

From: [NSW Government](#)
To: [Flood Inquiry](#)
Subject: Floods Inquiry
Date: Friday, 20 May 2022 7:24:08 PM
Attachments: [Submission J Fallding to NSW Flood Inquiry 2022.pdf](#)

Your details

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Submission details

I am making this submission as	Other
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Submission type	I am making a personal submission
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Consent to make submission public	I give my consent for this submission to be made public
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Share your experience or tell your story

Terms of Reference (optional)

The Inquiry welcomes submissions that address the particular matters identified in its [Terms of Reference](#)

Supporting documents or images

Attach files

- [Submission J Fallding to NSW Flood Inquiry 2022.pdf](#)
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20 May 2022

To: NSW Independent Flood Inquiry
via <https://www.nsw.gov.au/flood-inquiry-submissions-portal>

Submission to NSW Independent Flood Inquiry

Dear Professor O’Kane AC and Mr Fuller APM

I would like to make observations and suggestions relating to floodplain management planning and community information under the Terms of Reference of the above Inquiry.

My submission covers the following topics:

1. My professional background and motivation for writing this submission
2. Getting reliable information into the community in times of flood events
 - 2a. The implications of relying on Facebook for flood information
 - 2b. The Disaster Dashboard is a disaster in times of disaster
3. Communicating flood information to the community
 - 3a. Local Flood Plan details need to be communicated to the community
 - 3b. Incorrect, misunderstood and misleading use of flooding terminology impacts the community
 - 3c. Mismatch between BoM flooding classifications & river heights and flood expectations
 - 3d. Many councils’ flood mapping is missing in action
 - 3e. Flood mapping: confusing messages about flood risk to the community
4. Effective floodplain land use management has been let down by our complex NSW planning system
5. ‘Planned retreat from the floodplain’ is not viable for most communities
6. Further technical detail in professional associations’ submissions to Inquiry

In this submission, I will assume you have knowledge of abbreviations and terminology used in floodplain management practice.

1. My professional background and motivation for writing this submission

I am a qualified town planner with 30 years of experience as a self-employed, independent strategic and social impact planning consultant and former local government employee in regional NSW. I am a Registered Planner and Fellow (Planning Institute Australia) and a Professional Member of Floodplain Management Australia. I have had a professional interest in floodplain management planning during my whole career. I live in Singleton on the Hunter River floodplain and have witnessed the planning, awareness and emergency responses to floods over 20 years here, and previously in Wollondilly Shire and Bathurst.

This mix of my professional interest, along with my experience of living on floodplains motivates me to present the following observations and suggestions. I did not have direct involvement in the recent Northern Rivers events, but watched these and other events from afar.

I have also recently made recent submissions to other NSW flood-related issues, *which I am happy to supply to you on request*, being:

- Submission to draft NSW Flood Prone Land Package, June 2020
- Submission to draft NSW Flood Risk Management Manual Package, 4 April 2022

I am also aware of the submissions being made to this Inquiry by the Planning Institute of Australia (NSW) and Floodplain Management Australia and endorse their submissions.

2. Getting reliable information into the community in times of flood events

Despite ‘official’ channels of ABC radio and SES warnings, a sizeable proportion, if not a majority, of the community now turns online to look for sources of information during times of flood. This is vitally important for authorities to understand, since it is increasingly the method by which the affected communities communicate about local issues in real time. I will illustrate the shortcomings of two of these platforms (Facebook and Disaster Dashboard) by illustrating what happened in Singleton in the three recent flood events of late 2021 and February and March 2022.

2a. The implications of relying on Facebook for flood information

I would like to illustrate the reliance of communities on ‘unregulated’ social media information during times of flood.

For the Singleton LGA, the following Facebook pages are ‘meant’ to be the ones to follow for official information:

www.facebook.com/SESSingleton (Singleton SES local unit)

www.facebook.com/NSWSESHUR (Hunter SES - regional office)

www.facebook.com/SingletonCouncil - particularly for road closure information

There are also 4 local Facebook ‘group’ pages covering the Singleton township areas that are set up and administered by local community members, and other groups covering the rural areas around Singleton. The largest has about 13,000 members. During the Singleton floods, thousands of people in our community used these group pages to find, ask and answer information on our flood situation – for these people, they are the prime source of flood information. It was apparent that many people had no idea of the ‘official’ sources of information that they should consult. Many in the community also understand that the SES Singleton unit and Singleton Council cannot be ‘everywhere at once’ and cannot monitor all Facebook groups to respond immediately to constant community questions.

I spent a lot of time during the Singleton flood events, as did others in the community, answering community questions about road closures, river heights etc. on the above community Facebook group pages. We referred people to the SES and Council pages above and other relevant real-time sites - especially the Disaster Dashboard <https://singleton.disasterdashboards.com/dashboard/overview> (see below) and River height or warning information -

<http://www.bom.gov.au/nsw/warnings/flood/hunterriver.shtml> and

<http://www.bom.gov.au/fwo/IDN60232/IDN60232.561010.plt.shtml>

However, there was a lot of uninformed (but often genuinely offered) ‘information and opinion’ being given that was instead counterproductive (for example people’s experiences of driving recently on a road that had since been closed, or perceptions of river heights and risk). The reliance by many on these unregulated sources of information is at the least problematic and at the worst disastrous.

This issue was not helped by some flooding information relevant to Singleton that was initially being posted on the Hunter SES page, and then taking some time (up to 2 hours or more?) to be uploaded to the local Singleton SES page.

This reliance on ‘unregulated’ sources of flood information is obviously replicated across all communities in NSW (and the world). Although personal communication of this type can of course be invaluable, the ability for misinformation to spread quickly can be disastrous. Singleton was lucky in that we didn’t experience any urban dwelling inundation or widespread urban evacuation in these last floods. If it had got to this level, the ensuing situation would have been chaotic, especially since after a certain flood height, we only have one road and bridge crossing left on which to evacuate more than 5,000 people.

Suggestion: It would be helpful if local SES units could be resourced adequately to have someone monitor all local Facebook groups to provide immediate answers to community questions, and to correct misinformation that is posted.

2b. The Disaster Dashboard is a disaster in times of disaster

The 'Disaster Dashboard' website and app <https://www.disasterdashboards.com/> used by local councils and other agencies in NSW, has recently taken the fore in being the 'central' source of information in times of emergency, to be used and trusted by local communities, agencies and emergency services.

However, it appears that in times of complicated or extended emergencies (like the Northern Rivers flooding), the Disaster Dashboard system is a disaster in itself. Two examples of the use of the Dashboard and its severe limitations follow:

1. During the Lismore flood emergency on 28 February 2022; and
2. During the Singleton NSW flood event on 9 March 2022

In both examples, I will illustrate how the local Dashboard was mostly incomprehensible, confusing and potentially misleading. This is dangerous at the key time when people seek information on flooding and how to respond to an unfolding emergency.

In presenting these examples, I fully understand that the Dashboards are set up as a generic template, with the ability for numerous agencies to add real time information to them. However it is precisely this 'template' system, generated and presented on an information technology framework, that makes them a disaster for the average user. Once the Dashboard system is filled with multiple sections of information/data, the resulting presentation of the cumulative information becomes a confusing mess.

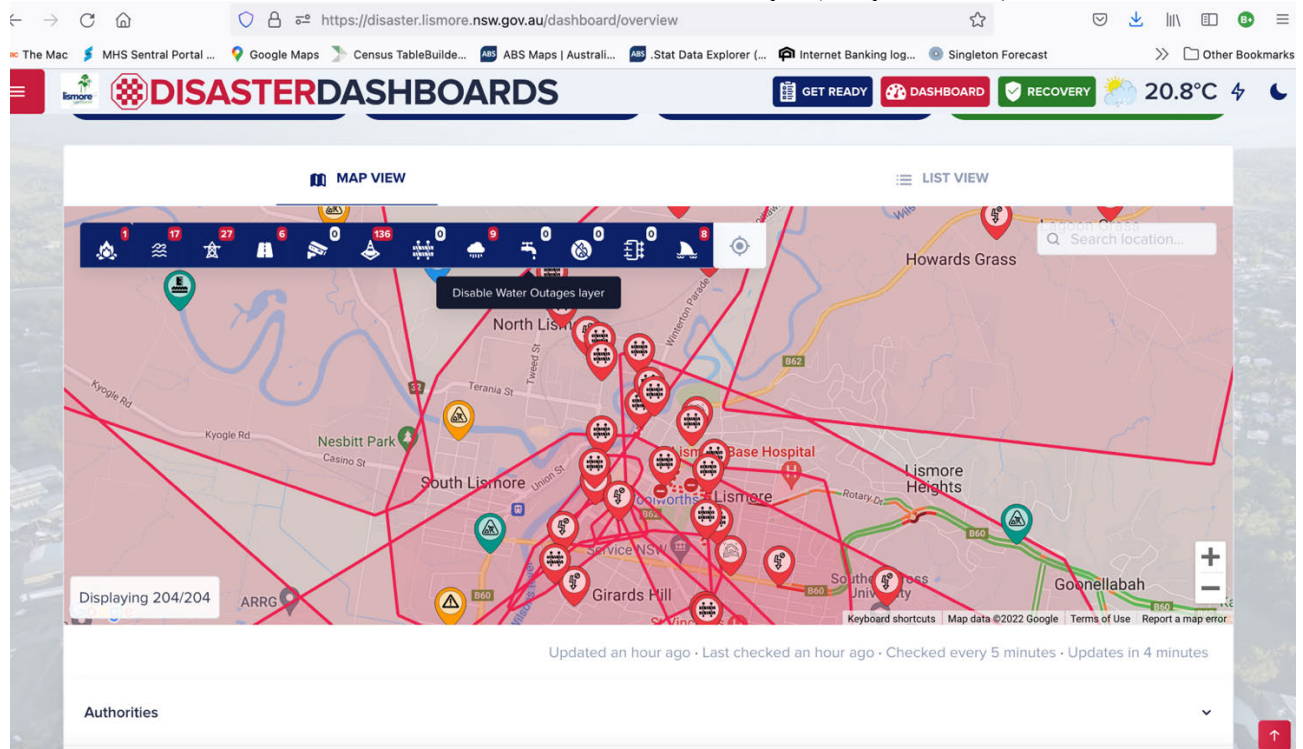
The Lismore Disaster Dashboard is at <https://disaster.lismore.nsw.gov.au/dashboard/overview>

Following are screenshots of that Dashboard I took between 1.13pm and 1.15pm on 28 February 2022, during the Lismore flood emergency.

My commentary for each screenshot follows each image – I employ the use of 'first person' grammar to illustrate my points.

(Remember that I was simply looking at this Dashboard out of interest, and luckily not relying on it as a local resident actually affected by the flood situation).

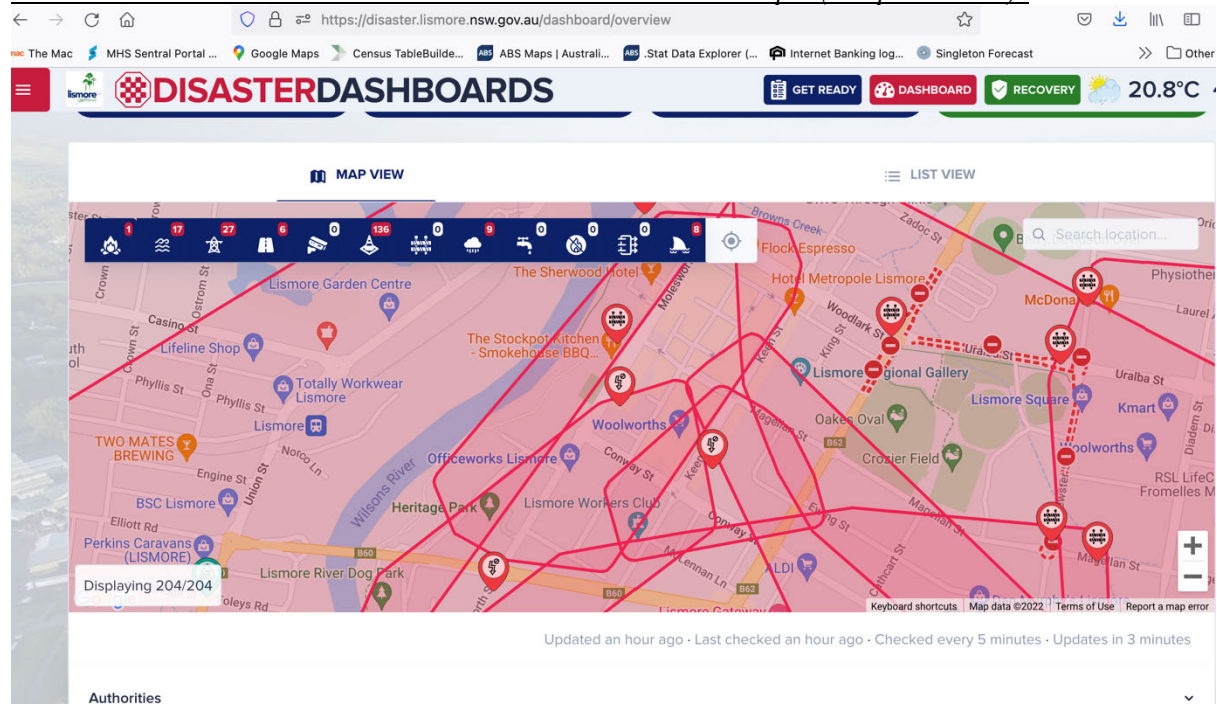
Lismore Disaster Dashboard Screen shot 2022-02-28 at 1.13.19 pm ('Map view' tab):



This overview on the main page of the dashboard shows a confusing mess of overlays of multiple 'incidents'. Unless you knew the Dashboard system intimately, it would be impossible to glean any

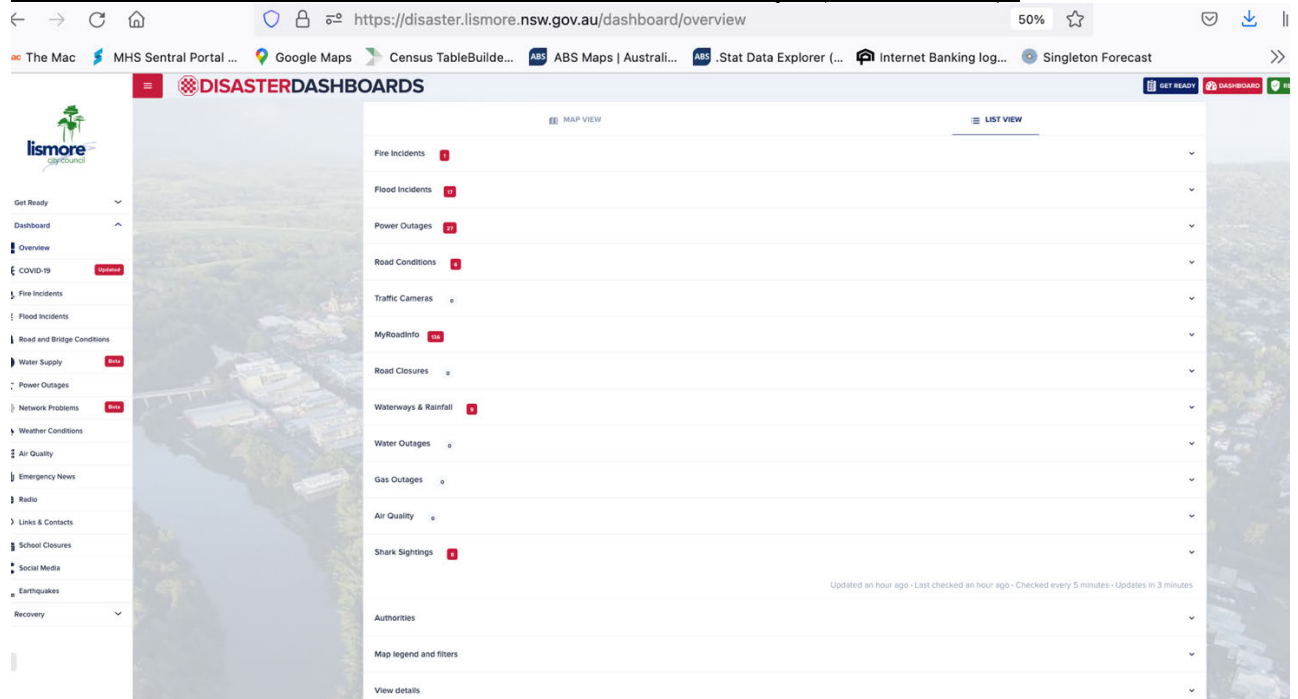
helpful information about the floods from this page, other than that there are numerous ‘incidents’ happening. What part of the Dashboard should I consult next?

Lismore Disaster Dashboard Screen Shot 2022-02-28 at 1.13.52 pm (‘Map view’ tab):



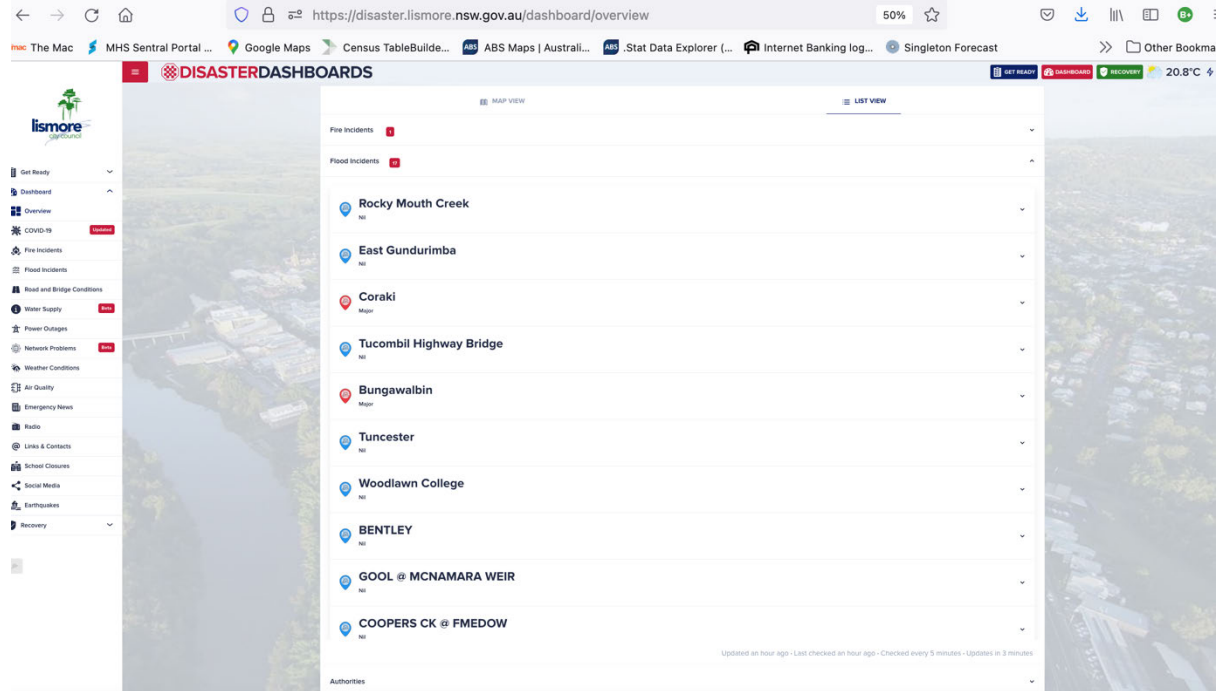
I decide to zoom in on the Lismore CBD area. It is still a confusing mess of overlays of ‘incidents’, and no clear information is apparent.

Lismore Disaster Dashboard Screen Shot 2022-02-28 at 1.14.36 pm (‘List view’ tab):



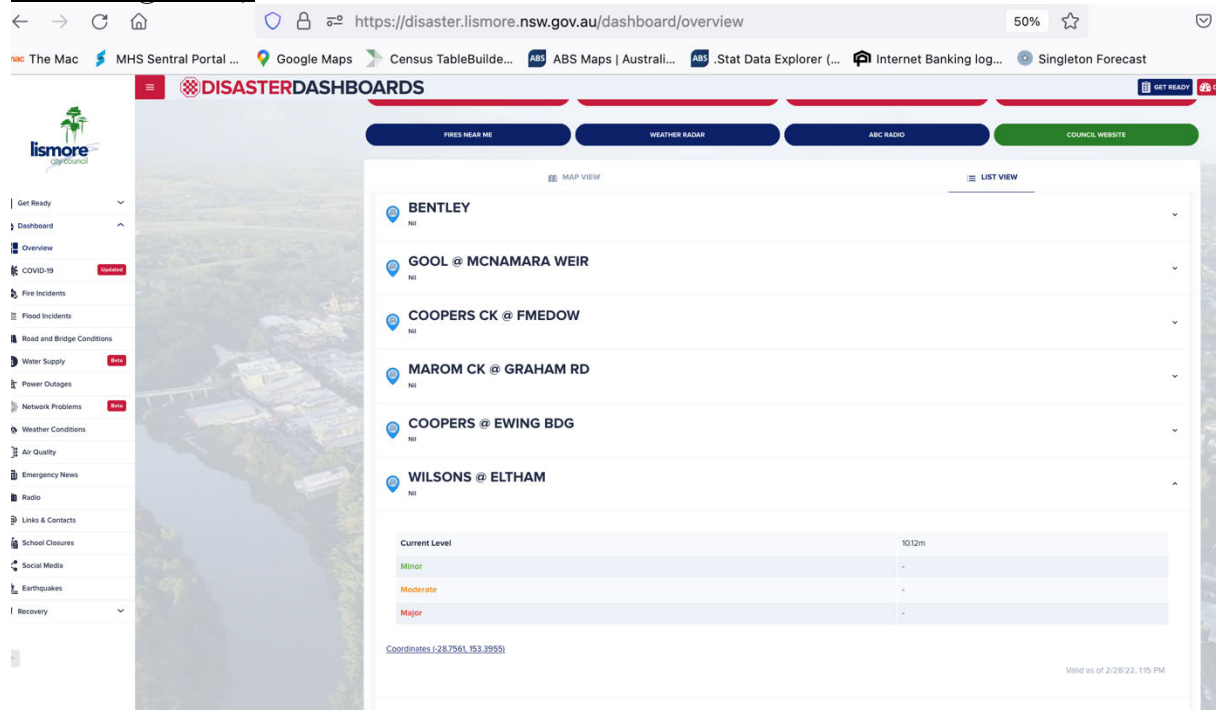
If you know to click the Overview’s ‘List view’, then again you will simply understand from this summary that there are plenty of ‘incidents’. Nothing about the severity of the current flood situation can be gleaned. Also notice the amount of road closed notices – too many to make quick decisions when evacuating.

Lismore Disaster Dashboard Screen Shot 2022-02-28 at 1.14.48 pm ('List view' tab – flood incidents)



Clicking onto the 'Flood Incidents' heading brings up another summary list – this time of each catchment/river name. If you were a resident somewhere in Lismore, or any surrounding town, village or locality, you would have to know your river/catchment name to gain any further info. There is no search by location, or priority of place (eg the largest town first, followed by smaller localities).

Lismore Disaster Dashboard Screen Shot 2022-02-28 at 1.15.42 pm ('List view' tab – flood incidents – Wilsons @Eltham)



I chose 'Wilsions at Eltham' to see what further info on flooding there may be. It simply told me the river height, and does not indicate the BoM 'major-moderate-minor' levels at that point. Therefore I have no idea of what the current extent of the flood problem is. There is no indication of the real situation happening on the ground at this point in time.

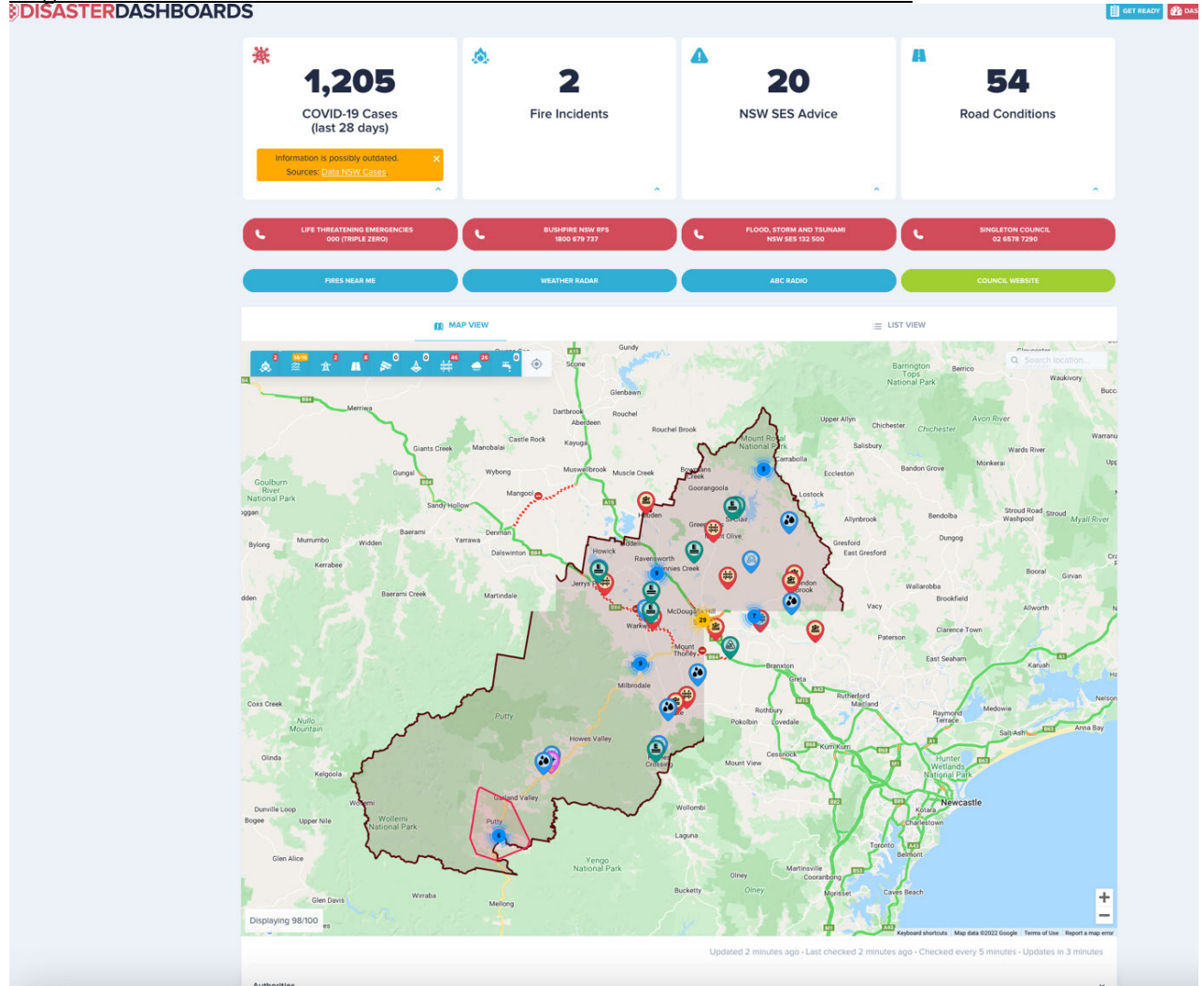
At this point I gave up in frustration, feeling for any community member trying to rely on the Dashboard for real time flood information.

The Singleton Disaster Dashboard is accessible at:

<https://singleton.disasterdashboards.com/dashboard/overview>

Following are screenshots of that Dashboard I took during the flood event in my town on the morning of 9 March 2022, and my commentary again follows each image. At the time, I was constantly referring to the Dashboard, especially to answer questions that were continually being asked on the local Facebook groups within Singleton (see previous section of this submission).

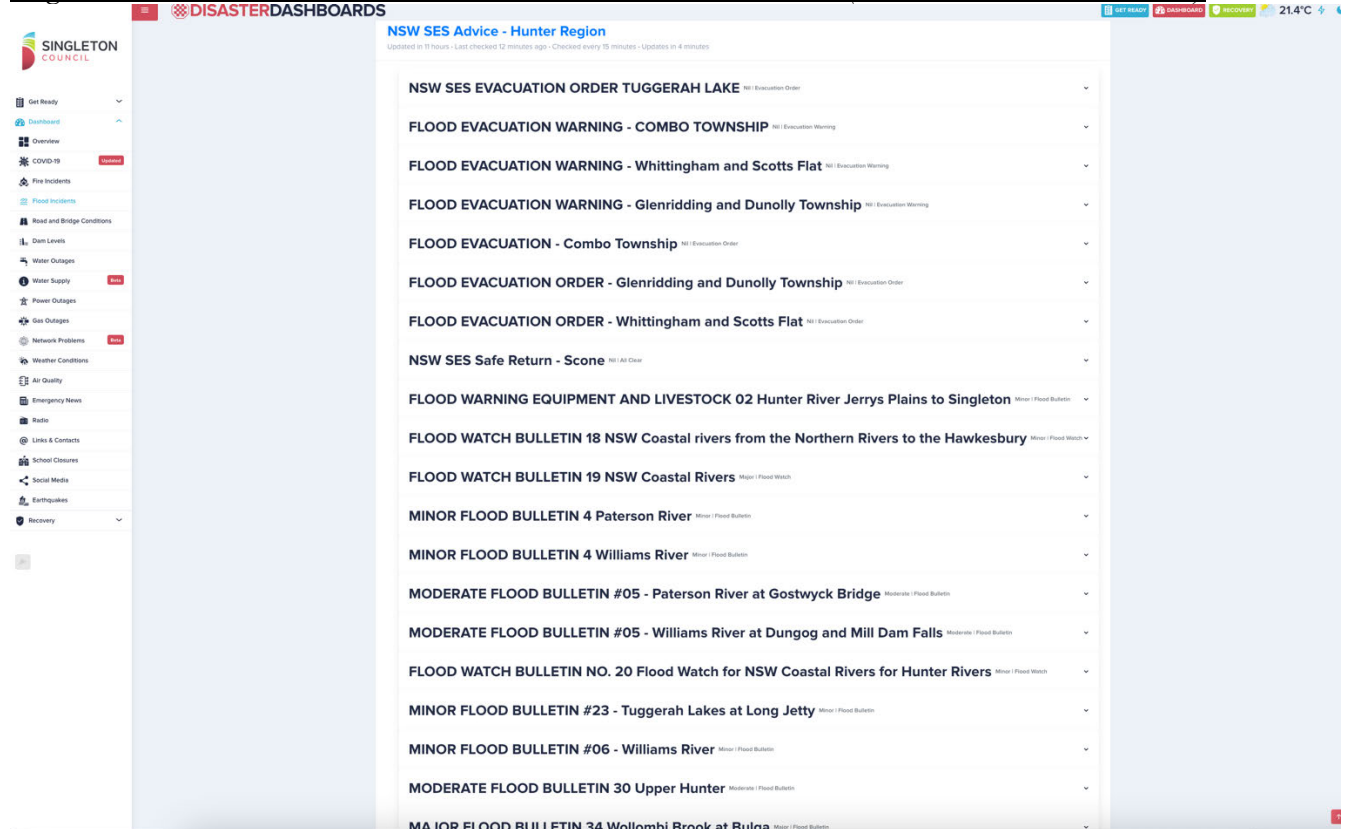
Singleton Disaster Dashboard Screen Shot 2022-03-09 at 10.51.40 am – overview



At this time, the Hunter River at Singleton was approaching a moderate (possibly major?) flood level and the community was already on high alert. Opening the main dashboard did not give any indication of the extent of flooding, but ‘helpfully’ showed me fire and COVID incidents! It would be appropriate instead if this main page highlighted the current type of emergency/ies.

Also, unless you know the geography of the Hunter and Singleton LGA (highlighted on the map), most users will have difficulty in finding the appropriate towns/localities (ie Singleton township and surrounds, and Bulga).

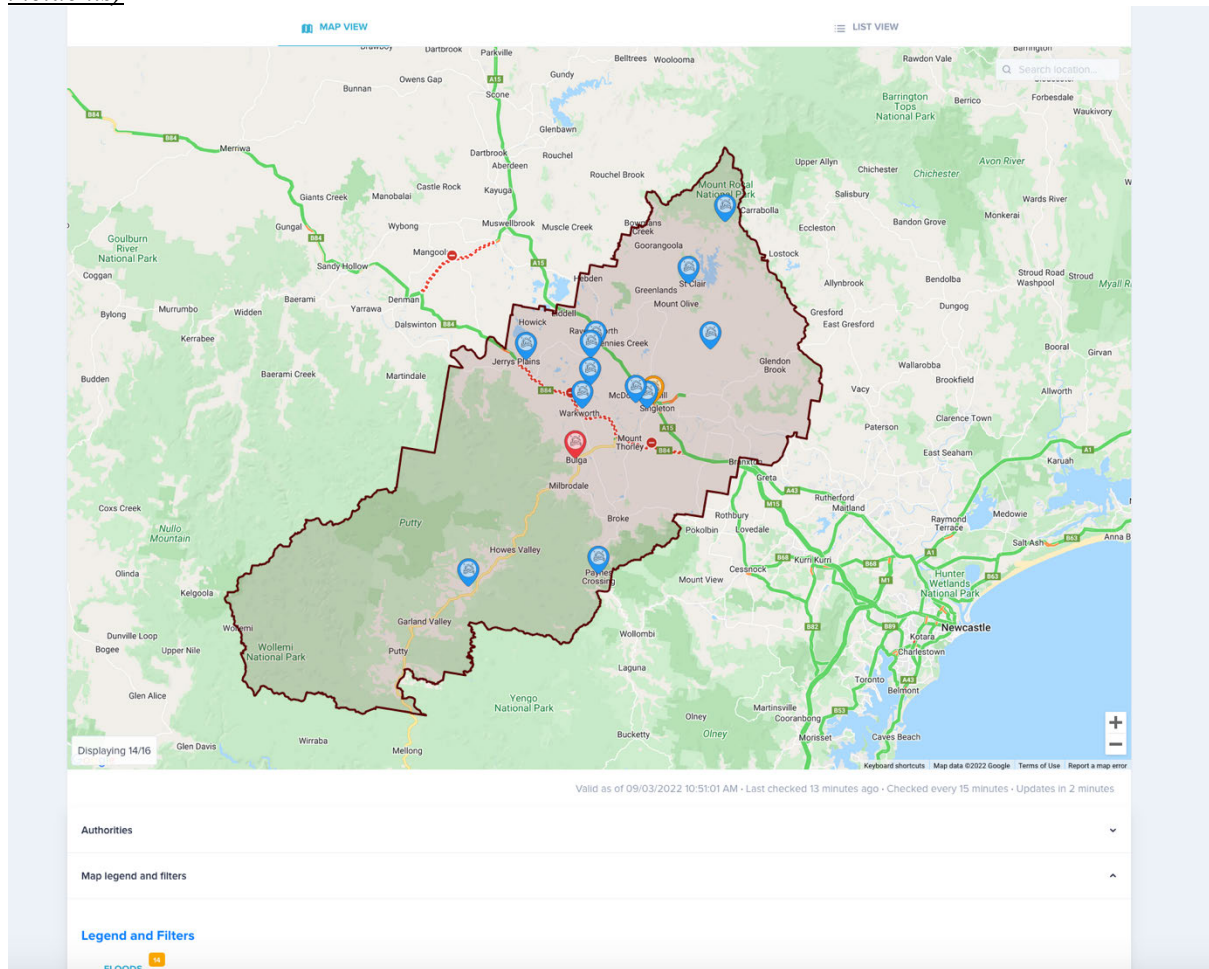
Singleton Disaster Dashboard Screen Shot 2022-03-09 at 10.51.40 am ('List view' – Flood incidents)



I decided to open the 'Flood Incidents' list from the left tabs. There are a few glaring issues with this list. Consider first that residents of Singleton consulting this page will probably already know that there is a current flood issue in our town, particularly in the low-lying Singleton locations of Combo, (incidentally not a township), Whittingham, Scotts Flat, Glenridding and Dunolly (also not a township). This list:

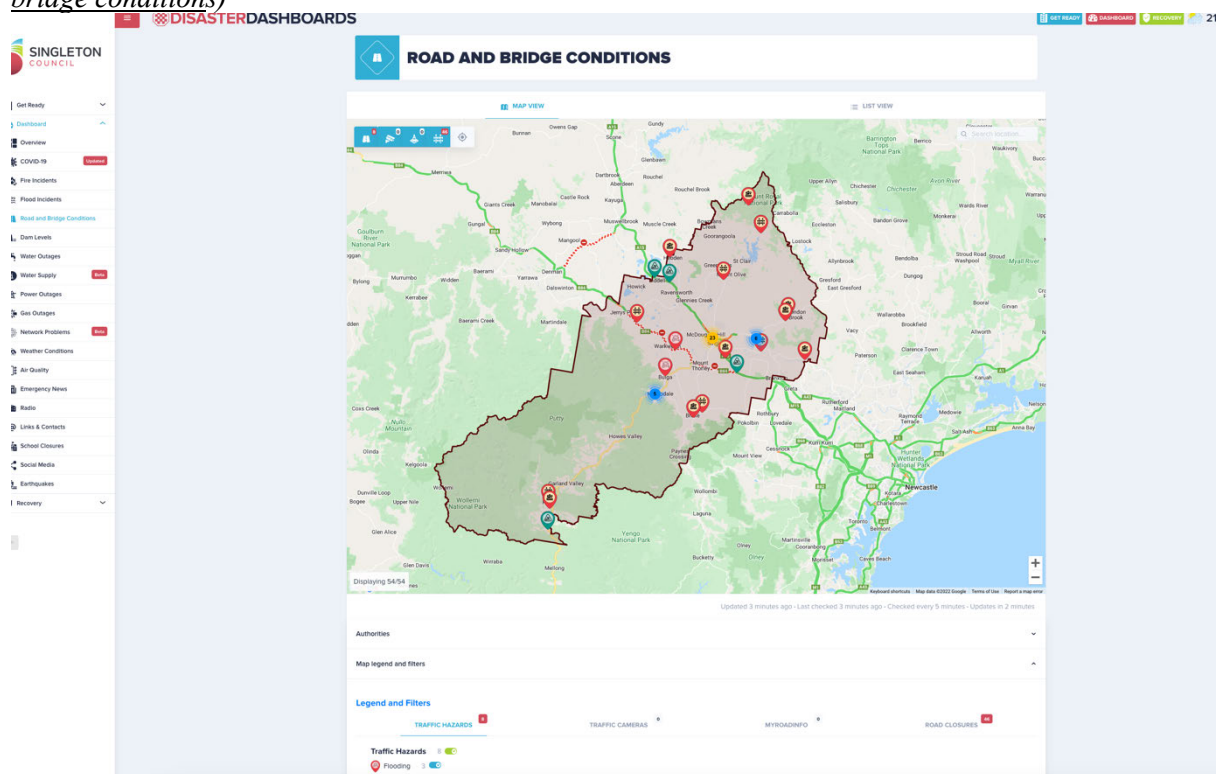
- firstly lists an Evacuation order for Tuggerah Lakes, more than 120km and several local government areas away on the Central Coast!
- next lists the Evacuation *Warnings* for Combo, Whittingham, Scotts Flat, Glenridding & Dunolly (at least they are relevant to Singleton LGA). The next on the list are the actual Evacuation *Orders* for the same areas. This is listed in the wrong order – the *Orders* should have superseded the *Warnings*.
- The remainder of the page shows flood information for various catchments in the wider Hunter and Central Coast region – some of these are within the Singleton LGA, but most are well out of the LGA
- One of the major bulletins relating to the Singleton LGA (Wollombi Brook at Bulga) is listed last

Singleton Disaster Dashboard Screen Shot 2022-03-09 at 10.52.27 am ('Map view' – Flood incidents)



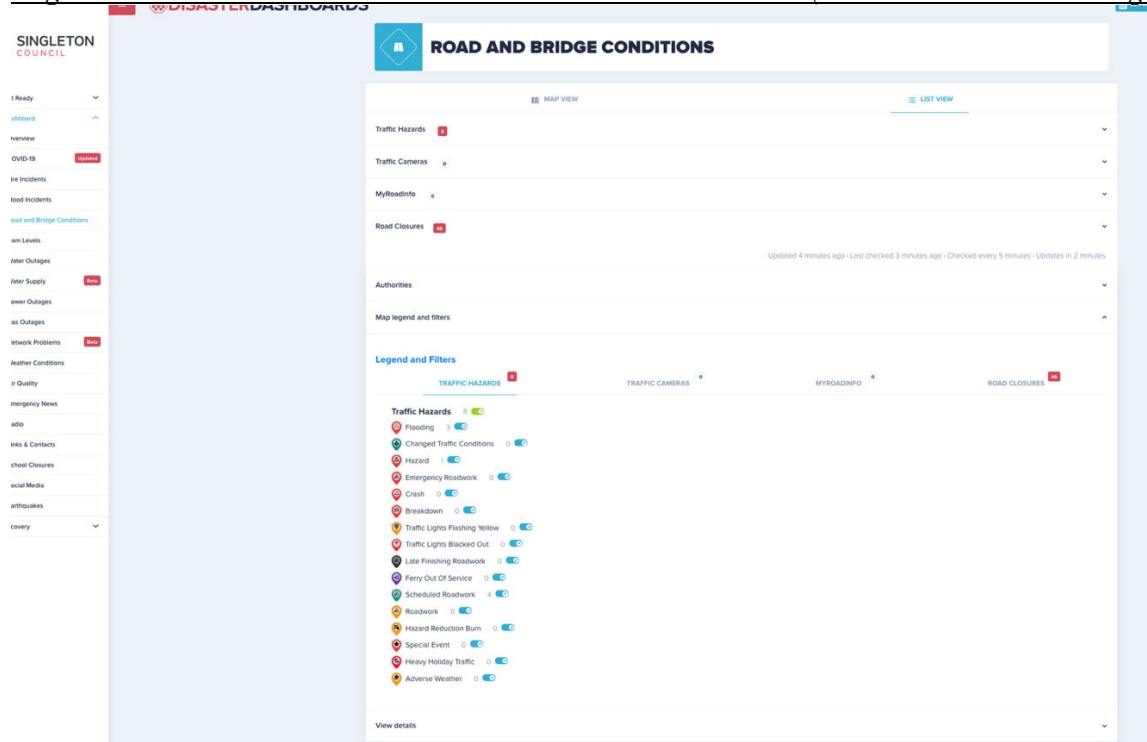
This is the map view of the list of flood events above. At this time the Hunter River and its tributaries are approaching moderate or major flood levels, but this page gives no clear information on the extent of the issue, or that there are currently 3 evacuation orders within Singleton township.

Singleton Disaster Dashboard Screen Shot 2022-03-09 at 10.53.43 am ('Map view' – Road and bridge conditions)



The New England Highway (2nd national route from Sydney to Brisbane) crosses the Singleton LGA and can be cut in at least two places by flooding in and near Singleton. By this time, (from memory) one of these places had been cut (or was near to it) – near the intersection with White Avenue. If you were trying to determine from this map which major roads in the LGA were affected, it is very difficult, especially as you can't even determine the location of Singleton on the map at this scale.

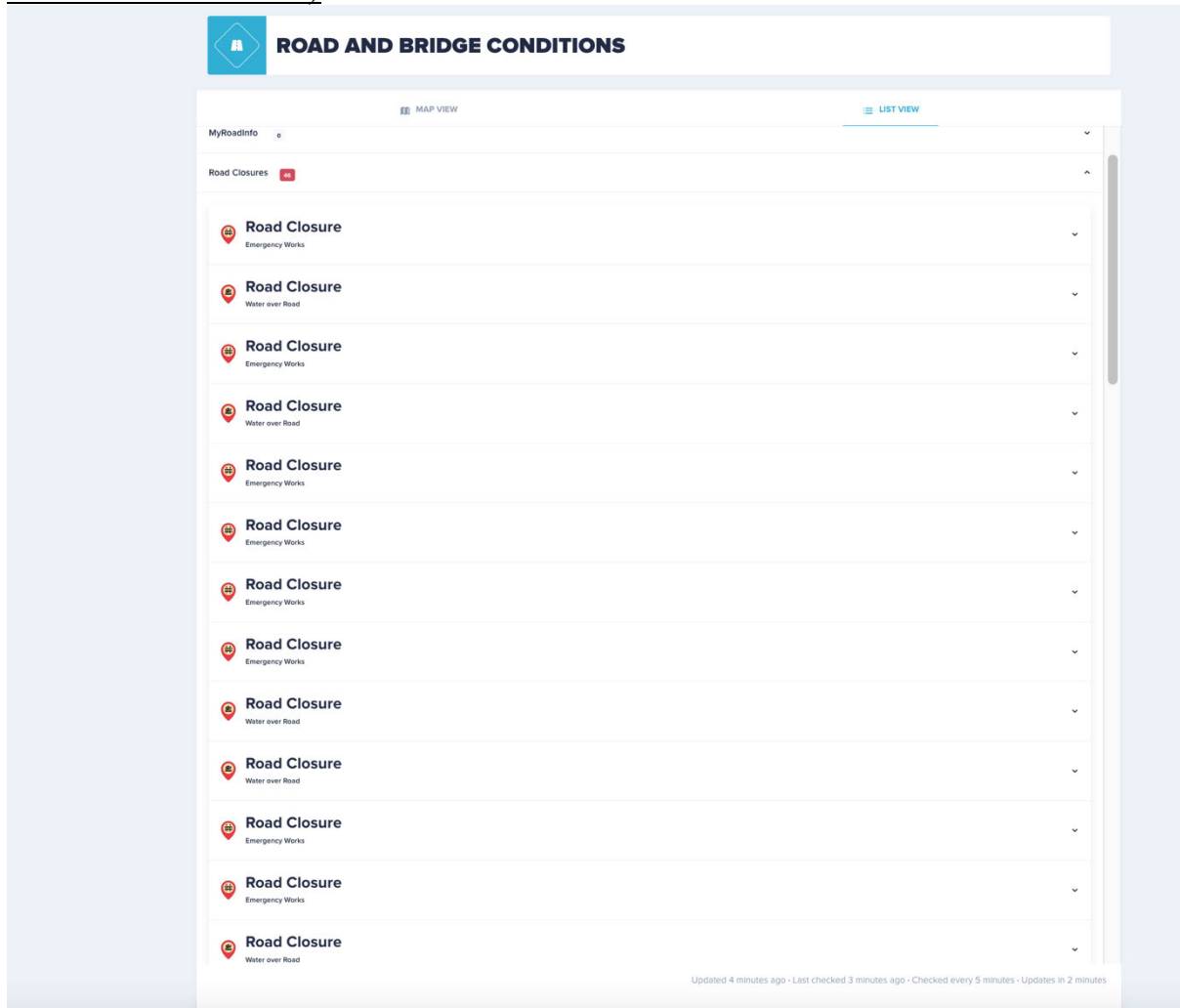
Singleton Disaster Dashboard Screen Shot 2022-03-09 at 10.53.55 am ('List view' – Road and bridge conditions)



This list view of the previous map view is not any more helpful. Here you can see that there are obviously a number of 'traffic hazards', but where would you go next to find out the key information?

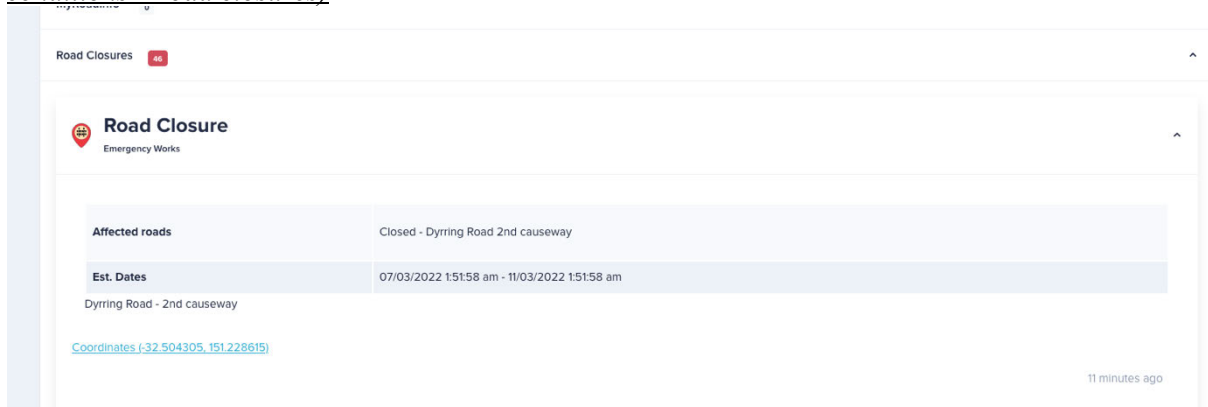
(eg where the New England Highway may have been affected). I could also see that ‘road closures’ was a separate tab and had a number of incidents listed...see next screenshot.

Singleton Disaster Dashboard Screen Shot 2022-03-09 at 10.54.07 am (‘List view’ – Road and bridge conditions – road closures)



This road closure tab is disappointing. Here I am faced with a list of ‘road closures’ – some being ‘emergency works’ and some ‘water over road’. What does this mean? What is the difference? How do I find a particular road I am interested in? I suppose I have to open each one? (see next screenshot)

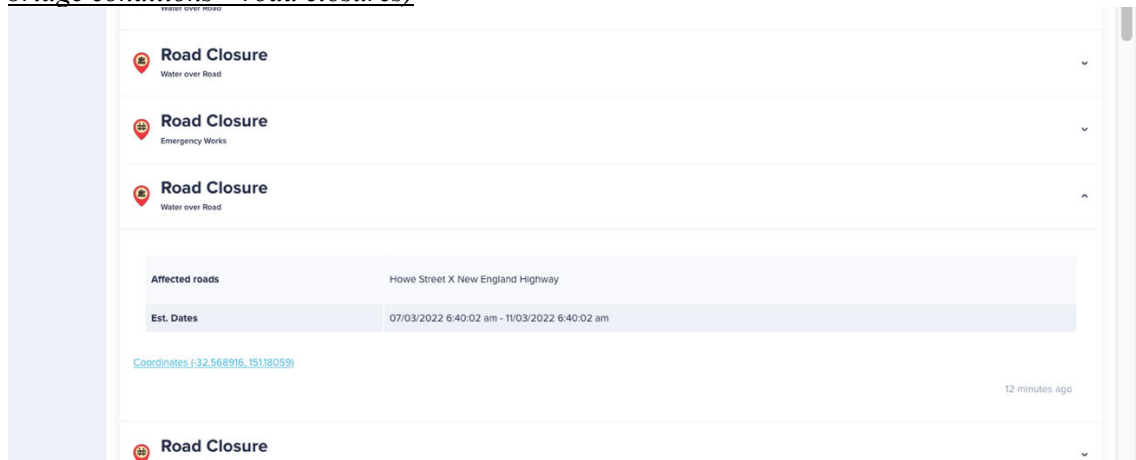
Singleton Disaster Dashboard Screen Shot 2022-03-09 at 10.54.20 am (‘List view’ – Road and bridge conditions – road closures)



I randomly open one of the ‘Road closure’ incidents (from the previous screenshot). It tells me that a local rural road has ‘emergency works’. It’s closed at the 2nd causeway (where’s that?) It further tells

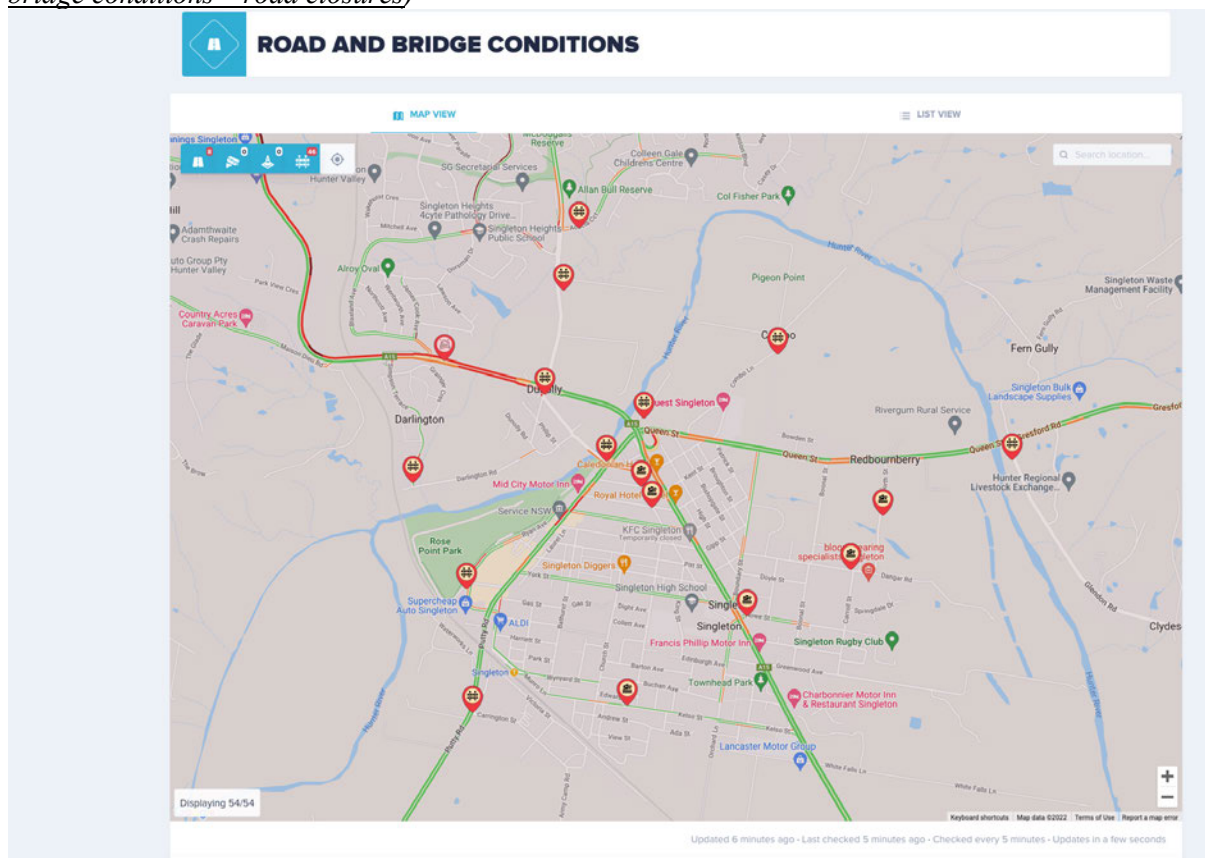
me that the 'estimated dates' were from 2 days before (at 2am in the morning), to 2 days hence at the same time. Why?! But what is the actual situation today??!! Should I rely on this information?

Singleton Disaster Dashboard Screen Shot 2022-03-09 at 10.55.04 am. ('List view' – Road and bridge conditions – road closures)



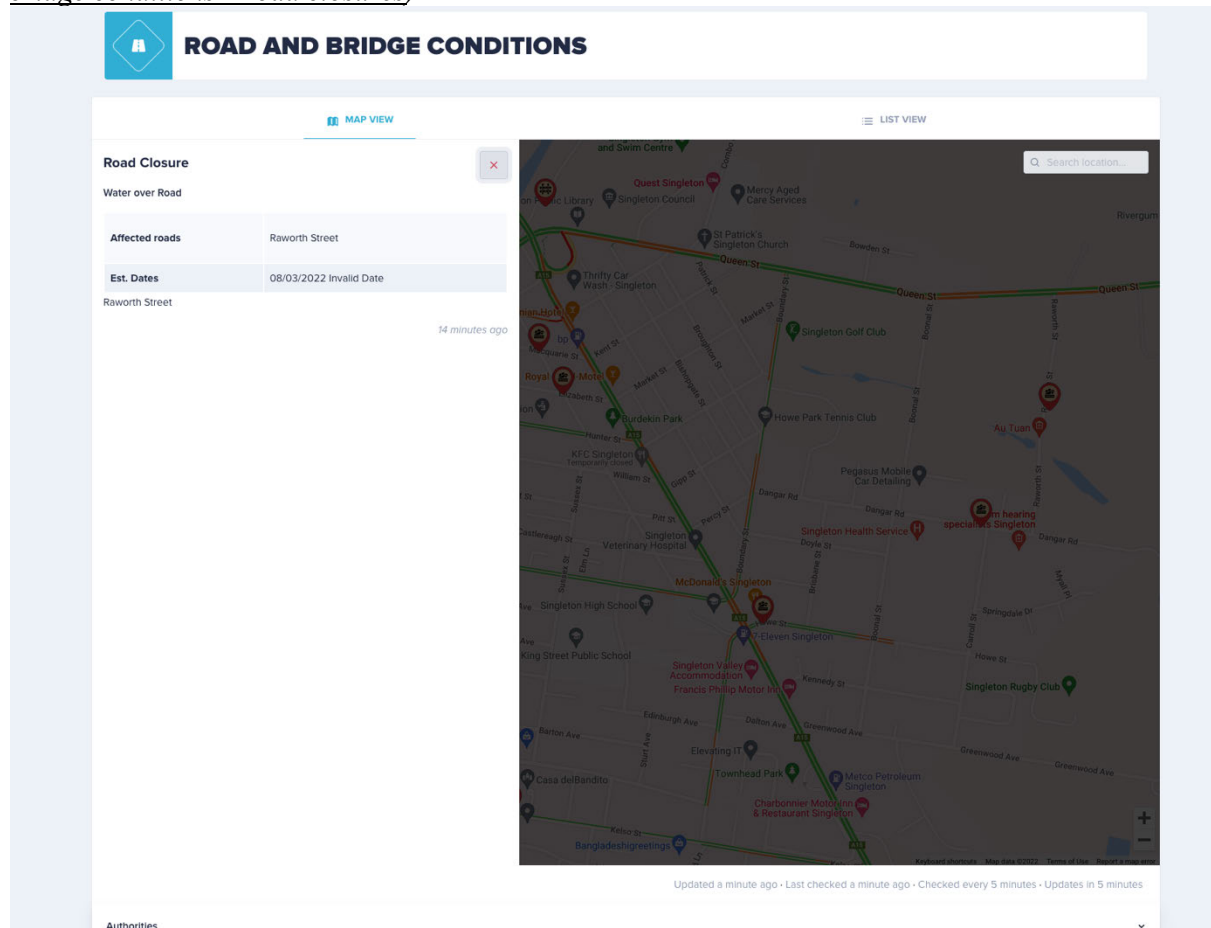
I randomly open another 'road closure' tab. It tells me that an intersection of the New England Highway in Singleton has water over the road (but under the heading of 'Road Closure', does that mean that the New England Highway has closed?) Also, its estimated dates are 2 days previous to 2 days hence. I know that the New England Highway wasn't closed the day before, so what does this mean? Is the highway actually shut, and will it be for 2 more days? (It wasn't closed – it simply had water over the road for a short time, was managed appropriately and traffic resumed normal movement in due course).

Singleton Disaster Dashboard Screen Shot 2022-03-09 at 10.55.59 am ('Map view' – Road and bridge conditions – road closures)



This map view shows the road and bridge conditions in Singleton township (including the last example above). If I was attempting to travel through the town on the New England Highway, I still couldn't have worked out what the situation was. (Note by this time there were constantly people asking this question on the local Facebook group pages, and we were 'helpfully' referring them to this Dashboard; they would have been further confused by being faced with this information). Also, notice that the colours on major roads are probably Google-derived, showing how fast traffic is moving, but this is not easily explained.

Singleton Disaster Dashboard Screen Shot 2022-03-09 at 10.56.26 am ('Map view' – Road and bridge conditions – road closures)



Here is another example of a local 'road closure'. Or is it simply 'water over road' without the road being actually closed? In this case it also states 'invalid date'. What does that mean? Should I believe it or not?

****My Disaster Dashboard examples end here****

Summary: you can see from the above that the Disaster Dashboard is a disaster in times of flood disaster. Users unfamiliar with its structure are faced with an unclear, illogical and confusing structure and terminology. This completely undermines its excellent intended purpose.

Suggestion: that the Disaster Dashboard system be radically overhauled to allow it to be a clear and logical primary source of information for the community in times of flood (and other) events.

3. Communicating flood information to the community

There are many aspects of floodplain planning and emergency management that the community does not understand, and that we as floodplain managers are not communicating well to the community. These all impact on the way that individuals and communities ultimately respond in flood events. Terminology and mapping are critical aspects of flood information that need better communication.

3a. Local Flood Plan details need to be communicated to the community

As discussed in the previous section, the SES is meant to be the chief source of information for the community in times of flood emergencies. Our community is proud of its local volunteer Singleton SES unit, who have an impressive history and experience in local flooding, and must be commended for their comprehensive 150 page Singleton Local Flood Plan

(<https://www.ses.nsw.gov.au/media/2666/singleton-lfp-feb-2018-endorsed.pdf>) This document contains, for example, details of local flooding scenarios, river and road heights that trigger evacuations or road closures, and details about evacuation procedures for specific sectors within the town. The local SES are keen for people to understand this document, but it is hardly known in the community. The SES and Council held a community information meeting to help explain this to the community, but there were only approx. 10 of us residents at that meeting (the rest being SES volunteers and Council and other agency staff).

Suggestion: That local SES units and Councils cooperate closely and allocate significant resources to communicating local Flood Plans to local communities. This should be in the form of clever summaries, maps and graphics, produced in both hard copy and suitable for social media and websites. Such commitment should be continued over the long term; not just one-off 'projects' – the resources should be updated and recommunicated regularly, particularly after flood events, and if BoM predictions indicate that an upcoming season is likely to bring significant rain.

3b. Incorrect, misleading and misunderstood use of flooding terminology impacts the community

The way in which flood risk is communicated to the community (before flood events) has a major impact on the way that people respond to impending and unfolding flood events.

Professionals and media have continued to use outdated and misleading flood terminology, despite the use of new terms since the introduction of the 2005 Manual. Wrong terminology used even at the height of the recent flood events continues to give the community a misleading perception of flood risk. Added to this is the use of terminology which is unknown to most outside the floodplain management fraternity. Some examples:

1. The 'One in one hundred year' (1:100) flood terminology is vastly outdated. Most in the community still have the idea that a flood will only happen of this size once every 100 years, and are 'surprised' and 'let down' when more frequent floods occur. **1% AEP (Annual Exceedance Probability) (AEP)** is the correct term, but is rarely heard in public, presumably because it is 'harder' to explain.
2. Worse still was the use by the NSW Premier to describe the Northern Rivers Floods as a '1 in 1,000 year' flood event. This gave a false perception that it will 'probably not happen again, as 1,000 years is a long way away'. However, **0.1% AEP** is the correct term, which simply means that on all modelled probability, the flood of that size had a 0.1% chance of happening this year, meaning that Lismore was incredibly unlucky.
NB It has since been generally agreed that the Lismore flood was approx. a 1:800 year [sic] flood (Reference Floodplain Management Australia 2022 Conference - 2022 East Coast Flood Events Panel Discussion -Thurs May 19th)
3. The '**floodplain**' is correctly defined as all land below the Probable Maximum Flood (PMF). However, many in the community understand the 'floodplain' as being land only below the more 'well known' '1%AEP (or 1% plus freeboard)
4. The **Probable Maximum Flood (PMF)** is a virtually unknown entity for most in the community. Councils are reluctant to communicate this 'worst case disaster level' and landowners and developers generally like to keep this quiet. However, there needs to be an effective way of

- describing ‘very rare’ floods and their consequences to the community. The PMF, or near-PMF examples of Nyngan (1990?), Picton (2019?) and the Northern Rivers (2022) cannot be ignored.
5. Even the meaning of the word ‘**flood**’ needs to be better communicated. In particular, the ‘smaller’ flood events (eg 20%, 10%, 5%, 2%) need to be better understood by the community – see information in the next section relating to mapping. In some areas, these **smaller floods have major impacts** and their implications for individual property owners and residents needs more attention. Also, their risks to development need more focus in strategic planning and development assessment

Suggestion: Significant effort needs to be put into explaining flood fundamentals to the community, and to professionals, including flood level terminology and ‘The Anatomy of a Floodplain’ (ie flood hazard and flood function categories). My submission to the draft NSW Flood Risk Management Manual Package, 4 April 2022 provides further ideas (and is available on request).

3c. Mismatch between BoM flooding classifications & river heights and flood expectations

There is a disconnect and confusion about flood risk terminology used by different organisations in NSW. The Bureau of Meteorology (BoM) uses ‘minor-moderate-major’ descriptions in warning for flood events, but depending on the locality, these descriptions do not match with the local flood events assessed and planned for under the FRM process - ie the 1%, PMF, etc.

The BoM categories can cause unnecessary angst in the community, who match their perceptions of ‘what might happen’ in their floodplain with their experience of what they have seen happen previously in their locality, or in another place. For example the BoM’s description of a ‘major’ flood (recently in the Northern Rivers) was way beyond the consequences of the recent ‘major’ flood in my part of the Hunter, which did not inundate any urban areas. However, the warning of a ‘major’ flood caused some in my community to incorrectly assume that they would end up like Lismore. In the different catchments, and for different flood events, the word ‘major’ means different scenarios.

BoM river heights measurements are also used to communicate the likely height of floods, but these heights:

- have no relationship to individuals’ homes or land; and
- have no relationship to the height of local flood mitigation infrastructure eg levees

This disconnect causes confusion amongst the community, and makes floodplain managers’ jobs even harder to communicate local FRM flood risk and mitigation.

Suggestion: An overhaul of the way that BoM classifies floods is required, and this should align with flood risk information prepared through the NSW FRM process.

3d. Many councils’ flood mapping are missing in action

At the commencement of the *Standard Instrument Local Environmental Plan* around 2008, many councils were required to place their adopted floodplain mapping (ie the Flood Planning Area (FPA) - usually 1% AEP and freeboard, and sometimes PMF) into their Local Environmental Plan. Other councils were allowed to keep it out of the LEP, and to place mapping instead in their Development Control Plan (DCP) or elsewhere. In the implementation of the Department of Planning’s ‘Flood-prone land package’ in 2021, all mapping was taken out of LEPs and councils were required then to place their mapping in a publicly accessible place (such as, but not necessarily, a DCP). Councils were given no assistance by the State Government to do this.

However, since that time, many Councils have NOT made their mapping publicly available and/or understandable. This is presumably because those councils lack the time, resources and expertise to do this successfully. Many councils (particularly regional and small rural councils) have mapping generated many years ago, and not suitable for online access. Some do not even have their freeboards and therefore FPL/FPA mapped. Others only have ‘cut and pasted’ difficult-to-read maps in old DCP formats, while some (larger, better resourced councils) have sophisticated online mapping showing many flood aspects.

Flood information/mapping/references are often ‘forgotten’ over time with council staff turnover. For example, I have witnessed incidents where council staff have not been aware of whether their (previous) LEP flood map included freeboard or not, and also other examples where staff vehemently argued that the definition of FPL does not include freeboard (despite the Manual’s clear guidance).

Poor or inaccessible information leads to poor decision making. This issue will require assistance from the State Government to be successfully implemented by councils regardless of their size or resources.

Suggestion: Each Council should be required to have a clear Policy on the type of flood mapping that they hold, what mapping will be publicly accessible, and how this will be done. All public mapping should also be required to specify:

- *A clear distinction between the defined flood event, the freeboard and the PMF*
- *A description as to what source(s) the mapping component(s) have been derived from (eg name of relevant Flood Study / FRMP).*
- *The purposes the mapping is used for, e.g. ‘flood related development control mapping’ and/or ‘other flood mapping and related data’*

3e. Flood mapping: confusing messages about flood risk to the community

The flood mapping referred to above is that which has been determined through the required steps of the NSW Flood Development Manual FRM process – i.e. developed via a Flood Study, FRMS and FRMP and adopted by Council. It typically shows the 1% AEP and a 500mm freeboard, as this is the ‘recommended’ Defined Flood Event (unless determined otherwise by the above studies) and has been ‘translated’ into the Flood Planning Area (FPA) as defined by the LEP and used for *planning purposes and assessment of development applications for future development*.

Although smaller flood events (e.g. 20%, 10%, 5%, 2% AEPs and the PMF) have also usually been determined by the above studies, they are not highlighted or well known outside flood engineering staff, as they are not connected to the *LEP Clause 5.21* definition of the Flood Planning Area.

This 1% AEP (plus freeboard) map by default then *becomes the main focus of the community*. This is the level to which development controls are applied (e.g. floodproofing of homes), may be the area that some development is excluded from and it is the map that is used to determine notations on Planning Certificates when people purchase their homes. It is usually the only map that people can find if they go looking for local flood information. People generally consider land above that to be ‘flood free’, despite the fact that the PMF defines the entire floodplain; only anything above that should be considered ‘flood free’.

Further, the map of the 1% extent becomes the focus, and the height and flow of water at any point within the floodplain is forgotten about.

This sets a complacency and misunderstanding in the community about the individual flood risk that is relevant to every property within the floodplain. Community members should instead be encouraged to understand *the likely height and flow of water at their property under the full range of flood events* – from a simple 20% AEP, through to the 1% and also at the PMF.

I appreciate that the technology and level of detailed modelling required to do this is substantial, however, simplified versions of this suitable for general community use could be developed. For example, detailed maps and infographics of sections of towns could show the likely height and depths at well-known locations – e.g. the post office, supermarket, churches, hospital, significant houses, landmarks etc. This type of information could be incorporated into the Local Flood Plan information and community engagement discussed elsewhere in this submission.

Suggestion: that maps and infographics suitable for a general audience be produced at the local level showing likely height and flow of water at specific properties in the floodplain under the full range of flood events, including up to the PMF.

4. Effective floodplain land use management has been let down by our complex NSW planning system

Our complex NSW planning system has meant that the importance of floodplain land use planning has been diminished over the years, in preference to other supposedly more important priorities. This is also not helped by the involvement of various agencies in administering floodplain planning.

At a local council level, planners and floodplain managers need to fully understand a vast amount of legislation and technical detail if they are to effectively manage and make informed decisions about their floodplains. A summary of documents relevant to local floodplain management planning in NSW are as follows, and show the wide range of frameworks and agencies involved in floodplain planning. An effective planner should be conversant with all of these.

Table 1- Documents and frameworks relating to local floodplain planning

Legislation / policy /strategy / supporting information	Source / reference (where relevant)	Administered /overseen by:
Floodplain Development Manual 2005 and appendices	https://www.environment.nsw.gov.au/research-and-publications/publications-search/floodplain-development-manual	Department of Planning and Environment – Environment, Energy and Science Specialist Flood Team
Draft Floodplain Development Manual review (2022)	https://www.environment.nsw.gov.au/topics/water/floodplains/flood-risk-management-manual-update	
Draft Flood Risk Management Guidelines (2022)		
s733 of the Local Government Act 1993: Exemption from liability—flood liable land, land subject to risk of bush fire and land in coastal zone	https://legislation.nsw.gov.au/view/html/inforce/current/act-1993-030#sec.733	Office of Local Government NSW
Standard Instrument Local Environmental Plan (LEP) Clause 5.21 Flood planning [compulsory]	https://legislation.nsw.gov.au/view/html/inforce/current/epi-2006-155a#sec.5.21	Department of Planning and Environment - Green and Resilient Places - Flood Specialists
Standard Instrument LEP Clause 5.22 Special flood considerations [optional] – many councils are currently considering its adoption	https://legislation.nsw.gov.au/view/html/inforce/current/epi-2006-155a#sec.5.22	
Local Planning Directions section 4.1	https://www.planning.nsw.gov.au/-/media/Files/DPE/Directions/Ministerial-Directions-commenced-on-1-March-2022.pdf?la=en	Department of Planning and Environment
Development Control Plan provisions relating to flooding	Published locally	Council
Local Strategic Planning Statement (under EP& A Act)	Published locally	Council
Community Strategic Plan (under Local Govt Act)	Published locally	Council
Flood Studies (often multiple)	Published locally	Council with assistance from Department of Planning and Environment – Environment, Energy and Science Specialist Flood Team
Floodplain Risk Management Studies (often multiple)	Published locally	
Floodplain Risk Management Plans (often multiple)	Published locally	
Council’s mapping relating to flooding	Often, but not always, publically accessible online	Council

Legislation / policy /strategy / supporting information	Source / reference (where relevant)	Administered /overseen by:
Council's Flood Policy (if any)	Published locally	Council
Any local strategies relating to flooding land use planning	Published locally	Council
Any local strategies relating to climate change adaptation	Published locally	Council
Planning Certificate requirements relating to flood policy	Produced as required	Council
Local Flood Plans and other emergency management references	E.g. https://www.ses.nsw.gov.au/local-region-information/hur/flood-storm-and-tsunami-plans/	SES
Australian Disaster Resilience Knowledge Hub including <i>Managing the Floodplain Handbook</i>	https://knowledge.aidr.org.au/resources/handbook-managing-the-floodplain/	
NB I may have omitted other relevant documents		

I have observed over my 30-year career that NSW planners have become much less fluent in floodplain planning, especially relating to detailed technical understanding of flood risk and mitigation and how that is applied to planning policy, land use strategy and determination of development applications. This demise has been in the context of increasing demands on planners to understand and keep up with the complex NSW planning system and its constant amendments, and the consistent 'priority' placed on housing delivery and development assessment processes than on adequate natural hazard and environmental planning.

In this context, planners (particularly local government planners, and more so in rural and regional areas) are generally not familiar with the detailed contents and obligations of the above documents, nor with how to effectively apply them or to make professional judgements and recommendations relating to floodplain development. They are also hampered in making good decisions by the time pressure of development application determination times and timelines for developing good planning policy. Further, they are constrained by a lack of CPD education relating to floodplain management, despite the existence of Floodplain Management Australia and their specific training course through UTS. (Some key councils choose not to belong to FMA and hence staff are unaware of and/or miss out on valuable information sharing and networking/learning/upskilling).

The lack of floodplain planning knowledge, coupled with confusing bureaucracy, continues to compromise good floodplain management across the State, especially in areas with limited numbers of experienced planners (or none at all).

Also, despite the excellent work in the 2022 draft review of the Floodplain Development Manual and Guidelines (which is more than 300 pages long), the role and responsibilities of land use planning as it relates to floodplain management is not well communicated in the review. PIA NSW and I addressed this in our submissions to the *draft NSW Flood Risk Management Manual Package, April 2022*. Without amendments to the Manual package, the principles and detailed requirements of the Manual may not be integrated successfully into planning practice, undermining the intent of the Manual.

There also needs to be a clearer understanding and explanation of the link between the Manual & Guidelines and the legislative aspects of floodplain planning, administered by other sections of the Department of Planning (i.e. the LEP flood clauses, Local Planning Directions etc). This disconnect between the arms of floodplain planning legislation and practice creates confusion and further contributes to the lack of successful integration of flood issues into planning processes.

Suggestions: that the draft Floodplain Development Manual and Guidelines 2022 be updated to include a specific Planning Quick Reference Guide, which should map planning processes for

proponents, assessing authorities and councils preparing planning strategy, and link elements of the Manual to each process element of the Manual.

I further refer you to the details in my previous submissions to the draft NSW Flood Prone Land Package, June 2020 and to the draft NSW Flood Risk Management Manual Package, 4 April 2022.

5. 'Planned retreat from the floodplain' is not viable for most communities

There has been plenty of talk in the aftermath of the Northern Rivers floods for a 'planned retreat from the floodplain' or 'not to let anyone live in floodplains ever again'. The response to this would necessarily cover many pages. However, I remind you of the definition of 'floodplain' being all land below the PMF. The totality of this land covers a substantial part of NSW, particularly in western NSW floodplains that are wide and shallow. The reality of this needs to be better understood by the NSW community. It is not viable to pick up every suburb, town and village near a river or creek and transplant it 'further up the hill'. Besides the cost and physical limitations, the social cost of this is enormous, and needs to be properly understood before any decisions are made.

6. Further technical detail in professional associations' submissions to Inquiry

My submission has been limited to a number of issues that I feel passionately about. There are many more that I could cover. Technical aspects relevant to the Terms of this Inquiry are covered much more comprehensively by the two professional associations that I belong to, and to whom I contribute my views. I urge you to use the vast experience of the membership of both the *Planning Institute of Australia (NSW)* and *Floodplain Management Australia*, and of the many other professional associations who will make a submission, to work through the issues in this Inquiry. These professionals are the ones at the front-line planning for the future of our floodplains and they need all the respect and assistance they can muster in these challenging times.

Thank you for the opportunity to present this information to the Inquiry.
Please contact me if you need any further information or clarification.

Regards
Jan

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