high levels of soil erosion, turbidity, the exacerbation of acid sulphate soils and blackwater events leading to fish kills (ABER, 2007; Hydrosphere Consulting, 2011a). Concentrated urban development around the catchments towns and centres, has led to an increase in hard surfaces, increased storm runoff, industrialisation of the floodplain providing numerous sources of pollution even in dry times (ABER 2007; Hydrosphere Consulting, 2011a).

As a result, the Richmond Catchment is known to be one of the most highly ecologically stressed catchments in NSW with extremely poor ecosystem health (Figure 2, Ryder et al., 2015).

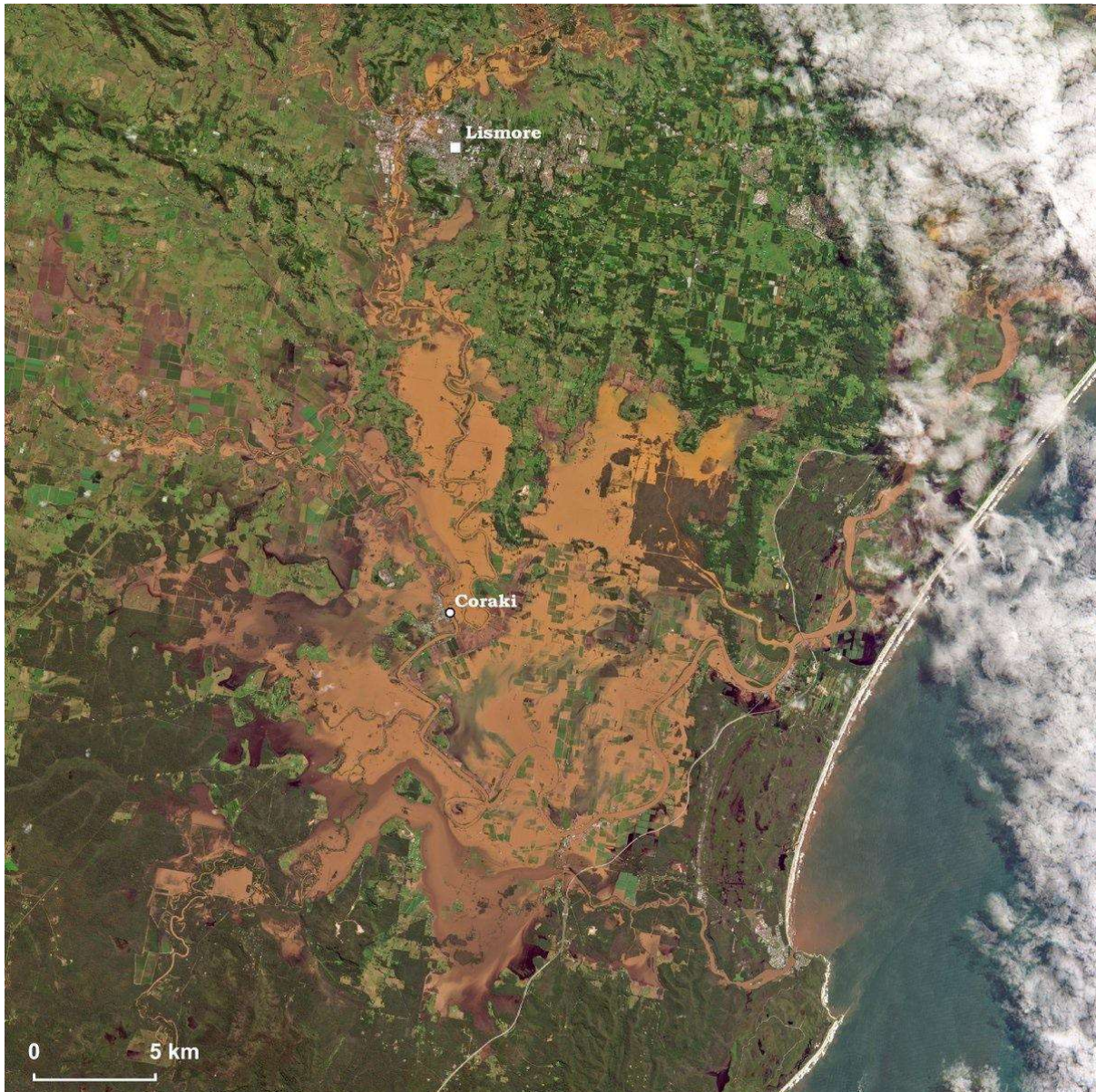


Figure 1: Sentinel-2 satellite image of the Richmond Floodplain in the second major flood, [31 March 2022](#). The Richmond River catchment is the sixth largest catchment in New South Wales covering an area of nearly 7,000km² (Hydrosphere Consulting, 2011a), with one of the largest coastal floodplains on the east coast covering an area of approximately 1000km² (Hydrosphere Consulting, 2011b). The Richmond River estuary is the seventh largest (by surface area) estuary in NSW (approx. 20km²) (ABER, 2007). The Richmond River is considered to be a poorly flushed system, experiencing water quality issues because of its relatively small catchment area, and large floodplain. Historical information suggests that flood water can remain on the floodplain for around 6 days and in some locations for several weeks (ABER, 2007). Dramatic changes in land use have occurred across the catchment only 180 since European settlement, with the historic clearing of the catchment, drainage of wetlands, and unsustainable land management practices leading to high levels of soil erosion and turbidity, with the exacerbation of acid sulphate soils and blackwater events leading to fish kills (ABER 2007; Hydrosphere Consulting, 2011a). Urban development has led to the increase in hard surfaces, increased storm runoff, industrialisation of the floodplain in some locations and numerous sources of pollution even in dry times (ABER 2007; Hydrosphere Consulting, 2011a). It is not surprising that the Richmond River Catchment is known to be one the most highly ecologically stressed catchments in NSW with extremely poor ecosystem health (Ryder et al., 2015).

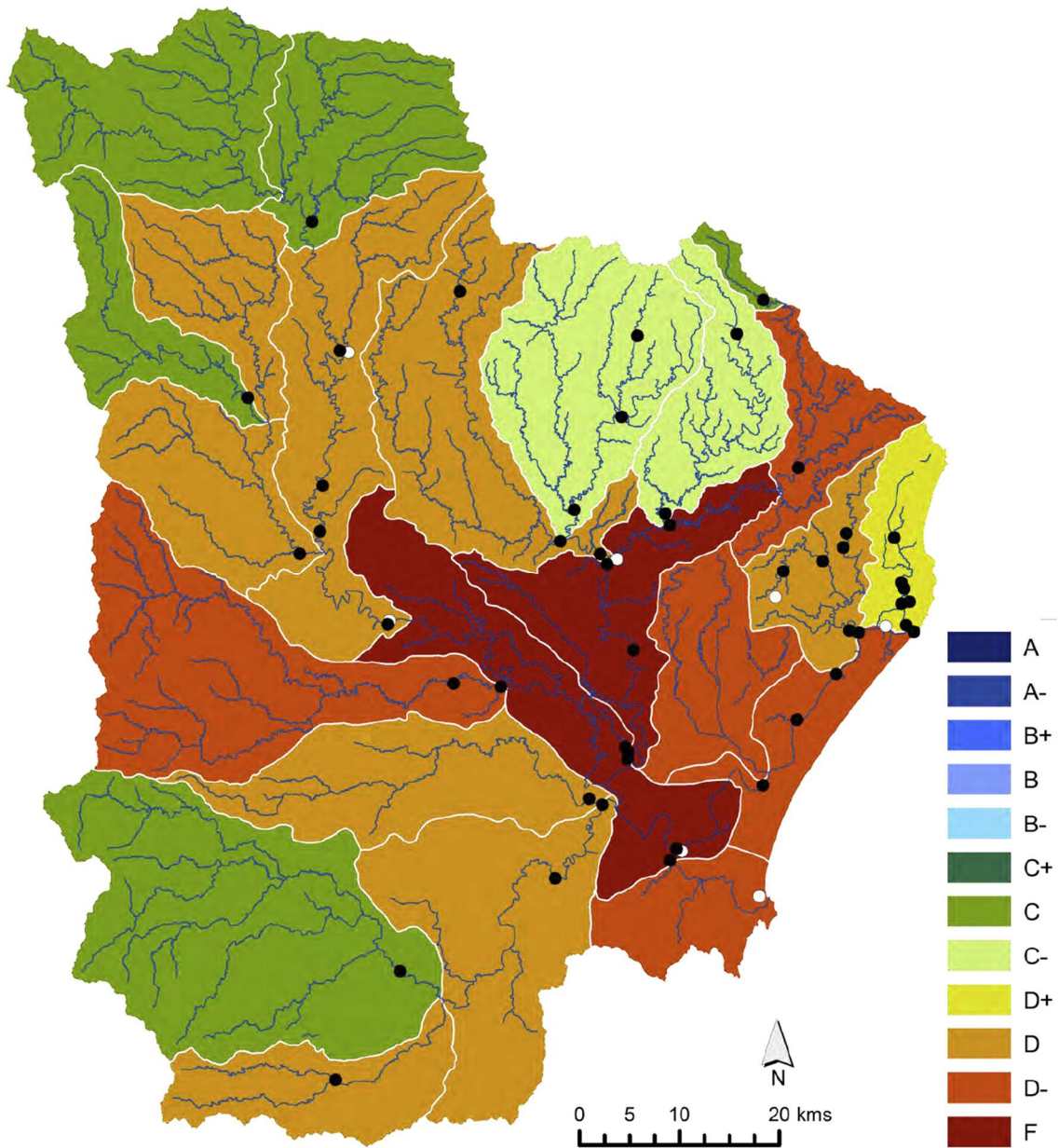


Figure 2: Assessment of River and Estuarine Condition, where the overall grade for the Richmond catchment was D- (poor, few of the environmental values are met), ranging from an F (very poor, very few of the environmental values are met) in the Wilsons River and upper Richmond estuary to a C (fair, some of the environmental values are met) in the headwater streams of the catchment. Twelve of the 17 river systems recorded a score of D or less. The upper freshwater reaches of the Richmond catchment had better water quality, aquatic macroinvertebrates and geomorphic condition than the lower freshwater reaches, but no better riparian condition. The upper estuary (upstream of Woodburn) was consistently in the poorest condition, with very high nutrient concentrations, turbidity and algal biomass. Scores were consistent among indicators within each system, highlighting that the issues with water quality, biota and physical condition are affecting short and long-term condition of the stream (Ryder et al, 2015).

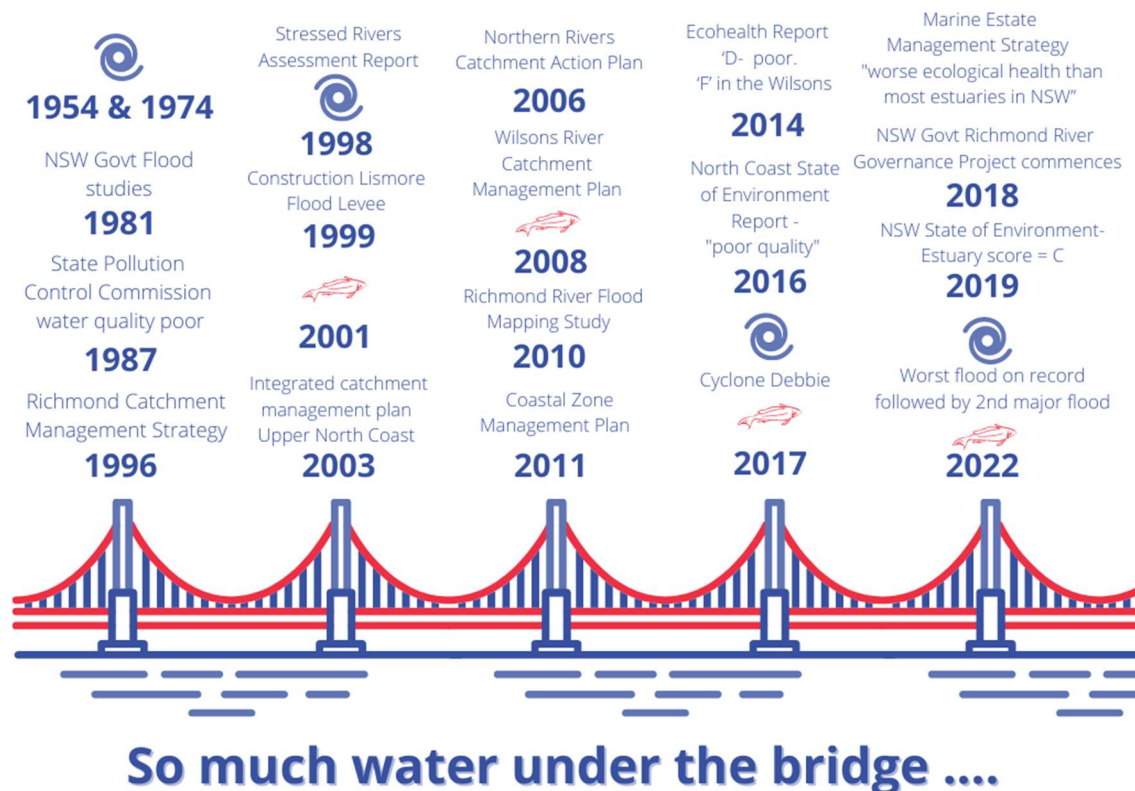


Figure 3: A summary of the major floods, fish kills including a snapshot of studies undertaken since the 1974 major flood. Threats to the habitat values of the Richmond River include human modification (eg flood mitigation works including wetland draining, floodgate construction, de-snagging), catchment clearing, and seawall construction, barriers to fish passage as well as acid sulfate soil runoff (ASSR) in the lower catchment which have been exacerbated by previous flood mitigation/drainage works (ABER 2007).

The landscape of the Richmond River catchment has been transformed as a result of the flood events of February and March 2022. The scale of devastation and the scale of the need is overwhelming and currently outside of the capacity of flood and landslide-affected landowners. [Holding back soil in the upper catchment, preventing further soil loss and erosion is paramount to the rivers health.](#) Many landcare sites have suffered significant damage. The entire catchment is in need of significant investment into riparian restoration and bush regeneration.

There are plastic pollution issues across the catchment with a range of contaminants such as hay bale wrapping, plastics, tyres, pumps, caravans, containers in riparian hay bale wrapping stuck in riparian vegetation. Measures to protect communities and the environment downstream of major centres of populations like Lismore are also urgently needed. From the adverse effects of older flood mitigation works, a flotilla of debris (micro plastics to fridges and aeroplanes) to large debris, pollution from oil, fuel, bitumen, chemicals - there were no planning or measures in place to prevent large-scale pollution from occurring in these floods, in some cases highly toxic pollution.

There was a known bitumen spill from a storage yard in South Lismore, as well as [spills of oil and diesel at Broadwater](#). One of Lismore's two sewerage plants was badly damaged in the floods. Lismore will be pumping an [estimated 4 megalitres](#) of untreated sewage into the Wilsons River for a projected 6 months. Interim Lismore City Council general manager John Walker has said publicly that there is no easy fix.

This pollution means not only loss of dwellings for affected residents but a serious worsening of already seriously poor ecological health for the river, including [a fish kill so extreme](#) inshore reef species were found washed up dead on the beach. The legacy of such pollution events will be inter-generational.

This is not good enough - what recompense or consideration does the river get? While we cannot turn back the clock to prevent the devastation of these recent floods which is linked with previous practices, moving forward we have the opportunity to put in place appropriate measures to mitigate the potential impacts of future flooding events.

Recommendations for action around future flood risks to communities and ecosystems

1a - The causes of and factors contributing to the frequency, intensity, timing and location of floods

1. That any future flood mitigation works are carefully scrutinized and vetted to ensure ecologically positive, considering the long-term, cumulative and downstream ecological impacts recognising many existing works have led to unintended, deleterious outcomes for the river and for fish habitat. While there is an appetite for immediate action and commencement of "shovel-ready" engineering solutions, the complexity of this issue means there are no simple solutions.
2. That large-scale projects to re-forest the Richmond River catchment be priority funded by all levels of government considering land tenure and suitable incentives to facilitate in achieving this goal. Apart from its numerous non flood benefits, native vegetation is well understood to assist storage and slow movement of water in the landscape, as well as bind soil.
3. That the restoration of floodplain wetland ecosystems with pre-European settlement drainage systems be prioritised.
4. That research be continued as a priority into nature-centred flood mitigation and 'green' infrastructure.
5. That all research, data, catchment models and water quality monitoring for the Richmond catchment be published open-source and a knowledge repository created.
6. That a Richmond Catchment Citizen Science program be co-designed with community, to build and share critical information across stakeholders, and between agencies.
7. It is beyond time that the priority actions outlined in the Coastal Zone Management Plan for the Richmond River Estuary (2011) and the Wilsons Catchment Action Plan (2008) were funded.

1c - Responses to floods, particularly measures to protect life, property and the environment

1. The river is suffering from ongoing pollution as a direct result of the flood. We strongly recommend that the repair of the stricken sewage treatment plant in Lismore be a top and urgent priority for funding and fast tracking.
2. We recommend that some kind of river fund be set up as a long-term compensation mechanism.
3. Flood debris is a major issue for properties throughout the catchment but particularly in and downstream from major urban centres. We strongly recommend a flood debris mapping and remediation project be funded to assess and mitigate the large scale of debris in addition to support the large debris work already being done by barge.



4. Toxic pollution (oil, diesel, asphalt etc.) from industry on the floodplain requires urgent and immediate investigation and remediation both for affected residents and the health of the river. A future ongoing program to empower and motivate all sectors of the community to improve their practices is essential.
5. Soil loss and the increased turbidity in the river result from all scales of flooding events. We can minimise this by improving vegetation, soil management and landslide prevention. In development contexts soil loss into the river system is considered an unacceptable avoidable environmental outcome and can be prosecuted as a criminal offence. Tackling soil conservation issues through continuing and targeted education, assistance and enforcement should therefore also be a priority.
6. Human induced climate change is widely recognised as increasing the likelihood of more frequent and intense extreme weather events. Dis-incentivising the drivers of this climate change (fossil fuel reliance, high consumption lifestyles, attitudes) is essential if we wish to minimise the scale and frequency of flood risk. Market price mechanisms for fossil fuel use where tariffs are then spent on environmental protection works would be a good start.
7. The problems are worsened or hindered by poor understanding of the issues, poor policy delivery, lack of strategic spending, lack of will, and poor coordination. For example:
 - the 'problem' is often conceived as being able to be mitigated through large engineering drainage and walling approaches to force greater change on a natural system, rather than reinforcing that natural system and giving it room
 - policy is prescriptive, has long lead times, is under resourced on the ground, and is vulnerable/captive to short term political cycles and manipulation
 - funding is mainly reactive and addresses temporary symptoms when disaster strikes rather than strategic addressing root issues
 - there is a well known lack of coordination on catchment issues. Some agencies tasked with Flood mitigation aren't fulfilling their mandated roles, or don't understand their roles, or aren't sufficiently effective.

1d - Recovery, including housing, clean-up, financial support, community engagement and longer-term community rebuilding.

It has been estimated that 97 per cent of disaster funding is spent on recovery, and only three per cent goes into mitigating the impacts before they occur (Productivity Commission 2014). Long term community and environmental mitigation measures are needed including [climate action now](#). We recommend:

1. That riparian and landslip restoration projects be prioritised and funded with resources commensurate to the scale of the disaster across the Richmond River catchment.
2. That funding be immediately made available for all land stewards to assess soil contamination including on farms, and riparian and floodplain landcare sites.
3. The feasibility of land swap and relocation of existing industrial areas on the floodplain should be assessed to reduce any future flood impacts on the river.
4. That community-led recovery across the Richmond catchment (eg the Koori Mail Hub, Resilient Lismore, Wardell CORE, Woodburn Hub, Richmond Landcare Inc, Border Ranges Richmond Valley Landcare Network) be supported with core funding for the longer term.
5. That landslides and mass soil movement sites on private land receive funding to treat and safeguard.
6. Traditional Custodians, Indigenous knowledge and the River be given voices at the planning and decision-making tables, including the Restoration and Reconstruction Corporation.

Yours for the river, the undersigned representing the foundation members of the Richmond Riverkeeper Association

Associate Professor Adele Wessell, Southern Cross University

Dr Alessandro Pelizzon - Southern Cross University, Global Alliance for the Rights of Nature, Australian Earth Laws Alliance

Professor Amanda Reichelt-Brushett - Southern Cross University

Professor Damien Maher - Southern Cross University

Ilka Blue - Border Ranges Richmond Valley Landcare Network

Jeremy Stewart - Richmond Landcare Inc., member Lismore Floodplain Management Committee

Lindy Margan - Monaltrie Landcare Group.

Dr Kristin den Exter - Wilsons River Landcare, Southern Cross University

Dr Rob Garbutt - Richmond River Historical Society, Southern Cross University

Tom Wolff, Co-founder, Revive the Northern Rivers

Vanessa Tallon - Wilsons River, Banyam Baigham, South Lismore Duckpond Landcare

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