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A 1955 Flood photo

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The Aims of the Society are to
Discover, Record, Preserve, Advise on and Teach the History of Maitland and the District

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Lecture meetings are held on the first Tuesday of each month from 5:30-7.00pm as a forum for lectures, talks and presentations.
Committee meetings are held on the third Tuesday of even months from 5:30-7.00pm.
General meetings are held on the third Tuesday of odd months from 5:30-7.00pm.
Members are invited to attend all monthly meetings.

Meetings are held at the Society's rooms, 3 Cathedral Street Maitland.

Membership fees : $25 (single) and $35 (double / family)

The rooms are open between 11 and 3 on Wednesdays and Saturdays.

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Editor's Notes: It has now been seventy years since Maitland's devastating 1955 flood. In this Bulletin we take a look back to that flood but also ponder what the future might hold for the city.

We open with an article, a version of which had appeared in the *Maitland Mercury* on 15 October 2021. This article had been excerpted from a more extensive flood related section in my book "A History of the Maitland Branch of the Country Women's Association: Service and Tradition" (2011). The work which the local CWA did in flood times was truly impressive.

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The Maitland CWA's Role During the City's Floods

By Lisa Thomas

During the 1949, 1950, and 1955 city floods the Maitland Branch of the Country Women's Association responded to the needs of the community.

The Branch was able to provide a safe refuge when Maitland flooded because its hall was in a fortunate physical position. The spacious CWA hall in Bulwer Street, which opened in 1941 and had functioned as the Service to Soldiers Building during WWII, was in a relatively raised position and possessed an upper level.

In the 1949 flood at least 1600 Maitland homes were under water. The CWA sheltered several hundred men and women of all ages, in addition to their household goods and pets, and even, reportedly, a cow. Similar numbers sheltered in the hall during the 1950 flood.

Fortunately the CWA hall itself was structurally unscathed during both floods.

Their 1949 and 1950 experiences made the Branch ladies critical of the official flood response up to that time.

At the 1950 CWA Hunter River Group Conference at Quirindi the Maitland Branch successfully proposed a motion to request that the New South Wales government "institute an effective automatic flood warning system on the Hunter River, so as to avoid repetition of the undesirable and conflicting reports made during the 1949-50 floods."

During the lethal 1955 flood, although the Bulwer Street hall suffered water damage, it once again provided many locals with temporary shelter.

When news of Maitland's 1955 flood reached the wider CWA organization, groups from around the country gave what they could in an outpouring of solidarity.

Contributions were received from the CWA head office in Sydney and from twenty-three individual NSW branches including Taree, Forbes, Liverpool, and Picton.

Donations came from CWA branches as far away as Dulacca Qld, Narrikup WA and Natya Vic. Money was even received from a women's organization in England.

Some donations were monetary and some were of goods, and were funnelled through the Maitland Branch, which itself gave £410 towards flood relief.

Many shipments were of simple items of immediate need. For example, CWA branches around the state sent new items of a personal nature such as underwear, pyjamas, nightgowns, and layettes. The branches also sent many shipments of used clothing and the Maitland Branch held several hand-out days to distribute them.

Branch President Mrs Minnie Parish organized the distribution of hundreds of sheets, towels, blankets, pillow slips, tea towels, and tablecloths. The Branch purchased and handed out kitchen utensils and groceries.

The Newcastle CWA Branch forwarded 100 pairs of shoes from the Paddle Shoe Company. The Chatswood Evening Technical Handicrafts class sent many storage baskets. Five hundred bottles of Zixo Bleaching Fluid were gratefully received from Cawley and Co.

Many toys were donated to the Branch and were forwarded to the Crippled Children's Maitland Committee and the Kindergarten School.

The flood waters had barely abated before the Branch ladies were again highly critical regarding the government's preparedness for floods and were making their opinions known.

At the State CWA conference in April 1955, on the representations of the Maitland Branch, a telegram was sent to the Premier Joseph Cahill on behalf of the 1000 delegates, urging him to take immediate action at Government level to remove the causes of the floods and avoid further disasters. Many CWA ladies also sent him individual telegrams of complaint.

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Learning from history: Is Maitland ready for its next big flood?

By Chas Keys

This month, Maitland commemorates the 70th anniversary of its biggest-ever and most catastrophic flood – the Great Flood which peaked in Maitland on 25 February, 1955. Eleven people died in the council area in that event, there was great damage to private property and infrastructure, and the functioning of the local economy was severely impaired for many months. No other flood in the area's history had been so disastrous. It reached a height of 12.1 metres (Australian Height Datum [AHD}, mean sea level) at Maitland's main flood gauge located at the site of the old Belmore Bridge, about 0.8 metres higher than the next highest flood recorded there since the gauge was installed in the 1860s. With no flood, the river reaches a height at the gauge of less than 2 metres at high tide.

A flood of 12.1 metres or higher, it is estimated, might be experienced at the Belmore Bridge gauge about every 200 years, on average. Put another way there is a 0.5% chance, each year, of a flood of that magnitude or greater occurring there. Sooner or later a flood reaching or exceeding 12.1 metres AHD will be seen in Maitland. For the sake of simplicity, we will refer to such a flood as a big one in the Maitland context.

It is entirely likely that at some stage a flood substantially bigger than the 1955 one will strike Maitland. In this regard the experience of Lismore, where in 2022 a flood reaching more than two metres higher than the biggest previously seen in European times struck the town, is instructive. No flood record cannot be beaten, and by a considerable margin, and several Australian communities have had the experience of a flood which exceeded by a great deal the highest flood previously recorded there. Lismore in 2022, with a record of floods going back more than 160 years, was just one of these. Another was Nyngan, in 1990.

We should regard a very big flood at Maitland as being inevitable, though we cannot know when it will occur. It could be this year, or in a few decades, or many hundreds of years into the future. Whenever it occurs it will be devastating in its impact and Maitland needs to be as ready as possible to cope with it.

So how will Maitland cope when a big flood strikes? Flooding is often said to be the most 'manageable' of the natural hazards we face in Australia, but that does not mean that a high quality of management (presumably minimising deaths, injuries, damage and disruption) is inevitable or even likely – in Maitland or anywhere else. Our flood management remains flawed, even though it has in many respects improved over the past several decades.

There are many differences between the Maitland of 70 years ago and the

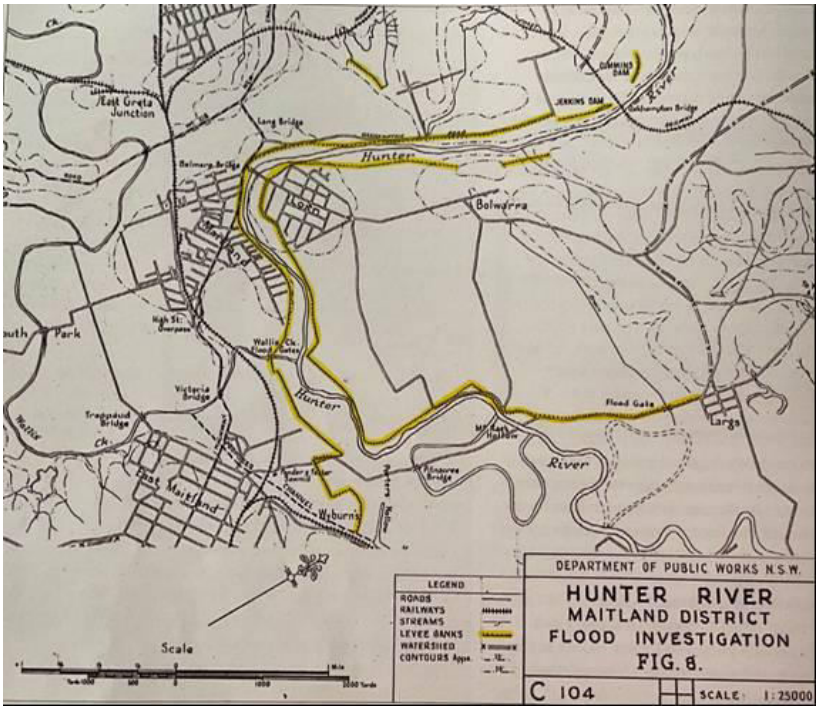
Maitland of today, and some of those differences suggest that it is possible that the costs will be kept down. But there are some worrying signs, too, which might imply that we are not as well prepared as we could and should be and are likely to experience great pain — and pain which will be seen after the event to have been at least partly avoidable. That pain could include many deaths and great material damage.

The Positives

Several things stand out as having the potential to reduce the impact of a big flood in Maitland. They are the existence of a modern, effective flood mitigation scheme, the fact that there is now a sophisticated flood prediction and warning system to provide hours of notice of coming floods on the Hunter River (and estimates of their severity), and the existence of an agency dedicated to the management of flood events. None of these things existed in 1955: the levees of the time were quite primitive, the predictions and warnings were very basic, and there was no State Emergency Service to lead and co-ordinate community responses. In addition, more people lived on the floodplains of the Hunter River and its local tributaries like Wallis Creek and the Paterson River. In this context, there is today less vulnerability of people and dwellings to the flood hazard than there used to be.

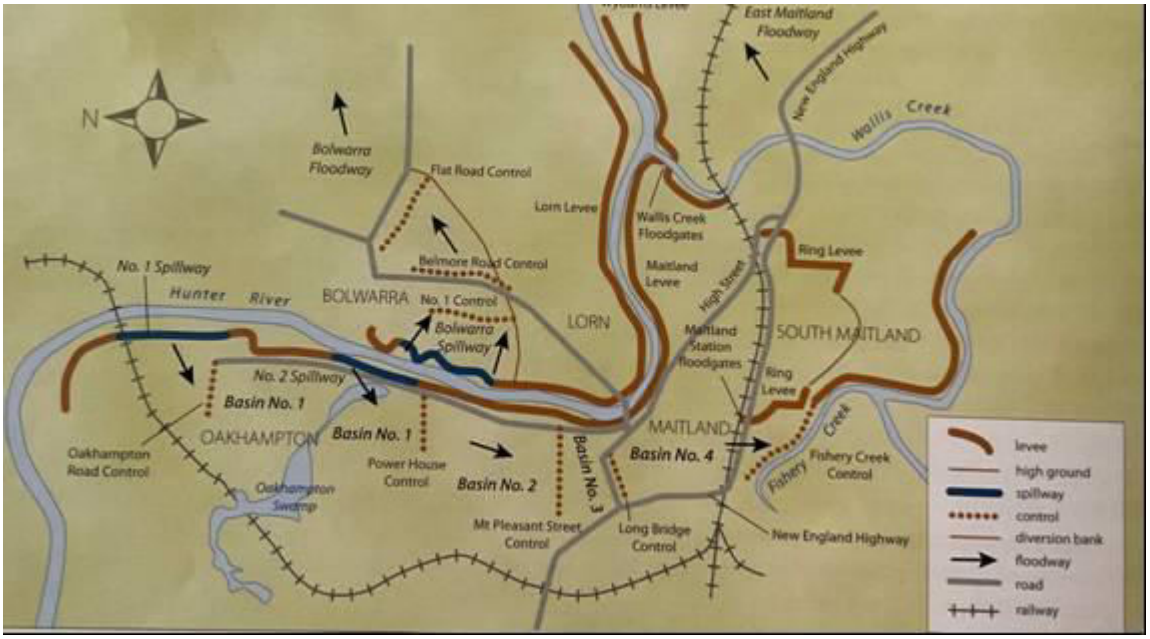
The Flood Mitigation Scheme

In 1955 the Hunter River was lined with levees along its left and right banks from above the town of Maitland (Figure 1).



Those embankments had been built gradually since the 1860s either by farmers to protect their land and assets or by the local councils (especially the Maitland Borough Council and its successor organisation, the City Council). The levees had kept many of the smaller floods away from farmland and houses, but they had routinely been overtopped or breached by the less common bigger ones like those of 1893, 1913, 1930, 1949, 1952, with disastrous consequences to farmers and townspeople. They had not been built to high engineering standards, did not have evenly sloping crests or appropriately graded batters and had no spillways.

After many serious floods between 1949 and 1955, on the Hunter and on virtually all the rivers of New South Wales, the New South Wales government entered the scene and developed the principles by which flood mitigation devices like levees should be built. Government agencies co-ordinated the building of many kilometres of levees around the state, with spillways and with control and diversion banks to reduce the erosive power of floods and direct the directions in which floodwaters flowed. Floods were 'trained', as far as possible, around built-up areas like Maitland (Figure 2). The scheme in the Maitland area was developed between the late 1950s and about 1980, with ongoing maintenance and repairs undertaken ever since.



The scheme has worked well, delaying the onset of inundation and limiting the extent of the areas inundated. Maitland has benefitted greatly from its existence.

It must be recognised though that the works of the scheme are not designed to keep out very big floods – those bigger than what was experienced in 1955.

Even in floods smaller than the 1955 one there is likely to be damage done to the embankments as was the case in 2022 when levees were damaged in the Pitnacree, Brisbanefield and other areas and water seeped through the 'ring levee' that protects South Maitland from big floods on Wallis Creek or from water backing up the creek from the Hunter proper. That seepage was a sign of incipient levee failure, and without urgent repairs the levee might have been breached. Had that happened, floodwater would have entered built-up South Maitland and might have invaded houses by putting water over their floorboards.

The messages here are twofold. The scheme cannot be expected to keep all of the floodwater out of the built-up areas in genuinely big floods, and vigilance and maintenance are necessary to maintain the scheme's integrity and ensure that it remains fit for its intended purpose.

Flood Warnings

Warning of impending floods in 1955 and earlier was, by today's standards, primitive. As a flood developed, heights at gauges on the river and its tributaries were transmitted by telegraph or telephone, for example to the Maitland Council, and were posted on bulletin boards in High St and from the late 1920s broadcast over radio stations. People thus could make estimates of the heights likely to be reached at the Belmore Bridge and other locations and from those estimates determine what the likely impacts would be for them and what they should do — whether this meant walking livestock to higher ground, raising furniture in houses or relocating items to areas likely to escape inundation. The warnings could and frequently did trigger farm and household strategies against floods.

The warnings were helpful, but since the early 1960s Maitland has had the benefit of a formal flood forecasting system by which the Australian Bureau of Meteorology predicts the heights likely to occur at designated gauge sites (including the gauge at the Belmore Bridge) and the times when those heights will be reached (Figure 3).

The service is not perfect in terms of accuracy, but it is based on modern hydrological modelling and data from many more gauging stations than existed in the past, and it provides a useful indication of what will happen over coming hours as a flood develops. The vast majority of the Bureau's height predictions in New South Wales, usually provided 12 hours or more in advance of forecast heights being reached, have turned out in recent times to be within 0.3 metres of what is actually recorded. The 2007 flood, its peak over-predicted by 0.5 metres as it approached, was unusual in this regard.

Real-Time Flood Management

In 1955 and earlier there was no designated agency to manage floods on behalf of the community – that is, to co-ordinate rescue, evacuation, resupply, property-protection and other flood-time activities. Much heroic work was carried out by individuals including council mayors and staff members, military and police officers and private citizens, but inevitably their efforts were ad hoc in nature and there was little co-ordination. Many urgent tasks were either not met or the responses were wastefully duplicated. The equipment, including boats and radios, was often lacking or inappropriate and responders took great risks in floodwaters to rescue people and remove household effects: some individuals, in fact, died in doing so. Entering floodwaters is frequently dangerous, and doing it is the principal reason for flood deaths in Australia.

Late in April, 1955, only weeks after the flooding on the Hunter and on several tributaries of the Darling River in the state's north-west, the state government took action to create an agency with defined responsibilities for flood management. This was the State Emergency Services, now known widely as the SES, which was set up over the following years in every local government area in NSW. Its role was to co-ordinate community responses to floods; that is to develop and implement management strategies involving many agencies and organisations at the local level. Maitland's SES was established in 1956 and is now responsible for managing responses to floods, the consequences of storm activity and tsunami. It also assists other agencies like the fire authorities and the police in responding to other types of emergency.

The SES and the other agencies are nowadays well equipped by international standards and there are formal arrangements by which resources (including personnel, floodboats and sandbags) can be brought into Maitland from outside to help manage floods when necessary. Training for flood response activities, such as rescue, is also undertaken. None of this existed in 1955.

One small example of the improvements in equipment becoming available is the Hazardous Area Rescue Ambulance (HARA) which can operate in floodwaters up to 1.2 metres in depth. This vehicle also has 'burn-over' crew protection

against fire. A HARA is to be acquired by the Maitland Ambulance Station in 2025; it will be one of eight deployed in NSW.

The Ambulance Station is today located in Rutherford, outside the reach of the Hunter River in flood, rather than in the CBD in High St as was the case in 1955. At the peak of the flood of that year the station was inundated to a depth of more than a metre and operations were virtually paralysed at a time of high demand for ambulance services. This was a dangerous situation only later rectified.

Land Use Management

In 1955 there were few restrictions on building in flood-liable areas in NSW, and councils exercised little control over the locations in which new houses were constructed. One legacy of this in Maitland was the building of houses along Mount Pleasant St, across a floodway where floodwaters frequently ran after breaking out of the river's main channel above Oakhampton. These houses were being constructed right up to 1955.

There was a moratorium placed by the state government on building in low-lying areas after the 1955 flood. Eventually, regulations were introduced that among other things mandated that floor levels be set at least a metre (plus a 50-centimetre freeboard) above the assessed 1% Annual Exceedence Probability (so-called one-in-100-years) flood level which is 11.7 metres AHD at Belmore Bridge. This regulation applied state-wide.

Over time the means of estimating 1% AEP levels, crude to begin with, became more sophisticated. The level remains a key plank preventing residential housing being built in locations that are prone to flooding even though it does not prevent construction in locations that are liable to inundation in rare, very big events. The estimated 1% AEP level at Maitland is well below the highest flood level possible (the Probable Maximum Flood).

Demographic Change

In 1955, about 8000 people of a total population of 25,000 in the City of Maitland had to leave their homes as the big flood approached or after it had arrived. A very sizeable proportion of the city's population was thus affected in a direct sense; many people had their houses flooded over the floorboards and in some cases floodwater entered ceiling cavities. Today, in a council area little changed in physical size since 1955 but with a population that has virtually quadrupled over the past 70 years, the number of people who might have to evacuate in a flood similar to the flood of 1955 is much less than 8000.

About 2000 people live in central and South Maitland and the low-lying parts of Telarah and East Maitland, 1500 in Lorn and perhaps 2000 in the rural areas

between Greta and Woodberry and from Tocal to Testers Hollow. Thus only about 5-6 per cent of the total population of the City of Maitland today lives within the area flooded in 1955 as compared with nearly a third in that year.

Part of this change involved the relocation, in the five years after the 1955 flood, of about 250 dwellings from flood-liable areas in built-up Maitland and in rural areas such as Bolwarra and Phoenix Park. These dwellings were moved bodily by truck to higher ground in East Maitland, Tenambit, Telarah, Largs and Bolwarra. In Horseshoe Bend and South Maitland in particular, one of the legacies is vacant blocks on which houses once stood. Also relevant is the prohibition on new dwellings in highly flood-liable locations; this has prevented the build-up of housing in the most severely flood-liable locations.

The reduction in the numbers of houses in low-lying areas means that future big floods will be less a matter of dealing with water over floorboards in houses than it used to be. It will to a greater extent be about coping with the consequences of isolation and the loss of access. Fewer people now have to be concerned about the potential for floodwater to invade their dwellings and the need to undertake the dispiriting task of cleaning up afterwards, but many more will be affected by dealing with issues related to access to services including shops and schools.

Some Negatives

Most of the things about which Maitland should be concerned as far as future big floods are concerned have to do with residents' thinking in relation to flooding. It can be argued that the people of modern Maitland are in important ways less ready for big floods than were their forebears in the 1950s. This is true in terms of psychology and flood experience. It might also be suggested that key organisations, including the Council and the SES, have not always responded optimally to the flood threat as far as changes in the nature of the Maitland community are concerned.

The Erosion of Flood Experience

Partly because of the success of the flood mitigation scheme in keeping most floodwaters out of the built-up areas since 1955, individuals and the community at large have only relatively infrequently had to confront the potential realities of inundation. Before the modern flood scheme was instituted, and especially in years of frequent floods such as those between 1949 and 1956, coping with floods was a frequent feature of Maitland life. People got used to them and developed behaviours which helped them to limit their losses. At the neighbourhood level in central and South Maitland, Horseshoe Bend and elsewhere, groups of men with trucks went house-to-house helping residents to raise furniture or load it for relocation to higher ground especially in East Maitland. Times of flooding became times of feverish activity, people pitching in

to help each other prepare for inundation.

The relevant behaviours were practised and honed in that flood-rich period. Importantly, the behaviours became embedded. They were not forgotten.

Over recent decades, however, such behaviours and the strategies they followed have largely fallen into disuse. It was noticeable in 2007, when a flood at one stage thought likely by the Bureau of Meteorology to peak at a height of more than 11 metres was predicted at the Belmore Bridge, little raising or relocation of furniture was undertaken in the old inner city. These were areas in which deep inundation, in some cases covering the roofs of single-storey buildings, had been frequent, but in 2007 the focus was largely restricted to people from the more elevated suburbs of Maitland collecting elderly relatives and taking them away for the duration. Mere belongings like furniture, important documents and family heirlooms were relegated to relative insignificance and left to the flood should it develop. Fortunately, the 2007 flood turned out to be less severe than had been forecast, peaking lower than predicted at the gauge.

Another example relates to flood behaviour on the farms. In the past, when dairying was a significant part of the local economy, farmers in areas like Louth Park and Millers Forest routinely moved their herds to higher ground for protection as floods approached. It is by no means certain that today's many hobby farmers in Millers Forest, for example, most of them recent arrivals and not accustomed to floods, would do this for their horses and beef cattle. Again, a tried and practised behaviour has fallen into disuse — with potentially serious consequences in the future.

Flood Psychology

There is a sense in which complacency about floods has taken hold in modern Maitland. Arguably, the community's current thinking about flooding is related to the existence of the mitigation scheme which has reduced flood frequency in the protected areas. It has, in all likelihood, fostered a sense that the flood problem has been overcome whereas the truth is that it has only been mitigated to a degree. Palliation has been achieved, not the total defeat of floods. Immunity against all flooding has not been achieved. Indeed it cannot be.

Flood mythologies (inaccurate explanations of floods) have also tended to flourish, and it is possible that people's flood comprehension has been diminished over the years since 1955. Residents have in a sense been turned away from the need to consider flooding as a potential threat to their lives and well-being. This is a common problem produced by levees: by their very existence they promote the sense that they can do more than what they have been designed to do. In this there is a level of wishful thinking in the populace which carries with it an element of danger.

The myths about flooding are several and they are often heard in casual conversation with Maitland people. One such myth is that the levees will keep the protected areas safe in all floods, in other words that they will keep out even the biggest floods that such areas could experience. They would not have been built, it is sometimes said, to keep out only some floods (and the lesser ones at that). Yet in NSW there are several towns whose flood levees, built much like Maitland's, have been overtopped or breached in relatively recent times. They include Nyngan (in 1990), Kempsey (in 2001), North Wagga (in 2012), Lismore (in both 2017 and 2022) and South Murwillumbah (in 2017). Other towns have had 'near-misses' in terms of levee overtopping: Grafton and Ulmarra three times this century, and Coonamble, Wagga Wagga and Hay once each. In Hay's case the town was saved from partial inundation only by the levees being built up over the two weeks before the big Murrumbidgee River flood of 2012 arrived.

Not all of the levees protecting these towns, it must be said, were built to the same specifications. The levee that protects downtown Lismore, for example, was intended to keep out floods up to only the height expected in a 10% AEP (or one-in-10 years) event: it was overtopped by more than three metres in 2022. Even had it been built to keep out the 1% AEP flood, though, it would have been overtopped by a very large margin that year.

The principal lesson remains: levees cannot be expected to keep out floods that are very large. Levees reduce the frequency of flooding by keeping out the smaller events but they do not provide full immunity against larger ones. It is important that this reality be recognised and understood.

In truth Maitland's levees, like all the levees in NSW, are designed to be overtopped in very big floods. These are also the floods which place the most stress on the embankments and might breach them before overtopping occurs.

This is not well understood in Maitland. In fact, the levees have helped create complacency about the flood risk. This is not just a Maitland thing: it is common around the world. The engineers who build levees are better at the construction task than at educating communities about the performance limits of the levees they have built. Funding for educational programmes, as it happens, tends to be limited. Ideally flood education would be a periodic, ongoing feature of our flood management effort and funded accordingly.

Another feature of flood psychology that can be witnessed in Maitland is that some people have adopted a view of flooding which can be likened to playing a form of 'Russian roulette'. These people consider that in the modern environment provided by the levees, it is 'worth the risk' of not protecting items when they are advised to do so and staying at home even when there is advice from the emergency services that they should evacuate. In other words, the idea

that the levees are built to withstand floods of, say, the 1% AEP (one-in-100-years) level appears to justify the notion that a flood that is currently approaching is not likely to be of that scale and need not be worried about. Yet the danger to levees at historically high flood levels cannot be determined accurately in advance. Moreover, on occasions, floods exceed the levels forecast while they are approaching.

At worst, complacency amounts to a denial of flooding as a threat in the current environment; at best it is likely to delay responses (like property protection and evacuation) until the impacts of the flood are clearly apparent. By this time, evacuation itself might have become be dangerous because escape routes are likely to have been inundated or bottlenecking has developed on the roads as a result of heavy traffic volumes.

People do not wish to evacuate: it is an activity fraught with tension and nobody's hobby. It is never fun, it holds some danger in itself and there is in-built resistance to it. Calls for people to leave home always produce some opposition. But if a call turns out to be justified by the flooding which develops ─ something that does not always occur ─ and delays in responses occur, the consequences can be dire. Amongst other things, people can be stranded in their cars on evacuation routes and caught in rising floodwaters. This has happened in Australia, for example at Toowoomba in 2011 when deaths resulted.

Complacency about flooding is rife in today's Maitland, fuelled by the loss of private flood management experience and by myths which feed the comfortable notion that flooding of the built-up areas is in effect a thing of the past. The likelihood that there will be a successful evacuation of low-lying areas of Maitland come the day of a big flood cannot be said to be high. Yet evacuation will be vital if people are not to be caught in floodwaters: ideally, people should not be in the path of a flood when it arrives. A failed evacuation operation, large numbers of people not getting out before the floodwaters invade the built-up areas and cut the roads to high ground in East Maitland and Telarah, carries the threat of a high death toll in central Maitland, Horseshoe Bend and the rural areas. It is by no means clear that this is well appreciated in the community.

The Roles of the SES and Council

The SES and the Maitland City Council are two of the main players when responses to floods are needed in and around Maitland, though many other agencies will be involved including the Department of Climate Change, Energy, the Environment and Water (the manager of the mitigation scheme) and a wide range of emergency service and other organisations (the Police, the Rural Fire Service, NSW Fire + Rescue and the Ambulance Service, for example).

The Council and the SES have hosted periodic commemorations of the 1955

flood since 1995, usually conducted in the Town Hall on round-number anniversaries of the event. These have been touted as educational activities and they have routinely been well attended. In 2015, more than 2000 people came through the doors of the Town Hall over the course of a weekend to see the displays of the commemoration. The Maitland Mercury has produced commemorative supplements on these occasions and they have mostly sold out quickly. There are real signs of community interest in flood matters in Maitland.

There has been a sense, though, that the commemorations have been solely about the vicarious recognition of the 1955 flood and its consequences. They have not, except subliminally, been about the additional goal of using the experience of that time to publicise the fact that floods, some of them severe, are certain to occur in the future and therefore about the need for people (residents and businesspeople) to be made ready for them. In other words, the commemorations have been narrowly focussed on history rather than on building a sense of the inevitability of floods in the future. Army DUKWs, flood boats and old radio equipment have been displayed but no checklists of actions that should be undertaken by people in flood-liable locations come the day of an approaching flood. Nor have talks about family and business flood preparedness as something in which people should purposefully involve themselves been featured.

The commemorations have not really ‘landed’ as educational events, and there is real doubt as to whether people have fully taken them on as being relevant to their personal circumstances. These people might one day have an unpleasant surprise to deal with, and their lack of understanding of the risks they face and how to respond to them will be laid bare.

Ideally the 1955 flood (and indeed flooding in general) should be treated as a platform for learning rather than simply as something to be remembered as an historical event and for its own sake alone. So far, learning has been at best a secondary purpose, at worst not even that. The opportunity exists now for a partial re-jigging of commemorative events as an investment in community readiness for something that is inevitable and can be managed best with forethought and preparation at the level of households, business premises and community institutions. This is about the empowerment of members of today’s community to manage future floods. In Australia we probably do this better in the context of bush fire management than for flooding.

What, for example, does one need to do to protect items of material or sentimental value in a low-lying house or to maintain personal and family safety should over-floor inundation become possible? How does one decide which items to focus on and what should be done to protect them? How does one manage a period of impending isolation, perhaps lasting for several days as was

the case at Gillieston Heights during the floods of 2015 and 2022? How will evacuation in the face of a coming severe flood be dealt with and how should people manage their own evacuation? And what can be done to alleviate the supply problems and boredom (which can produce psychological stresses) that result from not being able to move away from home for several days or even weeks on end?

Commemorative activities could be used to create a level of 'synthetic' flood experience by purposefully adapting them to exploit the educational opportunity they provide. There is an opportunity here for better community engagement in the interests of community safety: the potential exists to help people understand the actions they might one day need to take in order to protect their own interests. To achieve this, a more forward-looking approach needs to be adopted than in the commemorations of the past.

Likewise, the Council might usefully reconsider its attitude to the flood markers that were erected on power poles throughout the city by the Department of Public Works in 1982. There were more than a hundred of these, in built-up and rural areas, and they were placed as nearly as possible at the flood levels reached in 1955. Unfortunately, after more than 40 years there are fewer than ten markers remaining and those are badly rusted and virtually unreadable (Figure 4). Useful, virtually costless educational devices for indicating the reach of a serious flood in a neighbourhood have virtually disappeared.

Council, worried about the impacts of the markers on real estate values and sales (consequences that seem obvious enough but are extremely difficult to demonstrate and may to a degree be illusory) has shown no enthusiasm for maintaining them when they have been removed by property owners or fallen off their poles as the nails that held them there have rusted. Councillors, it seems, are waiting passively for the last of the markers to disappear as they inevitably will in the next few years.

Council needs, too, to be careful with the policy directions it takes in relation to redevelopment in the old inner city of Maitland. Fifteen years ago it adopted the recommendation of a report by City Plan Urban Design, the Central Maitland Structure Plan (2009), that it seek to restore the population of the area to its pre-1955 level of about 5400 between Wallis Creek and the Long Bridge and from the Hunter River to the southern edge of South Maitland. Today this area is home to only about 1800 people as a result of aging processes, the removal of dwellings after 1955, commercial uses displacing residential ones and the general discouragement of residential redevelopment over several decades.

Haste should be made very carefully here, and perhaps not at all: the entire area would be inundated, some of it very deeply, in a flood little larger than the flood of 1955. In that event a few hectares in High St and the upper parts of Elgin St and Church St remained dry but elsewhere hundreds of dwellings, shops and other business premises were inundated, some of them very deeply and indeed into ceiling cavities. A tripling of the resident population, as recommended by the Structure Plan, would surely seem unwise come a big flood: even given that much of the new population would be in medium- or high-rise buildings, it would amount to a substantial increase in the number of people exposed.

The ‘dry island’ that existed in 1955 would probably be completely inundated in a flood only a little larger than the flood of that year. Here it should be reiterated that a flood much higher (more than two metres higher) than the 1955 one is possible at Maitland: the record established then is far from being inviolable.

The benefits of a substantially increased population in the inner city, as advocated by the Structure Plan, would be in the enhanced commercial viability of the CBD while also replacing an aging housing stock some of which is nearing the end of its useful life. But there are inevitable costs to be borne as well in increasing the size of the population that will be vulnerable to severe floods. There is a difficult balancing act for the council in this, of course, community safety and commercial economic health being in a potentially dangerous opposition. Different groups within the community favour different stances as far as flooding is concerned.

There is a steady drum-beat of pro-development sentiment in Maitland as the

Structure Plan demonstrates. The council, oriented to the 'progress' represented by growth and development as most councils are, hears the noise and seeks to respond positively to it — which means there is always some support for new projects in areas that will one day be flooded. As it happens, development in and around Maitland is inevitable given the likely demand for new housing; Maitland is not in any danger of population decline in coming decades. Indeed, its future rapid population growth is virtually guaranteed.

The potential dangers of development are relatively weakly flagged by comparison with the benefits. This, arguably, is a characteristic of Australian political life.

The council has many conflicts to manage and it is often caught between different groups and different views on issues: this is always the case with local government bodies and indeed governments at all levels. Maitland Council's attitude to the topic of flooding is accordingly often ambivalent, as its stance on the flood markers might attest. They are now to all intents and purposes useless in terms of their original purpose.

On occasions the council appears to want to keep the flood issue at arm's length, and some elected representatives have argued that Maitland needs to shed the tag of 'flood city'. This stance is not necessarily conducive to helping residents come to grips with the problems they will periodically face from flooding. People need to be reminded of the flood threat as part of encouraging them to do what they can to manage it in their own interests.

The council is sometimes supported in its periodically dilatory approach to such matters. During the 1990s the Maitland CBD Board objected to a proposal by the SES to stage a march down High St as part of the 40th anniversary commemoration of the 1955 flood. The Board considered the proposal a 'promotion' of the flood hazard and expressed a preference that flooding be allowed to be forgotten. Commercial 'progress', it argued, might be retarded if people were reminded of the hazard of floods.

The concern was understandable, but not entirely appropriate given that the threat of flooding continues to exist and its successful management depends very much on community understanding and co-operation which require communication and information. To achieve this, the matter needs to be aired, not buried. Since the 1990s the position of the business community has appeared to soften somewhat, and in 2005 several shops in High St entered into the spirit of remembrance by putting flood photographs in their windows.

Another area in which further effort is needed is that of flood warning. Forecasts from the Bureau of Meteorology indicate how high the floodwater will reach in coming hours as a flood rises, but more needs to be done to ensure that the

locations and consequences of inundation to predicted levels are understood by residents in the path of flooding. The areas likely to be inundated at various flood heights must be publicised explicitly ─ that is, mentioned by name ─ both outside flood time and as a flood is developing. Doing this would give people a clear sense of the impacts that will be relevant to them of a coming flood and make warnings more clearly meaningful. It will also make them more persuasive as far as people being convinced to act in order to protect items of property or to evacuate are concerned. The resource needed here is 'flood intelligence', information from past floods and from floodplain management studies on the consequences of flooding at specified gauge heights. Much such information exists in the Maitland area.

To utilise flood intelligence to inform community understanding of the likely impacts of a developing flood will require a degree of boldness on the part of the SES. This is because the SES too, like the Bureau, would need to adopt a future-focussed (that is, forecasting) role. There is a risk of error that such a mode of operation involves, but the forecasting required would be of only a general nature: there should be no expectation that it will be at the level of, for example, individual properties and precisely accurate at the locations of those properties. Prediction of the depth of water that will be reached inside nominated individual dwellings, for example, is not possible.

All that said, in general terms the consequences of a coming flood can be predicted with no great difficulty when the approximate height it will reach at the Belmore Bridge is provided. It is clear that those consequences will become increasingly serious with every increment of additional flood height. At a height of about 6 metres at the Belmore Bridge gauge, farmland begins to be inundated and after about 8 metres local roads across the floodplain in areas like Bolwarra, Raworth, Pitnacree and Phoenix Park are likely to be cut. At heights above 11 metres large areas are flooded (and flooded increasingly deeply) and additional roads are covered with floodwater. At some stage the town-protecting levees will be threatened with damage by erosion, meaning that houses in Lorn, South Maitland, Horseshoe Bend and elsewhere will become vulnerable to inundation if breaches in or overtopping of the levees occur.

The sequence of inundation effects with increasing height needs to be publicised. A chart or table indicating the consequences of flooding at different heights in different parts of the city would help achieve this end (see Table 1 in relation to heights at the Belmore Bridge). Similar tables could be developed for the eastern parts of the City of Maitland), taking into account flood levels on the Paterson and Williams rivers which are tributaries of the Hunter. For all parts of the council area, a sense of the levels that are critical to the interests of residents and businesspeople could be developed.

Information could be provided to residents at commemorative events or with rates notices, or in welcome packs for newcomers living or operating businesses in flood-liable areas. As a flood is approaching, the areas likely to be affected should be specifically identified in radio broadcasts and via television and the likely consequences in those areas publicised. This has been done to only a limited degree in past floods, even during those like 2007 and 2022 which threatened to be significant in terms of impacts on built-up areas. It is particularly important that in big floods (say those likely to peak well above 11 metres at the gauge) a persuasive case is built that mass evacuation might be necessary: this will require identifying the areas likely to be affected and publicising the potential consequences there of failing to evacuate. The consequences could include deaths: there have been cases in Maitland of people who have died in floods having failed to evacuate as advised.

It is at heights above 11 metres, but less than the 12.1 metres of 1955, that the failure or overtopping of the levees protecting the built-up areas is most likely. Floods to such heights are likely to be particularly dangerous. It is worth noting in this context that the last flood to have peaked at above 11 metres AHD at the Belmore Bridge gauge occurred many years ago — in 1971.

In the case of South Maitland, protected by the ring levee (Figure 2), the impacts of flooding on Wallis Creek must also be noted. For places downstream of Morpeth (Berry Park, Duckenfield and Millers Forest), floods on the Paterson and Williams rivers, adding to floodwaters on the main stem of the Hunter, are also relevant.

There is a clear sense in Maitland, as elsewhere, that the flood prediction and warning system is not trusted and its products not understood. Hence the warnings are not well utilised by community members, as was shown in 2007 when a flood thought likely by the Bureau of Meteorology to reach as high as 11.2 metres was forecast. Some people in Lorn, central Maitland and elsewhere evacuated as advised by the SES early in this event, but many ignored the call to leave for higher ground.

As it happens, the flood did not reach the level predicted on that occasion and evacuation of the built-up areas turned out not to have been necessary. Some damage to the credibility of the warning system probably occurred.

The Bureau is perceived by many people as distant, not necessarily in touch with conditions in the Hunter, and in past floods the SES has not always or systematically added value to the Bureau's height-time predictions by giving them meaning in terms of the likely consequences of the forecast flooding. Yet the necessary information that would allow this to be done exists. It is to be found in records of past floods and from hydrological studies of flooding. Using

this information over the broadcast media would allow likely flood consequences to be better understood in advance by those at risk. Better understanding is critical to people recognising the dangers of flooding and the need in the more severe events to evacuate to safety. This understanding can and should be purposefully built.

There is an issue for the SES and the council to grasp and tackle here. This gap in the community's flood management endeavour needs to be filled in order to give people clear direction as to what they should do to protect their own interests. Community engagement and education need to be addressed as matters of priority.

Conclusion

Floods, including on occasions big ones, will inevitably be experienced in Maitland's future. When they occur, some people will experience the considerable trials of having water over their floorboards. More will feel the difficulties of being cut off from normal day-to-day activities. We must ensure that residents understand what they might need to deal with and are motivated to prepare themselves appropriately and activate their preparations on the day. This need not be particularly difficult to achieve and should be regarded as both cost-effective to initiate and deliver and of tangible benefit to residents.

Community members need to understand that the mitigation scheme provides protection that is not absolute and that the warnings they receive as a flood develops can be used to their own benefit. A substantial measure of community resilience to the flood threat, more than has thus far been achieved, should be the goal of the SES and the City Council. Ensuring people understand both the mitigation scheme and the meanings conveyed by flood warnings will be very important.

Maitland is one of the most flood-prone communities in NSW. More than most other communities in the state, it needs to become genuinely prepared for flooding. More needs to be done here than has been sought in the past. The alternative is to acquiesce in future floods becoming more severely consequential than they should be, with more injuries and deaths occurring and greater material damage being caused.

Many years ago, the Spanish-American philosopher George Santayana said something to the effect that "Those who ignore or forget the lessons of history are condemned to repeat them". We should seek to ensure that the lessons of 1955 are neither ignored nor forgotten. Nothing will be gained by having today's Maitland people re-learn first-hand in a bad flood the same very painful lessons that the generation of 1955 was taught by the flood of their time. Better, surely, to have as much as possible of the learning done using educational devices out

of flood time – and people understanding what to do and motivated to put their learning into practice when a flood is developing. The task is to provide the tools to educate community members and motivate them to take appropriate actions when floods strike.

As things stand, it is hard to believe that the next big Maitland flood will be handled well, with losses (particularly deaths and injuries) and damage kept to a minimum. More likely is that Maitland will look back on the event with a feeling that more could and should have been done to keep the consequences in check. It is always thus with floods in Maitland, as it is everywhere else in flood-liable areas. We rarely achieve flood manageability to the extent we could, but an unrealised potential is still there and every effort should be made to tap it. Commemorations have the potential to contribute in this regard and they should be harnessed accordingly. They should not be just about remembrance, reminiscence and the trials experienced by previous generations.

The work to be done is mainly in better engaging the members of the community. The goal must be to ensure that Maitland's people understand the threats posed by flooding, know how to deal with them and react effectively come the day of a big flood. The coming commemoration represents an opportunity hare. Maitland is not fully ready for its next big flood, but there are things that can be done to help improve the community's preparedness for it.

Reference

City Plan Urban Design (2009) Central Maitland Structure Plan, report prepared for Maitland City Council

Figure 1: Maitland's levees as they existed in 1953

Figure 2: The Maitland flood mitigation scheme of today

Figure 3: The flood gauge at the Belmore Bridge. When this photo was taken the gauge had been damaged, the plates above 10.6 metres having been lost

Figure 4: A flood marker in South Maitland past its usefulness

Table 1: The impacts of flooding at different heights (AHD) at the Belmore Bridge gauge*

6.0 metres +	Farmland in Bolwarra, Pitnacree and Phoenix Park areas begins to be inundated
8.0 metres +	Minor roads inundated eg Brush Farm Rd, Lawlers Rd, Phoenix Park Rd

10.0 metres + Further minor roads closed; houses in rural areas isolated; some may take in water

10.4-10.8 metres Water flows over Oakhampton and Bolwarra spillways in levees and inundates farmland and roads eg Oakhampton Rd, Belmore Rd

10.7 metres Peak height, 2007 flood; New England Highway closed

11.15 metres Ring levee probably overtopped; floodwaters likely to enter South Maitland

12.1 metres Peak height 1955; all levees likely to be overtopped; virtually whole floodplain inundated along with most of central Maitland (except for a small dry island on High St between Elgin St and Church St); low-lying parts of East Maitland and Telarah inundated. Breaches in levees may occur at lower heights than this and would cause inundation of built-up areas eg Horseshoe Bend. Parts of Lorn would be inundated by floodwaters flowing across Sharkeys Lane at lower heights than 12.1 metres

14.0 metres + Estimate of the Probable Maximum Flood; water deep, fast-flowing and debris-laden throughout CBD and other low-lying built-up areas; locations never previously known to be flooded would be inundated

* Note that the heights listed here are approximate and the consequences noted relate only to heights at this gauge. The situation can be complexified and exacerbated by any flooding on tributaries like Wallis Creek (which can affect Louth Park and South Maitland) and the Paterson River (and at Duckenfield and Millers Forest from the Williams River). South Maitland, for example, can be affected by backwater flooding up Wallis Creek from the Hunter or by 'frontwater' flooding coming down the creek itself as occurred in April 2015 and July 2022.

No Bureau of Meteorology predictions are provided for flooding on Wallis Creek, but predictions for the lower Paterson River, the lower Williams River and the Hunter River at Raymond Terrace will be relevant to the estimation of flood consequences in the eastern parts of the Maitland City Council area.