

# Dealing with Extremes

**The Lake Boga Follow-up Study - Report on Findings**

Department of Planning and Community Development  
Spatial Analysis and Research Branch March 2012



Department of Planning  
and Community Development

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Report written by Elissa Waters and Fiona McKenzie  
Fieldwork assistance by Sam Pendergast

Email [spatialanalysis.research@dpcd.vic.gov.au](mailto:spatialanalysis.research@dpcd.vic.gov.au)  
[www.dpcd.vic.gov.au/research/urbanandregional](http://www.dpcd.vic.gov.au/research/urbanandregional)

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# 1. Introduction

## Background

The Department of Planning and Community Development (DPCD) has an interest in understanding how communities cope with, and respond to, social, economic and environmental change. This report outlines the findings of a set of interviews conducted in Lake Boga in early 2011. The interviews were a follow-up to research which had been undertaken in the same location and with the same respondents 18 months earlier. As such, this report should be considered in relation to the published findings of the original study: *The Drying Lake. Lake Boga's Experience of Change and Uncertainty* available at [www.dpcd.vic.gov.au/research/urbanandregional](http://www.dpcd.vic.gov.au/research/urbanandregional).

Lake Boga is located near Swan Hill in northwest Victoria. It is a town of 700 people located around the lakeside and in the adjacent township. The lake provides significant social and economic benefits to the local and regional community. It is the centre of activity for the town and provides a space for popular events such as regattas and water skiing competitions. Importantly, the lake is a place where the community gathers and socialises.

## Overview of the original study

In early 2008, after nearly a decade of drought, the lake dried up completely. In the following months the smell of rotting fish permeated the town and a plague of gnats occurred. Of more lasting impact was the fine dust of the lake bed which was raised on windy days.

In 2009, researchers from DPCD visited the area to undertake a series of around 40 interviews with locals to find out about this event and how it had affected their lives.

Respondents talked about emotions of anger, frustration and shock in the immediate aftermath of the lake drying. A less obvious impact was the feeling of social isolation caused by the loss of a key community meeting place. The loss of the lake had direct economic impacts on local businesses as fewer visitors meant less money coming into the town. Nevertheless, the proximity of Swan Hill played an important role in limiting the economic impacts of the dry lake as it continued to provide sources of employment, and hence income, for working-age people.

A significant economic impact arising from the dry lake was a fall in property values, particularly around the lake frontage. Many home owners found themselves trapped by this loss of asset value. The loss was also felt in terms of a loss of lifestyle and amenity. While lakeside residents did not physically lose their house, they did lose a view, a lifestyle and the value of their investment. In short, a loss of wellbeing.

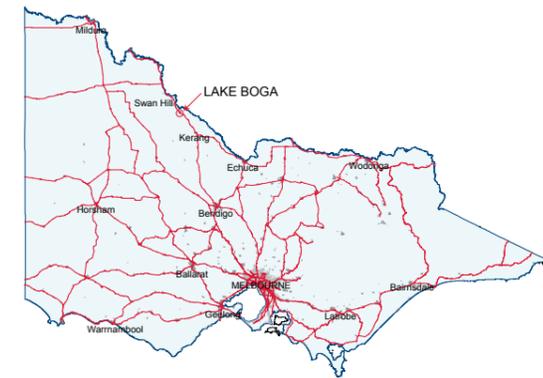
Despite the difficulties presented during the period of the dry lake, out-migration was rare. Some residents were trapped by loss of asset value and were waiting for water to return before selling their property. Others regarded the local area as home, with or without the lake, and indicated they were likely to stay irrespective of any long-term environmental change.

## Returning to Lake Boga

In March 2010 water began returning to Lake Boga. The initial phase of refilling occurred as water allocation became available via Goulburn Murray Water. Being part of the Northern Irrigation system, Lake Boga was selected as the storage location for this water.

By the end of 2010 the long drought was ending and in early 2011 Victoria experienced major flooding. During this period Lake Boga filled to capacity and threatened to overflow. While the township was spared major damage, the rivers surrounding the region – the Loddon, Avoca Murray, and Little Murray Rivers were all in flood with vast areas of land under water. As a result Lake Boga was affected by road closures, disruption to trade and transport. It was also a designated evacuation centre for nearby areas.

Ironically, the surfeit of water in the region delayed the research team from returning to Lake Boga to undertake follow up work. The return was envisaged as a way



of investigating the residents' experience now that water was back in the lake. The flood events, however, raised the possibility of gaining a unique perspective of the environmental extremes – drought, dry lake and flood – which the region had undergone over a two-year period. The opportunity to interview the same people about this period of change was extremely valuable, especially as the original project had sought to explore themes such as vulnerability, resilience, and adaptive capacity in the face of environmental change.



## 2. The return of water

### The story of water returning

In March 2010, after nearly two years of dry and dusty conditions, water was returned to Lake Boga by way of an allocation made by Goulburn Murray Water. Unsurprisingly, the overwhelming reaction of the community was one of excitement and relief.

*It was ... it was enormous, just the happiness on people's faces, it was bloody unbelievable.* (Interview 22)

*It was pretty exciting... even the kids at school, they were just racing around, yelling out to everybody who came in the gate 'did you know water's coming in the lake!'* (Interview 5)

The community was given three days notice before the water began to flow into the lake. During the dry period vegetation and debris had built up in and around the lakebed. Athel pines were growing in the bed which caused concern for many as, if they were not cleared before water returned, they could potentially impact opportunities for boating and skiing. Many of the interviewees expressed frustration that they were not given assistance or enough time to properly clean the lakebed before the water came back.

*The water authorities didn't give us time to clean up so it was really a mad shambles. Everybody was burning and cutting the pines.* (Interview 18)

*It's very poor coordination between departments. You know, they could have given us heaps of notice, could have done a really good job of cleaning up the lake bed, and the community would have.* (Interview 21)

*As residents of Lake Boga we are able to get government funding to do maintenance work along the foreshore but bureaucracy didn't allow that work to get done in the time frame before water returned. Now that has impacted severely on the caravan park.* (Interview 20)

Parallels were drawn to the period when the lake was drying where it was unclear which authority was responsible for the management of the lake.

*We got back to the same situation, 'it's not on my side, it's between DSE, council, Parks Victoria, water authority, not my problem' so nothing was done so consequently the whole of the foreshore around Lake Boga was becoming absolutely overrun by this tall grass.* (Interview 18)

*There was a lot of work that should have been done by the council, government departments being very slow to react ... they just couldn't make a decision.* (Interview 19)

Similarly there was some criticism over the lack of communication from the water authorities to the community about when how and why water was put back into the lake. However, for some there was recognition of the complexities of water management.

*You've got to take the water when it's there ... there's a lack of understanding about how the whole system works.* (Interview 15)

In the effort to clean the lake bed, the community got tractors and equipment and over the period of two days, cleared it themselves. There was a great deal of pride in how the community responded to the urgency of the clean up.

*So everybody started getting together and it was quite an amazing period actually, everyone, neighbours and friends all got together and cleaned up the lake.* (Interview 23)



The water allocation came in two stages and as the rains continued to the north the lake was eventually filled completely.

*You could watch it rising by the day and then it stopped because we had our allocation, but the rain in Queensland didn't stop so the Darling was banking up the Murray and it was flooding... It was just coming in, coming in, coming in.* (Interview 1)

### Explanations for why the lake filled

Explanations for why water was returned to Lake Boga reflected a general understanding that the management of the lake had changed. As opposed to being naturally fed by the Avoca River in times of high flow, the lake was now part of the irrigation system and was being managed by Goulburn Murray Water as part of the Mid Murray Storage Project. In response to the question 'why did the lake fill again?' most interviewees referred to the fact that excess flows in the Murray Darling River system meant that water managers had the opportunity to divert water into Lake Boga.

*Obviously water became available and Goulburn Murray Water decided to put water in there.* (Interview 15)

*As soon as there were excess flows in the river, the excess flows, you see, are no-ones water, so no-one loses. The Goulburn Murray diverts it into the lake, they're not losing water.* (Interview 6)



There was a recognition that there was a lot of water in the Murray Darling system and that meant that there was enough to fill Lake Boga.

*Basically the rains were up in the storages, the water was there.* (Interview 20)

*It also had a lot to do with the water that filled the Darling and the Murrumbidgee I think it was, there was water coming in which meant they had plenty of water to go down to South Australia.* (Interview 19)

Over a period of a month or so the lake was filled and the community was able to enjoy the views and activities. Naturally, the return of water to Lake Boga had an incredibly positive impact on the town and its residents.

### 3. The year of water

#### Emotional and psychological impact

Many people spoke about the emotional relief and psychological boost that came with seeing and using the lake again.

*It was sort of like a load off the shoulders really.* (Interview 3)

*You can see in the town, there's a spring in people's step. Attitudes had changed.* (Interview 7)

*With the advent of water the whole spirit of the region lifted. You could see the despondency disappear, and generally the depressed feeling of hopelessness ... people are looking forward to the future again, looking for possibilities and probabilities, what we should be doing now.* (Interview 9)

It brought with it a sense of relief that the dry lake was not a permanent state that they would have to adjust to.

*Just relief that there hadn't been a permanent change to the weather pattern which meant that we were never ever going to get water back.* (Interview 15)

*I had built a house around me in the dry, I felt vindicated. A sigh of relief ... I can sort of sit in the bedroom and look at the water and I look out there every morning, thinking, 'maybe I died and went to heaven.'* (Interview 1)

For many it was a reaffirmation of why people had moved here in the first place and a return to the sense of identity that many believed the town had lost during the dry period.

*We've got the identity back.* (Interview 14)

*It helped the little town attitude itself, that came back again.* (Interview 13)

*I just thought it felt like home again.* (Interview 7)

#### Social and Community Impact

The return of the water brought with it opportunities for the family and social activities that were sorely missed during the dry period. The yacht club started up again with new members, boats were brought out of garages and onto the water and people were able to get together around the lake again for picnics and barbecues. A new fishing club was formed which now has around 200 members.

*The kids are going over to go to the lake and messing around in the lake ... so its back to those activities from a family perspective.* (Interview 2)

*There's fish back in the lake, of course, and the kids go fishing. It's wonderful to see the kids back fishing.* (Interview 14)

*Because the lake was back this year everyone made a point to have Christmas in the home.* (Interview 23)

#### Property market impacts and migration

Following the return of water to the lake, many properties in Lake Boga were put on the market. There was anecdotal evidence that these properties were selling.

*As soon as the water came in ... I think just in a week about two houses and a vacant lot, the pieces of property sold.* (Interview 18)

*There been a tremendous upsurge in houses for sale, and they're modestly selling.* (Interview 8)

*There's both houses and vacant land for sale. So, I think people who sat it out are trying to cash in on the return of the water.* (Interview 1)

It was uncertain how important the return of the water was to peoples' decision to sell their property. Certainly the return of the water made it a more attractive market however it was not clear that the period of harsh conditions during the dry lake had encouraged people to sell when water returned.

*It was not just the water. Yes, maybe one or two might have been. A number of others I know went on the market and they were personal reasons why they were going on the market.* (Interview 20)

*Some places that've been on the lake, they've sort of been for sale since before the water. A couple have sold but I don't know that it's actually made a dramatic effect on that.* (Interview 5)

*There was probably some water influence there, but I think it's a general trend here at the moment that there is a lot of houses on the market that people are not prepared to take a loss on, so they're sort of sitting on the market there.* (Interview 21)

One interviewee made a distinction between residents' properties and holiday houses in terms of reasons for selling. The feeling was that for second home-owners the uncertainty about whether the lake would remain full was a key factor in them selling.

*They've just gotten sick of it. Water one year, no water ... They just thought that now that water's here, we might be able to get some decent value for our property, take the money and run.* (Interview 12)



Similarly some pointed to a difference for people who hadn't lived in the area for long. There was speculation that perhaps the conditions during the drought could have become too much for them and those people's properties have been amongst those put on the market.

*People are probably getting sick and saying I've had enough of this, if they haven't come from the area, it's something they are not used to and oh bugger this, I'm going back to wherever else.* (Interview 24)

For the most part the interviewees themselves did not feel that they would sell and move now that water is back in the lake. Many of the responses reflected the opinion that they had during the dry lake period – that they would stay in the region no matter what happened with the water.

*I'm one of the old diehards, I live on the lake actually and we had no intentions of leaving anyway whether there was water or no water.* (Interview 9)

*The decision to go out there is a lifestyle one not a financial one, and we choose to live there for lifestyle reasons and that has only been enhanced by the return of water to the lake. Not even the remotest possibility of selling.* (Interview 15)

The few interviewees who had doubts about staying during the dry period indicated that they were more confident about staying now that water was back in the lake and the region.

*We're staying. We considered getting out because we had no options but now we've got options and we're staying.* (Interview 7)

One respondent had sold a property, however they indicated that there were general issues of market confidence due to a lack of certainty about security of water in the area.

*Yeah we did, we sold a place over the road. We'd had it on the market for some time ... I think the end of the drought and people hung back and waited to see whether the water would come back and when the water came back I think they're hanging back and waiting to see how long it does stay.* (Interview 19)

### Impact on business and tourism

For the most part the water returning to the lake provided a boost to the local businesses that had suffered because of the decline in visitors during the drought. The participants indicated that the water also had the effect of reinvigorating the local population and encouraged them to spend more time and money in the community.

*Really it reinvigorated the area, especially the local people. The caravan park man was happy, the deli was happy. Generally there was a little bit of euphoria you could say.* (Interview 18)

*Last night we were at the pub for a meal. That was nearly full of locals and visitors I think but during the dry season when the lake was dry you'd go in there on a Wednesday night and we'd be the only ones.* (Interview 18)



Some of the interviewees recognised that that length of time that the lake was dry might mean that there would be a lag time in visitors returning to Lake Boga.

*I think a lot of those people who did come up here have probably found somewhere else to go.* (Interview 6)

*It takes a long time to re-establish after such a long time out of the game.* (Interview 12)

*The caravan parks are pretty well booked I think, but there's another side to it. People that have been ravaged by the drought are not spending money.* (Interview 19)

## 4. The floods

### Arrival of La Niña

By September 2010, an intense La Niña event was bringing rainfall and flooding to Victoria. Rainfall continued to be high through December and in January 2011, major flooding affected all of Victoria's rivers running north to the Murray as well as areas in the Mallee and Wimmera and south in the Western District.

Convergence of floodwaters created an 'inland sea' which stretched for around 100 kilometres in length and 50 kilometres in width. This vast body of water took many weeks to move through the region between Kerang and Swan Hill, thus leaving Lake Boga isolated and subject to the threat of floods.

As floodwaters began to encroach on the region, many of the positive aspects of water returning to the lake were put on hold and in some cases reversed. It was difficult for the interviewees to say what the full impact of water coming back would have been.

*The floods have killed any forerunner of good times at the moment.* (Interview 19)

At the height of the situation there were multiple rivers in flood with water spreading across the flood plains heading towards Lake Boga and Swan Hill.

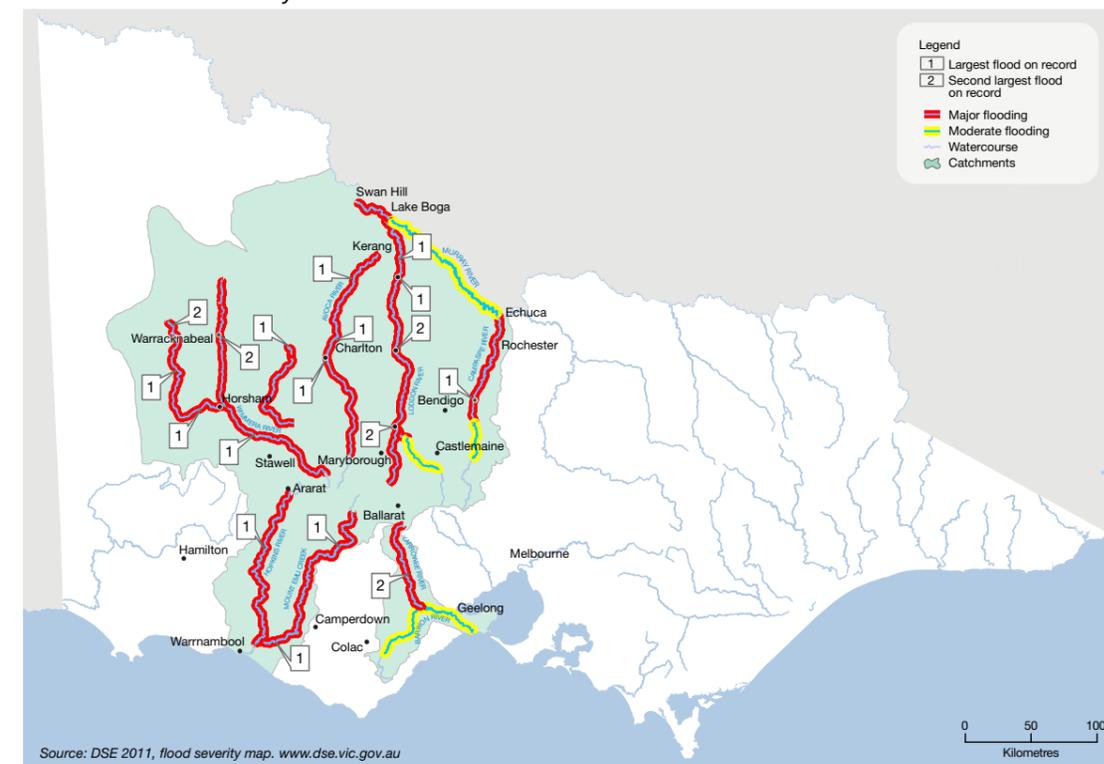
*It was just huge. Hadn't rained like that for years and of course the ground just couldn't take it and the floods came right through. There was the Avoca end flood, there was the Loddon, all the rivers were coming down towards the Murray.* (Interview 19)

One major concern was that the flood waters from the Avoca River, which had inundated towns like Charlton, would continue north and flow into the lake causing it to overflow into surrounding residential areas. Interviewees recognised that the possibility of the lake flooding was a serious threat.

*It did look for a period of time that we, particularly people around the lower edge of the lake, were going to be in trouble.* (Interview 9)

*I mean the water came up so high [in the lake] when the wind was blowing the water was splashing over the top of the levee.* (Interview 20)

Victorian Floods January 2011



## Preparing for flood

Other towns and properties in the wider region flooded first with major damage in towns like Charlton, Rochester, Kerang and Benjeroop. Lake Boga was warned that there was potential for significant damage if management options were unsuccessful and the levies did not hold. The warnings were communicated in multiple ways including town meetings, radio broadcasts and visits to individual properties.

Preparations commenced with authorities identifying areas for evacuation, the sandbagging of properties and town assets, and individuals preparing by raising furniture and electrical equipment off the ground of their homes.

Large working groups of community volunteers got together to fill and distribute sandbags. In one working bee on Australia Day, tens of thousands of sandbags were filled by volunteers.

*It was just stunning in the amount of volunteers and how hard they worked.* (Interview 8)

While preparations were being made, water management agencies, the council and others were working to manage the flood waters, direct the flow of water and coordinate relief efforts. After weeks of preparing and managing flows in the region

the threat level eventually decreased and in the end the town was not flooded.

When talking about that period of time and the impacts on the town, the interviewees were very careful to qualify that the town did not suffer significant damage. Similarly, they went to great efforts to acknowledge the areas in the region that were flooded badly and the hardship that was suffered in places like Benjeroop and Charlton.

*Look, we didn't go through a flood. Benjeroop is still under water ... we didn't have a flood. We had a very high lake.* (Interview 1)

## Impact on the town

Some of the roads surrounding Lake Boga were closed so that there was no through traffic to the town.

*That went on for five or six weeks, so it was a big impact.* (Interview 17)

*It was a morgue here, it was just so quiet. It was like a cemetery.* (Interview 12)

Roads being cut off created some problems for the distribution of fresh produce in the area.

*There were problems with bringing in produce to [the supermarkets] ... for a while they didn't have any fruit or any meat, anything that had to be refrigerated or frozen.* (Interview 18)

This did not mean that there were severe shortages of food in the town, rather it was a matter of a noticeable impact on the amount and quality of the produce. People prepared by stocking up on food and fuel from surrounding regional centres.

*We kept our cars full and we did stock up on groceries and we did stockpile water because they told us that we needed to have drinking water.* (Interview 18)

Although the town was spared the experience of major flooding, it nevertheless experienced related impacts such as a downturn in tourism.

*Well, it put a dampener on because you thought the whole area was coming back again and all of a sudden it just pulled the rug from underneath you and it was nothing, and that time of year it's a peak period.* (Interview 17)

*We need the business in January to keep our business running over the winter, because winter's such quiet months for us. It's like our harvest, same as a farmer.* (Interview 12)

After the immediate threat of the floods diminished the lake remained closed due to concerns about water levels and quality. This caused ongoing problems for businesses that relied on recreational tourism and the use of the lake.

*There was no passing trade, and no tourism, no boating, no recreation whatsoever, in the middle of the main recreation time.* (Interview 12)

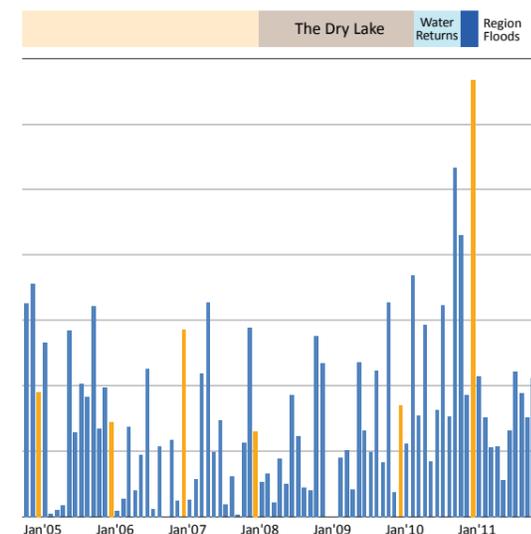
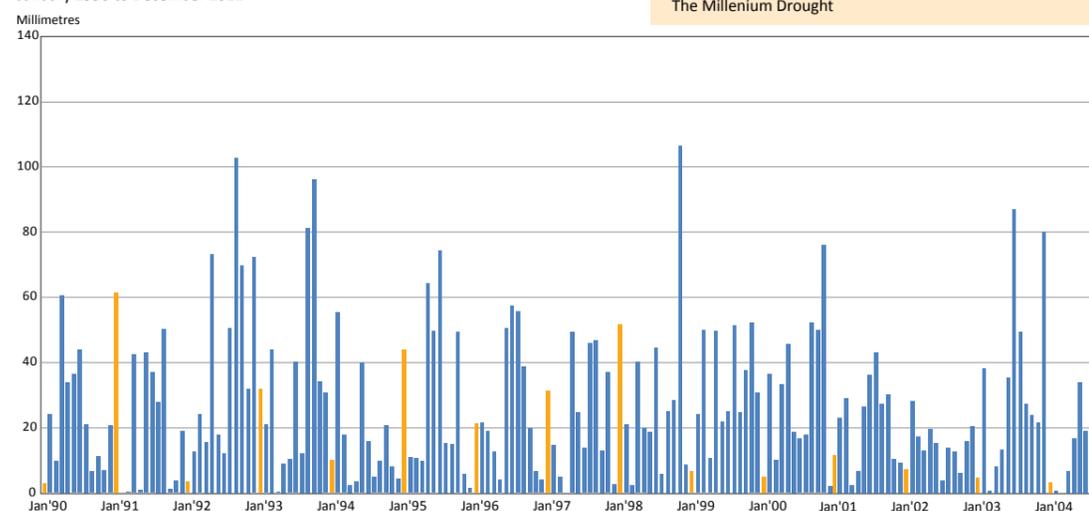
Some interviewees felt that the amount of press coverage at the time of the floods may be having a continuing impact on potential for tourism to the area.

*Well the press are always looking for stories and they beat it up ... instead of promoting the hell out of it now and telling the general public that the roads are okay and there's not much of a problem with the floods, get in there and help the locals by bringing custom to the area, that's gone by the board at the moment.* (Interview 19)

Similarly there were reports that people were worried about the safety of the water for swimming and boating. There was also a Murray Valley encephalitis scare that caused concern and may have impacted on the late summer tourist season.

*And then we had the flood scare ... and then the Murray Valley encephalitis and then the different viruses that the mozzies have purportedly been carrying.* (Interview 16)

Monthly Rainfall at Lake Boga  
January 1990 to December 2011



## Impact for farmers

For many farmers in the region, the 2010-11 season was shaping up to be an extremely good one and a much needed economic boost following a decade of drought. For some, the high summer rainfall literally dampened expectations with crops being downgraded.

*It could have been an absolute ripper but the October, November and December rain sort of ... yeah it knocked that around from being an absolute bumper to a better than average season.* (Interview 16)

Other farmers in the broader region faced the prospect of no harvest at all.

*What promised to be a great year for some people just turned out terrible.* (Interview 4)

*Some of the places where I went to last week, yes it was stock, crops, and everything that was lost.* (Interview 25)

The extreme change in weather brought with it secondary impacts such as an outbreak of mice in farms and in town.

*It's been a shocker. We're in the middle of a mouse plague.* (Interview 6)

*We have a friend that lives down the street. I guess they have a lot in their house, but a couple of days ago he killed 19 outside just overnight.* (Interview 18)

## Individual and community impacts

While the town itself did not get inundated, there were some evacuations in the Lake Boga area. One couple interviewed were forced to leave their home and farm for three weeks. It was only due to help from a local with an excavator that the house was saved from inundation.

*Our house is a metre and a half below flood level, so we moved out of the house for three weeks ... we shifted everything. Shifted the house, the farm, the cows."* (Interview 7)

For most individuals the impact was in the stress of the threat, the waiting and the inconvenience of the disruption to their lives.

*It was like a pregnant pause. You just wait, wait, wait, waiting for the flood to happen.* (Interview 2)

As the floods approached Lake Boga and the community was asked to prepare, there was a great deal of anxiety and fear in the town. People spoke about panic in the community with people unsure what the impact might be on themselves and the town and what to do in a crisis situation.

*Just everyone went into panic mode, at one stage they had a queue up of fuel in the petrol bowsers in Swan Hill trying to get fuel, you couldn't buy stuff in the supermarkets because people would just stockpile. Just a big frenzy.* (Interview 17)

There was an indication that for younger people or people new to the area the uncertainty and worry was more of an issue. These people may not have experienced anything like this before and, as opposed to residents who had seen floods in the area before, they were more fearful and stressed.

*People under the age of probably 30 or something like that hadn't seen anything like this before. They were thinking 'Oh, this is a bit of a worry!'* (Interview 3)

*There's a lot of incomers who wouldn't have had any experience or any idea of how much water can come down. So they wouldn't know, and then with the dire warnings coming out there was a lot of panic going on.* (Interview 8)

Some interviewees suggested that because the Queensland floods had occurred just beforehand, many people were worried that there might be similar devastation in the Lake Boga region.

*It happened soon after the Brisbane floods and I think in a lot of people's minds it was going to be something similar to that and, yes, so there was mass panic.* (Interview 20)

*This was straight after Toowoomba had been taken out and people were having visions of tidal waves coming down the main street and all that.* (Interview 3)

## Community action

Taking action and being involved in helping prepare and protect the town was a good outlet for the fear, stress and worry within the community.

*The community felt like they were doing something filling all those sandbags.* (Interview 15)

There was a great deal of pride in how the community pulled together to handle the situation and fill the sand bags.

*I think it was more like people looking out for people too. People would come in and say 'Righto, are you alright? Do you need any sandbags or anything like that? If you need anything give us a yell and we can help'.* (Interview 4)

*I suppose it was an adventure for them, and a sense of wellbeing for doing good, but in extremely difficult and dangerous conditions a lot of people worked very hard.* (Interview 8)



## Insurance

Many people in the region were not insured for flood damage. The length and financial cost of the drought meant that people had not considering adding flood cover to their insurance premiums. For most, the perceived risk of a major property-damaging flood in Lake Boga was not high on the list of things to worry about into the future.

*You'd never even worry about a flood being on the policy statement.* (Interview 15)

When asked if they had taken out flood cover now many respondents said that they had not thought about it now that the threat was over, or that they did not think that it was necessary now.

*Yeah I hadn't really thought about it since. I don't think we've done anything about getting covered.* (Interview 15)

Some indicated that they did not think the insurance industry would cover most flood claims and that the likelihood of having a claim rejected is a deterrent in itself.

*Some of the people, not that we know but that we've heard about, even if they did have flood insurance, its so nit-picky that if something happened, it's not going to cover that so what's the point in having it?* (Interview 18)

*Why pay thousands of dollars in insurance if its not going to pay ... the chances of getting flooded is so minimal, why bother? ... The flood here is one in 200, one in 100.* (Interview 18)

## Management issues

Attitudes towards the management of the floods were mixed. For some the management was alarmist and unnecessary considering the town was not eventually flooded. Many were disappointed that more local knowledge was not taken into account in the emergency management decision making process. Others were happy with the way the situation was handled and were sympathetic to the idea that managers needed to communicate the worst case scenario in order to protect people in an uncertain situation.

Many participants believed that the council and the emergency managers responded quickly and effectively to the crisis.

*The water authority, there must have been some clever people there, they were evaluating it and diverting the water to low lying areas that weren't covered by houses and diverting it to lakes that had been dry for years and years so there were some smart cookies there.* (Interview 18)

*The Mayor and the local government did an excellent job. He came to all our meetings in the floods, and he didn't do all the talking, he handed over to his two top people to do the talking.* (Interview 11)

Amongst many of the responses there was a level of criticism that some of the panic in the community was exacerbated by the communication and information that came from council and the SES.

*The problem was they were hyping everyone up and everyone was panicking.* (Interview 6)

People indicated that they had to rely on the advice of the SES and that was about communicating the worst case scenario. While many of the interviewees understood the rationale for this strategy they felt that it caused unnecessary worry and concern in the community and may impact how the community receives information in the future.

*The SES always plan on the worst case scenario because then if something happens later on they can get their arses kicked.* (Interview 2)

*No one's going to listen in the future. I mean, it's like crying wolf.* (Interview 6)

Some people conducted their own measurements of the levels of their houses and based their decisions on those rather than the advice of management authorities.

*Our front doorstep is the same height as the windows on the first storey of the Swan Hill Hospital, which is on top of that big hill. So if we get water to our front doorstep, every house in Swan Hill has got water through it.* (Interview 6)

*I worked out that if I flooded half of Victoria would have flooded.* (Interview 17)

In criticising management decisions some interviewees made the distinction between local SES members and central decision-making bodies.

*For groups like the SES it was unfortunate. You've got local SES people who are fantastic and do a fantastic job but the bureaucrats, not here, were making various decisions that the SES in general sort of got a bad name for.* (Interview 20)

*The SES – the workers were great; the management of the SES was hopeless.* (Interview 7)

The importance of incorporating local knowledge into emergency management decision-making processes was an issue that was raised by a number of interviewees. Some people felt that local knowledge was overlooked during the floods and that the opinions of outside experts and data from computer modelling were favoured over the experience and knowledge of locals.

*Probably like anything the authorities do, instead of consulting the people that have been here for years, they just worked out on a computer probably what the flood was going to do. It just didn't work that way.* (Interview 4)

*You can't beat local knowledge though, and I felt that the ones that came up from Bendigo should have asked the local people.* (Interview 14)

*The water authorities did their absolute best but they've never seen the situation before. It's all old timers who've seen it and that was one of the things that universally around the community people have said, 'They're not listening to the farmers, the powers that be weren't listening to the locals.'* (Interview 7)

There was also a concern amongst some interviewees that there had been a loss in flood management expertise at a local level considering it had been such a long time since floods had been an issue for the area.

*There has been a tremendous loss of expertise in flood management, just by fluxation of time and retirements.* (Interview 8)

There was reference to the lack of planning in managing the flood impacts. People cited the issue of erosion problems on the banks of the lake and the amount of money that was outlaid to deal with that post the flood situation. Some participants believed that if council had spent time and money on planning and preventative measures, some of the management challenges could have been mitigated or avoided.

*They probably neglected the [levee] banks and that a bit too. It happens doesn't it? I mean if you don't need it you don't think about it until you do need it and then it's a bit late.* (Interview 4)

There was recognition that flood managers were dealing with an unprecedented and uncertain situation and didn't know what the flood was going to do.

*In all fairness they didn't know how high the water was going to be, and by the look of some of the photographs of the water that was moving down this way, from Rochester and that area, it was a fair flood that was coming.* (Interview 16)

Regular meetings were held to update the community on the threats. Radio broadcasts ensured that people who could not attend the meetings were able to receive up to date information.

*It was seen very early, as I said, by the bushfires as well, that communication was important. So the local radio station covered a lot of those public meetings ... So at least people felt a little bit empowered that they were getting the latest information.* (Interview 15)

*The Mayor was on the radio ... It was Cruikshank doing it. There was one mouthpiece. You didn't have three, four, five other people. It came through one person and Greg was good.* (Interview 18)

In comparison to the management of the drying lake many people indicated that they thought the floods were handled better due to the fact that there were formal procedures for the floods.



## 5. Comparisons between drought and flood

### Which was worse?

The original Lake Boga study investigated the way in which this community dealt with the loss of their lake and the impact that drought had in the region. Barely a year later, with the return of water and the advent of floods in the region there was a rare opportunity for this follow up study to explore comparisons of these two extreme events, from the perspectives of the same set of interviewees.

The interviewees were asked to think back over their experiences through both the drought and flood and compare a number of aspects: which was worse or more difficult to deal with, differences and similarities in the way that the community dealt with the two events, and differences and similarities in how the two events were managed. The answers to these questions revealed remarkably broad and personal perspectives on how these events impacted the town and individuals.

When asked which was more difficult to deal with, a drought or a flood, many respondents made it very clear that in some cases they were not directly impacted by the events and did not want to cause offence to people who were by making a direct judgement between the two. For example, they were either not directly inundated by the floods or did not directly suffer from the drought as farmers had. It was clear that many of the participants preferred to answer this question on the basis of the impact on the whole community in the region rather than themselves personally.

On the basis of this perspective, the results from this question were surprisingly balanced. Out of the 25 interviewees 10 felt the flood was worse, 12 believed the drought was and 3 were unsure or couldn't say.

For those who felt that flood was the lesser of two evils, the economic value of water was often emphasised.

*I think its still better with water. If you've got mud you can grow things ... If you haven't got water in this country your pretty much knackered.* (Interview 16)

*The soil moisture reserves are there now for cropping, it's going to be absolutely incredible.* (Interview 21)

*I mean water's money up here, it means everything, it guarantees security for my job, it'll boost my business by whatever percentage, people are more confident of the future so they'll spend it.* (Interview 22)

Others focused on the contrasting length of time that each event represented with a preference for the short, sharp experience of a flood rather than the drawn out difficulties of drought.

*The flood's good in a way that there's water, if you survive and it's over modestly quickly. The drought's a strangulation.* (Interview 8)

Another aspect of a flood event was the feeling of being able to respond with clear actions. This suggests that personality and personal values may be important factors in dealing with different types of emergencies - rapid action in the face of a sudden emergency like a flood versus endurance and determination over the longer challenge of a drought. For example, those who fared better with a flood situation made statements such as the following.

*The flood event people worked together - common cause. If we do this we know this will happen if we don't do that we know that will happen so you've got some level of control and people need a level of control in anything.* (Interview 20)

*At least with the flood, people felt they could at least do something and we can at least help a little bit here and that sort of stuff.* (Interview 5)

In contrast, descriptions of drought emphasised the debilitating effect of uncertainty over such a long period.

*That grinding scenario in terms of drought, a long period of time, that wears away at people and their finances, wears away at their mental stability, their health, their relationships.* (Interview 2)

*I mean I remember the '82, '83 drought but this just went on and on and on, it was incredible. So I really think the drought was more wearying, more debilitating on people.* (Interview 13)

*A flood is more short term. You sort of know within a period of a month or two it's going to go away. The problem with drought was it felt like it was never going to rain again.* (Interview 23)

For others however, it was precisely the short and sudden nature of a flood that made it more stressful than drought.

*More stressful. Stress levels, the energy required to deal with it ... it's just so much more intense, and so much more short lived, and potentially so much more damaging in a physical sort of infrastructure way.* (Interview 15)

The potential loss of property was seen as a particular threat for many respondents.

*I don't think anything can get much worse than a flood if it gets in your house. I don't think it could ever be the same again.* (Interview 4)

*A drought doesn't come and ruin your property, it doesn't spoil your furniture, it doesn't drown your livestock, it doesn't wash trees away.* (Interview 1)

For farmers, floods brought other problems which created economic worries.

*There's more diseases spread through floods than what there are through drought.* (Interview 21)

*With all the rain we've had, we've had our disease problems, extra chemical costs.* (Interview 6)

As with the drying lake, the events of early 2011 came with secondary ecological impacts.

*Post-flood we've had spiders, mice, wasps we had coming out of the locusts. It's just been one thing after another, it's incredible.* (Interview 8)

Flood and drought had differential impacts on dryland and irrigation farmers although there was still variation in individual views on whether drought or flood were worse. For irrigation farmers, flood brought problems of disease and less lucrative water markets. For broadacre farmers the floods brought the threat of livestock and feed loss.

*One of the worst things in the rural areas is all the hay that got wet for the farmers because they've still got to get rid of it.* (Interview 4)

*I can't sell my excess water, so that's an income stream I don't have anymore.* (Interview 6)

### Community response during drought and flood

The original Lake Boga Study highlighted a number of community responses that aimed to bring the community together during the dry lake period, for example the Dry Lake Dinner. Many participants acknowledged that these were positive and necessary actions, but that they required a lot of patience and there was a level of frustration about what could actually be done to help the situation. The floods, by comparison, were seen by many to be a very different situation in relation to opportunities for the



community to respond and work together. Many people pointed to the greater sense of unity and purpose in the community response to the floods. The goal of protecting the town and the urgency of the sandbagging effort brought people together.

*I mean in the flood event people worked together, common cause ... They will still walk around with a smile even when it was wet and we were sandbagging.* (Interview 20)

*When it first went dry there was quite a bonding of communities and an outlet of emotion that people attached to. But as it went on I think we got to a point where we sort of lost our way a little bit. But in the flood, the way the community pulled together and responded was just something I've never seen before and it just opened up my eyes. It'll be interesting to see how we go from here.* (Interview 23)

There was a sense that the direct community action that was needed in the flood brought the community together in a different kind of way to the dry lake experience.

*[In] a drought – here's another day, what do we do today? Probably go to work, same thing. But [during the flood] people would get home have their tea and be out helping sandbagging. It's sort of a bit like a social occasion too, they'd get out and meet people they haven't met before.* (Interview 3)

*In a drought it's more about fund-raising and helping people financially, whereas in a flood there's physical stuff you can do that makes people feel good.* (Interview 7)

*I think in an intense situation people need to feel like they're doing something, whereas in a drought I think people feel a lot more helpless.* (Interview 11)

The immediacy of the threat and the single focus of the response needed meant that more people felt able to be involved and act.

*On a dry lake bed there's no single focus, its dependant on what you or your particular group sees as a priority whereas a flood is here we've got to deal with it and we've got to deal with it now.* (Interview 9)

The idea of community resilience was seen to be a key factor to in relation to both events.

*It's a very resilient community. Through the drought that came through, but also in terms of the other thing, the flood, they were quick to come to arms, quick to get in behind, good community spirit.* (Interview 2)

Some felt that the experience of going through both events would give the community more capacity to cope in the future.

*It went full circle, we went from a drought to a flood. Probably on the way it'll even out and we'll have a few good years then all of a sudden it'll throw something else back at us and we'll just be reading it because we've seen both ends of the scale.* (Interview 3)



## Comparisons in Government Response

For some, the frustrations with management processes that were expressed during the drying of the lake were also an issue during the floods.

*It was exactly the same, everyone's pointing the finger at everyone, there's just no acceptance of liability or control of the whole situation, it was just you can't do this, you can't do this.* (Interview 17)

Financial support was not seen to be a major point of comparison in management response. For the interviewees that mentioned it, it was satisfactory in both cases.

*In terms of government, following the flood, in terms of monetary support people got their grants and it was easy to get them.* (Interview 7)

*I feel that the government has responded adequately in both occasions. They've given fairly good financial support.* (Interview 8)

Timeframes and extremity of potential impact and damage were considered by many to be a factor in the way that authorities responded to the two events. Many people believed that authorities and management agencies responded much better in the crisis of the flood situation than they did in the drought.

*I think they were better during the floods, definitely better during the floods ... during the drought you couldn't get them to do anything ... yes when there was a crisis they did really come through.* (Interview 18)



The importance of legal precedence and established policies to deal with problems was seen as a key difference in the management of the floods and the dry lake for some interviewees. In these interviews it was felt that the floods could be managed better than the dry lake because there were policies and legislation that set out the roles and responsibilities of managers.

*With the dry lake it was a fight between DSE, Goulburn Murray Water and Fisheries, whose fault is it, who's to blame, who should clean it up. Whereas in relation to the flood events I think there is legislation to say you're in control of this, it's your responsibility and I think that's the difference right there.* (Interview 24)

*The flood was a definite threat that the council could take on, where the dry lake, there was a lot of people upset about the council because they weren't doing enough. They couldn't seem to find out who was responsible for the lake.* (Interview 11)

For some the effort that was put into community consultation, communication and involvement during the flood was a point of comparison.

*I think to be honest, I think we got a lot more information about the flood than we ever got about the drought.* (Interview 5)

## 6. The future

### The Future of the Town

When asked about the future of Lake Boga the majority of the respondents were positive due to water being back in the lake.

*“It’ll gradually build again. There’s very few places you’ve got a lake like this that’s basically unspoiled, there’s avenue to put in some infrastructure and it can be a booming place in Victoria.”* (Interview 17)

*Lake Boga can only go one way now and that’s up. And that’s all due to the lake.* (Interview 10)

*They’ve got the fishing club up and running, they’ve got the yachts back on the lake. The future has got to be very good, I say that without hesitation.* (Interview 14)

Nevertheless, some found it harder to foresee an instant improvement in conditions in the region.

*I think there are some pretty tough times for the next five or six years. There are heaps of houses for sale and there are quite a few people still living there but they’ve just stopped farming. It’s going to take a while with that side and that’s the backbone of Lake Boga. The permanent employees of the farms have always lived in Lake Boga.* (Interview 6)

*I’d consider expanding (the business) but I’m not confident enough in light of the stability of the area.* (Interview 12)

Some respondents saw Lake Boga’s future dependent on the wider region and particularly Swan Hill.

*I think Lake Boga’s got a good future but it’s going to take a bit of time and work any maybe something new. I think basically the fortunes of Lake Boga rest pretty heavily on the fortunes of Swan Hill.* (Interview 6)

Many people spoke about the multiple factors that lead to a sense of resilience in the region.

*It goes through better times and worse times, depending on the seasons, but it’s fairly resilient. You know, we sort of proved that with the drought and the floods.* (Interview 16)

*I think Boga is a fairly resilient community, I suppose if we get massive floods all the time then people around the lake would have to consider where they were and what they were doing. But these communities are resilient and I think they’ll come back.* (Interview 2)

### The Future of the Lake

In relation to the lake itself, the general response was one of confidence. This was mainly due to the fact that the lake had been included in the irrigation system as part of the Mid Murray Storage Program. The fact that Goulburn Murray Water now had an investment in the water provided many in the town with confidence about future water levels.

*It will take a really serious drought for that lake to be impacted upon to the level it was last time when it dried up. I don’t believe the authorities will allow that to happen unless it’s a really, really serious drought.* (Interview 20)

*The future for the lake is good. If they’re going to use it as storage it is assured it will never run empty again. Yes, I don’t think there is any problem for the lake*



*here.* (Interview 4)

Some respondents tied possible uncertainty of water to the uncertainty of Lake Boga’s future.

*If we had a repetition of, even a brief interval between a useable lake and an empty lake that would have a marked impact on Lake Boga ... If you didn’t have security of water which is what that would entail then I think Lake Boga’s future doesn’t look so bright.* (Interview 9)

*I hold high hopes for the lake but I wouldn’t be putting my five hundred thousand dollar house on the side of Lake Boga with the surety that it’s going to be there in five years. I’d rather go and buy a house at Mulwala because I know the lake will be full all the time. It’s on the bloody start of the Murray, not the end of it.* (Interview 12)

The need for community leadership regarding how the lake is used and managed was also noted.

*There is still a need for Lake Boga to have a voice, to have the community, to have someone to organise and have the interests of Lake Boga at heart.* (Interview 15)

### Individual futures

When asked if they had considered leaving the town after the extremes they had gone through, most respondents were adamant they would stay on in Lake Boga.

*No, I’m pretty happy, dig a hole out the back here and bury me sometime.* (Interview 17)

*We’ll be here for a while I reckon. But I think we’re part of the furniture. Where would we go? Because everywhere there’re floods and fires, and we’ve been*

*here and we’ve seen a flood and a drought and come out ok.* (Interview 3)

Some respondents expressed their desire to move but didn’t directly relate it to environmental difficulties.

*I want to go somewhere else just because [Lake Boga’s] so far away from everything. Not because of the lake or drought, just because it’s so far away from my friends and family.* (Interview 11)

*I’ve got a bucket list. There’re still a few other things I want to do so I’ll hang around here for a few more years, get financial stability to do what I want to do then I’m off.* (Interview 22)

### The Frequency of Future Extreme Events

A key aspect of scientific climatic change projections is the likely increase in *frequency* of extreme events such flood and drought. Participants were asked if they were aware of the theory and debate around the issue and, considering their experiences, if they believed this would occur, as well as how that would be likely to impact their lives and the area.

Most of the interviewees had strong views on the issue of future increases in frequency of extreme events and based their beliefs on a range of sources. Many are getting information on the frequency issue through contact with older people in the community who have been through these events before. There was a strong reliance on these oral histories for how the interviewees see the



future in terms of the frequency of extreme events.

In many of the interviews there was reference to the point that extremes like flood and drought are part of natural cycles that have been developing and changing for millennia.

*Everything runs in cycles, the weather runs in cycles, droughts run in cycles, wet years run in cycles.* (Interview 6)

*You've got to expect after every drought there's a flood and vice versa. It's just the land looking after itself and that's the way of life and you accept it.* (Interview 24)

More specifically, the important point of these cycles was that a record flood almost always follows a record drought, and following that there is most likely a period of relative stability. There was a sense that this period of stability was what people were hoping for and looking forward to.

*It's how the cycle goes isn't it? Droughts, floods, pestilence ... I think that's what farmers live on, historical perspective, especially if you've been there as a generational thing ... I think everybody is sort of hoping that we've had a drought and a flood, now we'll have ten good years.* (Interview 7)

*It always rains after a dry spell. If it's a long dry spell it's a bigger bloody rain you know? It's happened before.* (Interview 8)

Amongst some interviewees there was acknowledgement of the possibility of climate change having an effect on cycles and frequency, but in most cases people felt that there was too much uncertainty for it to influence their personal decision making. Similarly, some believed that even if human actions were changing climate conditions, the timeframes for change are too long to cause major concern or action.

*Yes, I do accept that man made activities are probably increasing the rate of global warming, but I still think it's happening*

*slowly compared to the human lifetime.* (Interview 1)

A couple of interviewees indicated that people were thinking about the possibility of extreme weather events occurring more often.

*I think people are honest with themselves and saying, yes, there will be more of these extreme weather patterns. The climate change gurus are indicating that we are going to become more tropical type climate scenarios.* (Interview 20)

*They're saying this is a one in 200 year flood event that we've just had. But every record that's ever created will be broken one day, whether its now or in 100 years time, but it might be in two years. Heaven help us.* (Interview 21)

## Uncertainty

Many people spoke about the uncertainty of weather and the difficulty of predicting the future.

*We can't say it's more frequent than normal, because we don't know what normal is here.* (Interview 6)

*How can you worry about something that you've got no idea is ever going to happen?* (Interview 15)

*I talk to the odd farmer and they all shake their heads and say nobody knows. Nobody knows.* (Interview 16)



Some interviewees pointed out the difficulty with trying to predict the future when we don't have long records of trends in past events.

*Well you're relying on the limited history that we have, and our history's not very old. In terms of Lake Boga you can only go back to 1836 which is not a long time ago so it's very difficult to gauge anything from the data we have available.* (Interview 9)

## Consequences – will people leave?

In the majority of cases people did not feel that the possibility of these events occurring more often in the future is enough to cause them to think about leaving the area. The combination of uncertainty about the future as well as a belief in the historical patterns of natural cycles means people are more likely to stay and adapt to change as it occurs.

*I've been through the worst flood and drought in years and come through with flying colours. It hasn't affected me at all. Why would I shift anywhere else?* (Interview 11)

There was a recognition from some that if they did move they were likely to face the same problems elsewhere.

*But where would you go? It happens everywhere, people in Queensland are saying 'we're getting out' but they'd end up coming down here and in two years time might strike a drought, so that's really from one problem to another.* (Interview 17)

*If it's happening here its probably going to be happening everywhere else so what do you do about it?* (Interview 4)

For some, the uncertainty around how frequent these extreme events might be in the future and what can be done about it means that they have chosen not to worry about it.

*It's going to happen, there is nothing we can do about it so I don't really care. To me, if you worry about it it's just going to drive you crazy so you just have to go along with the flow and not let it bother you.* (Interview 18)

Some believed that dealing with fluctuations in extremes was a natural part of living in Australia.

*I think a lot of people that you talk to say 'But that's just how it is in Australia', we have all these fluctuations in weather. It's dry or it's this or that and I think people think that it's all part of the deal. You're in Australia so we just get on with it.* (Interview 5)

The original Lake Boga study highlighted that people's migration choices are driven by more than just climatic conditions. This was emphasised again in this round of interviews.

*Everyone's tipping point will be different and everyone's way of adapting will be different. I think at the end of the day ... it will be the financial viability of your enterprise, whether it's a shop, or whatever, more so than how often you get flooded, which will determine whether you stay or go, adapt or change.* (Interview 6)

*We're going to stay here. We'll basically look to expand (farming operations) as long as we can get market access. Our biggest concern is the power of the supermarkets.* (Interview 6)

## 7. Discussion

### Cumulative impact

The interviewees were asked about how their views on their future in Lake Boga might change if they were to experience more of these extreme events back-to-back. In the interviews, the concept of cumulative impact was presented through the example of two Victorian towns (Charlton and Rochester) which had been severely impacted by drought followed by three flood events during 2010-2011.

One respondent pointed out how difficult it was for people who wanted to leave areas where multiple floods had occurred as many who had sustained major damage to their assets were subsequently unable to sell their properties.

*Now to try to sell those farms is going to be near on impossible. They were struggling to sell them before, now they've been massively flooded and any infrastructure that was on them was flooded as well. So ... in some respects they may be locked in to where they are.* (Interview 2)

*It really broke down a few people, they struggled through the biggest part of ten years and then to get this – devastated – I think is the easiest word I can come up with.* (Interview 25)



Many interviewees felt that, hypothetically, there would be a limit to how many events they could go through and how much damage they could sustain.

*If I lived in Charlton or Rochester, whatever, like I said If my house was flooded three times then I would leave.”* (Interview 18)

*If we get massive floods all the time then people, particularly around the lake here, would have to consider where they were and what they were doing.* (Interview 2)

There was strong reference in many of the interviews to the role of personality in decision-making and the capacity to deal with the cumulative impact of extreme events.

*I guess it depends on the people themselves ... I think it's more of a personal choice. For some people [being flooded] once would be enough. Then you go 'I can't go through this again so let's find somewhere else to go'. Yet other people will go through it time and time again.* (Interview 5)

The resilience of communities and individuals, in terms of their capacity to deal with shocks, was referenced as a factor in dealing with cumulative impacts.

*I think there could be a tipping point for communities but communities are remarkably resilient if they've got an advantage, something that makes them be there, a reason.* (Interview 8)

### Management and Assistance

The issue of incorporating local knowledge into high level decision making for emergency management is a persistent and emotive one. Many respondents perceived a lack of concern from managers regarding local issues. This led them to feel that their experiences and opinions were not being valued and thereby created a point of anger and resentment. This led many to believe that they would be less likely to cooperate with non-local officials in the future.

This issue of scale has long been a problem for governance in general and emergency management in particular. As was noted by some participants, it is very challenging to scale up local knowledge and experience and scale down risks and responsibilities. Participatory approaches to disaster management emphasise the use of local knowledge, mainly because communities living in flood- (or other disaster) prone areas have accumulated experience and knowledge over time. These approaches also acknowledge that locals are the main participants when a disaster strikes.

Emergencies require an array of responses; some are better able to be provided at a large scale (such as state or federal government) while others are more suited to the local scale (local or community-based organisations). Taking local knowledge into consideration can help organisations improve their planning for, and response to, emergency events. For example, what is needed most can be identified and it can be delivered in a locally acceptable way.

Local participation can also be solicited in the response process. As well as the efficiency gains from this approach, in terms of performance and acceptance of those organisations during an emergency, there are also social gains in terms of building mutual trust and common understandings across different scales of organisation. (Dekens 2007, pp. 13-14)<sup>1</sup>

The interviewees concerns and opinions about their interactions with emergency managers should not be seen as simply the venting of angry locals. Perspectives on what worked and what could be improved provide lessons for how to build better relationships for future emergency events.

### Relative impacts

The hardship brought by the floods was moderated for many by a sense of others being worse off. The fact that Queensland had experienced extreme flood conditions and loss of life, and that other Victorian towns had been hit by multiple severe flooding meant that many in Lake Boga felt that they had been spared the worst.

This was quite a different feeling than that of being 'forgotton' which had been a feature of the drought and dry lake period. Interestingly though, residents of nearby Benjeroop expressed their sense of being forgotten as their experience of being flooded extended for more than a month.



1. Dekens, J. 2007, Local Knowledge for Disaster Preparedness: A Literature Review, International Centre for Integrated Mountain Development (ICIMOD) Kathmandu, Nepal.

While there is a spectrum of severity of extreme events, the amount of attention and assistance given to communities does not necessarily follow the same pattern or an even spectrum. This can lead to resentment and mistrust in communities who feel they have not been dealt with equitably. This can restrict the capacity of emergency management engagement in those communities during future events.

### **Impacts of media**

The experience of nearby Benjeroop during the floods and Lake Boga during the drought highlights one of the problems of any extended emergency situation – sustaining media interest. Media reporting is a significant factor in mobilising support and raising awareness of an emergency, however, media interest can be difficult to maintain over an extended period.

On the other hand, widespread reporting of an intense event such as floods can lead to people staying away from an entire region, thus disadvantaging local businesses.

These conflicting aspects of emergency reporting (too much or too little) reflect the complexity of dealing with unpredictable events and diverse communities. It suggests that communities and agencies need strategies for dealing with short-term, widely publicised events as well as longer-term events which may only attract occasional attention.

### **The role of personality**

The experiences of the community in Lake Boga demonstrate how individual values and personality impact the way that people react and respond to environmental change. People spoke about how drought and flood affected people differently and, in turn, the personality of individuals caused them to respond differently to each event.

For some, the length of the drought prompted a stoic personal response. For others, it led to a feeling of helplessness that could be contrasted with the motivating physical response to the flood emergency. Importantly, some individuals who responded well to one event did not cope well in the other, even though they occurred barely a year apart.

Different men and women became leaders and motivators during the floods than in the drought. Some participants who indicated in the original study that they felt marginalised from the community response in the drought, went on to be highly involved in the collective response to the floods. When talking about these different responses the interviewees frequently made the connection between the role of values and personality in how they responded to different events.

For the most part the examples were linked to the timeframe and extremity of the two events and peoples personal ability to cope with slow-burn crises and high-stress situations. The general consensus was that individuals will respond well in either one situation or another but rarely both.

The individual nature of response at this local level has some important implications for emergency management and assistance. Management authorities cannot presume a community will respond in a homogenous way to extreme environmental events. In one situation, a person or group may be mobilised while others may not. In other situations this can reverse. Understanding how values and personality motivate responses is a key aspect of understanding how communities will cope with climate or environmental change. Understanding how personality drives responses may help emergency managers build better and more productive relationships with communities.

### **Frequency of extreme events**

The study provides insights about how people view the likelihood and impact of increased frequency of extreme events. This highlights the ways that people process information, manage risks and think about future environmental change.

In making decisions around the likelihood of extreme events, most interviewees indicated a reliance on personal experiences and historical patterns of frequency rather than scientific predictions or models. Consequently, there was a strong belief that current trends and patterns, such as record flood following record drought, will continue into the future. Similarly, there was also an expectation of long periods of relative climatic stability in between extreme events. For many people, these periods of stability represent a chance to recharge and recoup losses from the turbulent times. They are therefore important from both a psychological and economic perspective.

While there was a recognition that increased frequency would make life more difficult, people mostly indicated that they would stay in the area and adapt to whatever changes eventuated. This was not an abstract concept for the people of Lake Boga – the interesting aspect of this set of questions was that we were asking people who had recently experienced two extreme events in the space of a year – and this makes that determination to stay and their resilience all the more powerful a finding.

## 8. Conclusion

Floods and droughts are a normal feature of Australia's climate. Nevertheless, climate change scenarios suggest an increase in the frequency and severity of such events. Therefore understanding the ways in which communities experience and respond to these events provide important insights for planning and policy development.

Like many other towns in Victoria and in Australia, Lake Boga experienced the extremes of severe drought followed by flooding rains in the decade to 2011. The lake which provided the environmental, social and economic backbone of the town was lost for a period of two years - an event which had a profound impact on residents' sense of wellbeing.

When water was returned to the lake at the start of 2010, the township experienced 9 months of 'normal' conditions. Boating and fishing activities returned, recreational clubs were reformed and the local community looked forward to a summer of visitors and business activity. It was ironic that by the end of 2010 the town was faced with a lake closure due to increasing water levels and looming flood conditions.

While the town of Lake Boga was spared the inundation that devastated other towns across north-western Victoria, it nevertheless found itself in at the heart of the action - as a refuge for people from nearby flooded areas and as a community affected by secondary impacts such as compromised road access and visitors staying away for an extended period. This occurred in what should have been peak season for local businesses.

The events of January 2011 again showed the ability of a small community to band together to address a potential threat. This was highlighted in Lake Boga by the sandbagging efforts around the lake and the extension of help to those in nearby communities. The ability of a local community to respond effectively to another 'disaster' within the space of two years provides the strongest evidence of the strength and resilience of such communities.

It's been a tough time but, having said that, it's a year to remember. (Interview 8)

