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EXPLORING THE EXPERIENCES OF THOSE WHO SHELTER IN PLACE DURING SEVERE FLOODING

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ABSTRACT

Exploring the experiences of those who shelter in place during severe flooding

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2. Risk Frontiers

This report examines the experiences of residents and business owners in the Northern Rivers region of NSW during flooding on March 30 and 31, 2017. It draws on a survey of residents and business owners conducted in July 2017, and a series of semi-structured interviews conducted with residents and business owners between April and July 2017. Using these methods, perspectives on awareness, information and warnings, and preparedness are explored, alongside people's experiences of staying with their home or business during this flood. The findings suggest that an approach that is more responsive to local cultures and contexts is needed for managing the residual flood risk in already existing towns and developments in floodplains, particularly where there is an established culture of sheltering during floods. Information that enables residents and businesses to effectively plan and prepare for the realities of sheltering, or to recognise that early evacuation is a better strategy and to take steps to ensure that evacuation is possible, is needed.



END USER STATEMENT

Researchers from the Department of Geography and Planning, Macquarie University and Risk frontiers have undertaken post-event research on the Northern Rivers floods for the NSW SES. The research will enable the NSW SES to gain a greater understanding of community behaviour during flood events, including whether evacuation or sheltering in place was/is the preferred option for the impacted community and what precautionary actions people take before a flood. This research will assist the NSW SES in revising plans, warning services and operational strategies to address existing flood risk.

NSW SES is already using the outputs of the existing fatalities and impacts research conducted by the team to inform community engagement campaigns to reduce the incidence of motorists and people entering floodwater.

Marcus Morgan NSWSES Senior Planning and Research Officer, NSW SES



1. INTRODUCTION

This report examines the experiences of residents and business owners in the Northern Rivers region of NSW during flooding on March 30 and 31, 2017. It draws on a survey of residents and business owners conducted in July 2017, and a series of semi-structured interviews conducted with residents and business owners between April and July 2017 (Section 3). Using these methods, perspectives on awareness, information and warnings, and preparedness are explored, alongside people's experiences of staying with their home or business during this flood. The findings suggest that an approach that is more responsive to local cultures and contexts is needed for managing the residual flood risk in already existing towns and developments in floodplains, particularly where there is an established culture of sheltering during floods. Information that enables residents and businesses to effectively plan and prepare for the realities of sheltering, or to recognise that early evacuation is a better strategy and to take steps to ensure that evacuation is possible, is needed.



2. BACKGROUND

Flooding impacted Northern New South Wales (NSW) from Thursday late afternoon on March 30 2017, as a consequence of heavy rainfall from ex-Tropical Cyclone Debbie ('Cyclone Debbie: Floodwater crisis hits Lismore' 2017). Thousands of residential and commercial buildings were flooded. Both North and South Lismore and North Murwillumbah are protected by a levee system up to a 10% average annual probability (Lismore City Council 2014a). The levees in Lismore were both overtopped.

The Lismore Rowing Club Gauge measured a flood peak of 11.6 metres AHD, which has been the highest flood recorded since 1974 (12.2 metres AHD (equal to the highest on record)) (Lismore City Council 2014b, p.7). The 2017 Lismore flood is estimated to be a 2% annual probability event (1:50 ARI) and Murwillumbah a 5% annual probability event (1:20 ARI) (Lismore City Council 2014a). Murwillumbah was flooded in the late afternoon of March 30 and North Lismore later that evening, whilst South and Central Lismore were flooded in the early morning hours of the 31st of March (Levy & Mitchell 2017).

The flood event affecting Northern NSW spanned across these two days. On the 30th of March alone, over 40,000 Tweed residents and over 17,000 properties were affected ('NSW Flooding: Lismore ordered to evacuate, Murwillumbah residents stuck on roofs' 2017). In the same report, it was stated that within the first 36 hours, over 300 rescues were carried out and several residents were stuck on roofs. Approximately 10,000 homes and businesses within Northern NSW were without power. Several fatalities were recorded as a result of Ex-Tropical Cyclone Debbie (Cyclone Debbie's trail of destruction, 2017). Table 1



summarises the levee systems in place throughout the Northern Rivers region, and Table 2 outlines the available rainfall and flood height data for this event.

TABLE 1. LEVEE SYSTEMS IN THE REGION

Town	Year constructed	Levee height Peak flood level (metres)	Source
Central Lismore	2005	12 to 11.5	Lismore City Council, 2014
South Lismore	1975	10.9 to 11.7	Lismore City Council, 2014
Murwillumbah		6.2	Sharwood, 2017
East Murwillumbah		6.2	Howard, 2017
South Murwillumbah	1991	4.85	Todd, N, Craig, M, McKenzie, D & Brennan, A 2017 'Regular floods are now history' 2012, Tweed Daily News, viewed 9 August 2017, http://www.pressreader.com/australia/tweed-daily-news/20121201/282419871550830
Tweed Heads	Late 1960s – early 1970s	2 (originally)	Tweed Shire Council, 2012.

TABLE 2: KNOWN DATA ILLUSTRATING RAINFALL LEVELS IN THE NORTHERN NSW REGION AND PEAK FLOOD HEIGHTS DURING THE FLOODING EVENT FROM MARCH 30 – 31.

Suburb	Flood height	Rainfall (mm) 30-3-17	Rainfall (mm) 31-3-17	Source
North/South Lismore	11.6m	74.0	324.8	'NSW Flooding: Lismore ordered to evacuate, Murwillumbah residents stuck on roofs' 2017, ABC News, viewed 9 August 2017,
Tumbulgum	4.1m	133.0	327.0	Roads and Stormwater, Tweed Shire Council, 2017
Murwillumbah/South Murwillumbah	6.4m	133.0	327.0	Roads and Stormwater, Tweed Shire Council, 2017
Condong		133.0	327.0	BoM (2017)
Bray Park		159.0		BoM (2017)
Mullumbimby		71.0	362.0	BoM (2017)
Billinudgel		71.0	362.0	BoM (2017)
South Golden Beach		71.0	362.0	BoM (2017)
Moobal		71.0	362.0	BoM (2017)
Chinderah	2.2m	22.6	186.6	Roads and Stormwater, Tweed Shire Council, 2017
Burringbah		133.0	327.0	BoM (2017)



3. METHODS

This project includes a questionnaire and semi-structured interviews with residents and business owners in the Northern Rivers region. Ethical approval for this project was obtained from the Macquarie University Human Research Ethics Committee.

3.1 Survey

A survey of 330 residents and business owners in the Northern Rivers region was conducted during July 2017. The survey was developed in close consultation with NSW SES, and included questions about warnings and information, preparedness, sheltering experiences, and reasons for sheltering or evacuating. The survey was distributed in three ways. First, the survey was available online, and was promoted through SES Facebook pages, on the BNHCRC website, and by the Lismore-based newspaper The Northern Star (Paterson, 2017).

Second, the survey was conducted by telephone. The towns listed in Table 3 were targeted. For the residential survey, respondents were randomly selected using a list of the most common surnames in Australia, and then the White Pages to call only those who reside within the target areas. Businesses were found by checking through blocks of street addresses in affected areas in Google Maps to identify businesses. Surveying was carried out by two research assistants between 10am and 7pm on weekdays.

TABLE 3: SUBURBS AND TOWNS TARGETED IN THE SURVEY (PHONE)

Suburbs and towns	
Lismore (not Lismore Heights)	Mullumbimby
North, South Lismore	Billinudgel
Tumbulgum	South Golden Beach
Murwillumbah	Moobal
South Murwillumbah	Ocean Shores
Condong	Chinderah
Bray Park	Burringbar

Lastly, a team of four researchers visited Chinderah, Tumbulgum, Murwillumbah, Condong, Mooball, Billinudgel, and Lismore over four days. Researchers



conducted the survey in person, and also distributed letters with information about the survey.

3.2 Interviews

Eighty-three semi-structured interviews were conducted with residents and business owners in the Northern Rivers region in April, June and July 2017. These interviews focused on warnings, preparedness, sheltering experiences, and reasons for sheltering. With consent, the interviews were audio-recorded and then transcribed. The interview transcripts were inductively analysed by two researchers using NVivo 11 to identify key themes in the transcripts. To ensure analysis consistency, the two researchers initially analysed interviews together, and closely collaborated throughout the analysis process.

4. SURVEY FINDINGS

4.1 Respondents

In total, there were 330 responses to the survey¹. The average age of respondents was 50 (ages ranged from 16 to 88); 63% of respondents were female, and 35% were male. In terms of flood impacts, 64% reported that the floodwaters entered ground-level rooms on their property, and for 11% of respondents, the floodwaters also entered raised-level rooms. Reported water-depths ranged from ankle-deep to above head height.

The survey asked participants to select to respond about their home or business. Nearly 80% answered about their home, and 20% answered about their business.

Residential respondents

Table 4 provides a summary of the household characteristics of the residential survey respondents.

TABLE 4: RESIDENTIAL SURVEY RESPONDENTS

Location			Household Members		
Response	#	%	Response	#	%
Burringbar	11	5.07%	Couple with children or other dependents	63	27.63%
Chinderah	7	3.23%	One adult with children or other dependents	28	12.28%
Condong	6	2.76%	Couple without children or other dependents	60	26.32%
Lismore	29	13.36%	I live alone	43	18.86%
Lismore (East)	7	3.23%	Shared house with other adults	24	10.53%
Lismore (North)	16	7.37%	Other	10	4.39%
Lismore (South)	27	12.44%	TOTAL	228	
Mullumbimby	13	5.99%	Transport		
Murwillumbah	21	9.68%	Yes, I have my own car or other vehicle	206	91.15%
Murwillumbah (South)	12	5.53%	Yes, I share a car or other vehicle with other household members	10	4.42%
Tumbulgum	12	5.53%	I can drive, but there are no cars or vehicles at my household	1	0.44%
Other	56	25.81%	No, I cannot drive	9	3.98%
TOTAL	217		TOTAL	226	

¹ Please note that because not all respondents answered all questions, results are reported with both the number of responses and the percentages.

Most respondents (75%) resided in a house on a residential block at the time of the floods, and 70% were owner-occupiers. On average, respondents had resided in their current home for 12.5 years (ranged from less than 1 year to 80 years). As shown in Table 5, most residents were aware of the flood risk in the area, but some 35% did not expect to get flooding in their home. Almost 60% reported having no flood insurance, almost half had no flood plan for their home, and 40% had not previously experienced flooding.

TABLE 5: RESIDENTS' GENERAL FLOOD PREPAREDNESS

Awareness of the flood risk to the property		
Response	# of responses	%
No	46	20.18%
Yes, I knew the area flooded, but I didn't think it would impact this property	80	35.09%
Yes, I knew this property might get flooded	102	44.74%
TOTAL	228	
Did you have flood insurance?		
Yes, for my home	17	7.52%
Yes, for my home and contents	65	28.76%
Yes, for my contents only	10	4.42%
No, I was not insured	134	59.29%
TOTAL	226	
Did you have a flood plan?		
Yes, we had a written plan	13	5.58%
Yes, we had talked about it as a household	105	45.06%
No, we didn't	115	49.36%
TOTAL	233	
Have you experienced flooding here before?		
Yes, many times	84	36.84%
Yes, once or twice	52	22.81%
No, never	92	40.35%
TOTAL	228	

Business respondents

Sixty-five businesses responded to the survey. Retail was the most frequent business type (29%); other sectors represented in the survey included industrial, café/restaurant/bar, agriculture and horticulture, and private consultant/contractor. Responses were received from businesses throughout the Northern Rivers region, with most coming from Lismore (39%) and Murwillumbah (17%). On average, businesses had operated in the region for 16 years. As shown in Table 6, most respondents were from micro or small

businesses, and most were aware of the flood risk and thought their property might get flooded. Forty percent had no flood insurance and over 50% had not experienced flooding at their business previously, yet almost 80% did have either an informal or formal flood plan.

TABLE 6: SUMMARY OF BUSINESSES AND GENERAL FLOOD PREPAREDNESS

Business Size		
Response	#	%
Number of businesses =<5 employees	28	56
Number of businesses 6-20 employees	16	32
Number of businesses 21-199 employees	6	12
TOTAL	50	
Awareness of the flood risk to the property		
Yes, I knew the area flooded, but I didn't think it would impact this property	11	20.75%
Yes, I knew this property might get flooded	37	69.81%
No	5	9.43%
TOTAL	53	
Did you have flood insurance?		
No, I was not insured	28	40.58%
Yes, for the building	20	28.99%
Yes, for stock	7	10.14%
Yes, for plant and equipment	11	15.94%
Yes, business continuity insurance	3	4.35%
TOTAL	69	
Did you have a flood plan?		
Yes, we had a written plan	15	25.86%
Yes, we had talked about it	31	53.45%
No, we didn't	12	20.69%
TOTAL	58	
Have you experienced flooding here before?		
Yes, many times	10	18.87%
Yes, once or twice	13	24.53%
No, never	30	56.60%
TOTAL	53	

As shown in Table 7, some 27% of respondents had not previously experienced a flood, and among those who had, sheltering-in-place was by far the most common practice during floods. Further, some 58% of respondents stated that prior to this event, they thought would shelter (rather than evacuate) if a flood occurred, and 15% thought they would 'wait and see'. These tables are suggestive of a culture of sheltering during floods within these communities (see also, Section 5.3).



TABLE 7: PREVIOUS AND EXPECTED FLOOD BEHAVIOURS

In previous floods, what have you using done?		
Response	#	%
Usually stayed at my home or business	151	57.41%
Usually evacuated to a shelter	7	2.66%
Usually evacuated to a friend's, neighbour's, or relative's house	5	1.90%
Usually wait and see before making a decision	24	9.13%
Not experienced a flood before	72	27.38%
Other	4	1.52%
TOTAL	263	
Before March 31st, what did you think you were most likely to do in a flood?		
Evacuate to a shelter	12	4.63%
Evacuate to a friend's, neighbour's, or relative's house	23	8.88%
Stay at my home or business	150	57.92%
Wait and see before making a decision	39	15.06%
Wait for NSW SES, fire or emergency services to tell me what to do on the day	9	3.47%
Hadn't thought about it	22	8.49%
Other	4	1.54%
TOTAL	259	

4.2 Information and Warnings

Table 8 identifies how respondents first became aware of the likelihood of flooding. Notably, observing rainfall and the rivers (25%) was the most frequent response, followed by being informed by family or friends (14%). Official information from the BoM website, SMS messages, and official social media accounts were also named by many respondents. While 18% of participants stated that they saw floodwaters within 2 hours of being warned, 36% reported having 'about half a day's notice', and 25% knew about the floods for a day or more in advance.

TABLE 8: HOW RESPONDENTS FIRST BECAME AWARE OF THE LIKELIHOOD OF FLOODING

How did you first find out that your town or suburb was likely to experience flooding?		
Response	#	%
Heard radio announcement	17	6.34%
Radio talk back	4	1.49%
SES Website	4	1.49%
Received SMS text message	30	11.19%
Bureau of Meteorology website	28	10.45%
Saw posts about it on social media (eg. Facebook, Twitter) from the SES, BoM or other official sources	20	7.46%
Saw posts about it on social media (eg. Facebook, Twitter) from friends and family	11	4.10%
Saw television announcement	16	5.97%



Told by family, friends and neighbours	37	13.81%
Told by SES staff or volunteers	5	1.87%
Told by other emergency personnel (eg. Police, firefighters)	2	0.75%
Observed heavy rainfall or rivers rising	67	25.00%
Saw water inside house	9	3.36%
Other	18	6.72%
TOTAL	268	

As shown in Table 9, when asked to consider the most important information source during the flood, 22% nominated social media (Facebook) and 21% the BoM. Some 17% identified their family, friends or neighbours as the most important source of information. Among the 'other' responses, many stated that there was no information source that was useful during this event; others stated that simply observing the rain and water was the most useful source.

TABLE 9: MOST IMPORTANT INFORMATION SOURCE DURING THE FLOOD

Which source was the most important in helping you respond to the flooding?		
<i>Response</i>	<i>#</i>	<i>%</i>
ABC Radio	26	10.79%
Other local radio	4	1.66%
Emergency personnel (e.g., police, firefighters)	3	1.24%
SES staff or volunteers	22	9.13%
Bureau of Meteorology	51	21.16%
Local council	5	2.07%
Television	15	6.22%
Friends, family or neighbours	41	17.01%
Social media (e.g., Facebook)	54	22.41%
Other	20	8.30%
TOTAL	241	

Table 10 summarises feedback collected on the information and warnings received by residents and businesses. While some were satisfied with the information and warnings they received for this event, almost 60% felt that they were not adequately informed about the likely height of the floodwater, and 40% reported that they received an evacuation order without enough time to take appropriate action.



TABLE 10: FEEDBACK ON THE WARNINGS RECEIVED

	Strongly disagree		Neutral		Strongly agree	Did not receive/don't know
I understood if my property was likely to be affected	28.84%	15.36%	15.36%	13.48%	26.97%	N/A
I understood when my property was likely to be affected	37.59%	16.54%	16.54%	10.90%	18.42%	N/A
I understood what the height of the flood waters was likely to be	57.52%	16.17%	10.90%	4.89%	10.53%	N/A
Evacuation warning with enough time	35.82%	9.33%	9.33%	7.46%	16.04%	22.01%
Evacuation order with enough time	40.45%	8.24%	7.49%	5.62%	10.49%	27.72%



Many respondents provided additional feedback about the warnings and information they received. Some noted issues with the accuracy of the information, whilst others suggested that what warnings were received were not taken particularly seriously because of previous flood warnings:

*BOM dropped the ball severely with Mullumbimby - **they predicted minor flooding and we got the biggest flood ever** - I don't blame them but **there should be a warning system to wake residents up when flood waters start to inundate a neighbourhood** - if it had happened during the day it wouldn't have been a problem but it hit when we were asleep and by the time the dog woke us it was too late to save anything*

*We were aware that it would flood, but not the extent of the flooding, or the time at which the water would inundate the property - **more accurate real-time data needs to be made available to property owners so that they can make better informed decisions***

*Because previous non-flood events had also come with exactly the same warning and evacuation orders, and because this event was unprecedented, **no-one in our street really took much heed of the warnings ... This is not anyone's fault exactly, but at the same time we feel the one feeble SES warning to move our cars about half an hour before the water hit in a torrent was both too late and too mild.***

For some respondents, a warning that highlighted the exceptional nature of this event may have been useful. Other suggestions include:

*When they were putting out their warnings, **if they could have said that they're "subject to change"**. So we kept on getting text messages telling us when the river was going to peak etc. **We thought each message "was the final announcement"**, so we had no idea what the SES was thinking. Then we kept getting new messages and the evacuation message was in the middle of the night.*

*There didn't seem to be any cohesive information regarding evacuation orders - **I heard the sirens and didn't know what they were. I also wasn't aware of the frequency patterns to indicate different situations / degrees of urgency.** A letterbox drop, when it's not flooding to inform people of what to listen / look for in that regard? More community education, particularly for those of us who live in flood zones.*

*There needs to be **Auslan interpreters with the SES** and special reach out to deaf community so they know where to go for information. A significant number of Deaf people do not speak / read English so captions are useless. Similarly, there needs to be better **outreach to older residents living alone and people with disabilities***

Other suggestions included using more local knowledge (see section 4.7), having street flood wardens,



4.3 Preparations

Table 11 summarises the actions residents and businesses took to prepare for this flood. The most frequently selected actions were: charged up cell-phones and other devices, moved furniture or possessions higher, moved vehicles, and obtained a torch, batteries, or candles. Many also reported stocking up on food and water, and on medications and health products. Notably, only 26 respondents reported preparing an evacuation kit. Some commented that their preparedness was constrained by work commitments on the day:

My work place was not evacuated until 4:30 pm that evening. That gave me only 4 hours to prepare for flood. Not good enough. Town should have been shut down that day so people could have a whole day to prepare their properties/ businesses.

*The biggest comment I would have is that we didn't get a flood warning at all for South Lismore, it whist went from nothing to evacuation order. **For people like myself, who were at work, that meant we couldn't justify going home and making flood preparations.** If a warning had been issued in the morning I could have taken the day off work, conducted proper flood preparations and saved a lot of my possessions... After this I'd urge them to issue premature warnings that may ultimately be unnecessary. It's much easier to persuade your boss to let you go home and commence preparations if a flood warning is issued than if it isn't and everyone is just guessing.*

TABLE 11: PREPARATIONS FOR THE FLOOD

Preparation	# of responses
Moved vehicle(s) to a safer location	157
Moved stock to a safer location	33
Moved pets to a safer location	78
Placed sandbags	12
Obtained a battery-powered radio	62
Prepared an evacuation kit for each member of the household	26
Stocked up on food and water	116
Bought additional pet food	0
Stocked up on personal medications and health products	77
Moved important documents and possessions to a water-resistant or safer location	0
Obtained a torch and spare batteries, or candles	146
Charged up cellphone, laptop, and other devices	160
Moved furniture, other possessions/stock higher up	159
Obtained or checked generator	0
Obtained or checked BBQ or camping stove	0
Secured objects that were likely to float or cause damage	100
Relocated or secured waste containers, chemicals and poisons	54
Turned off electricity or gas at mains	61
Backed up electronic records	0



Other	9
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Participants were also asked to rate how effective the preparedness actions they took were out of five. This question seeks to evaluate whether such preparedness actions as placing sandbags were effective in this instance. While such actions as charging up cell-phones and stocking up on medications received high average scores (4.32 and 4.26, respectively), others did not. Placing sandbags was rated the lowest (2.25), followed by moving furniture or possessions higher (3.22), preparing an evacuation kit (3.38) and obtaining a battery-powered radio (3.41).

4.3 During the floods

Many survey respondents reported looking after other members of their household or colleagues during the flood. As shown in Table 12, 59 respondents reported caring for infants or children, and 65 cared for family or friends who were elderly, disabled, or unwell. Among the other responses, 14 people specifically mentioned caring for their pets during the flood.

TABLE 12: LOOKING AFTER OTHERS DURING THE FLOODING

Looking after others during the flooding	#
No	133
Yes, infants or children	59
Yes, elderly person/s	26
Yes, disabled persons	25
Yes, ill person/s (physical or mental health)	14
Yes, other able-bodied adults who became ill or stressed during the flooding	27
Yes, other	28
TOTAL	312

As shown in Table 13, 152 respondents stated that they entered floodwater in some way during this event, most often by foot. While most people entered floodwater that was waist-depth or shallower (116), 32 entered floodwater that was chin-depth or above head height. Only 4 stated that the water they entered was a 'raging flow'; most reported entering water that was either still (41) or that had a slight flow (49). Reasons for entering floodwater were diverse, and some noted that there were multiple reasons for entering floodwater throughout the event. The most common reason was to rescue or secure property or belongings (57). Two respondents noted that they had no choice

but to enter floodwater; for example, "I literally woke up in the middle of the night and went to get out of bed and stepped into knee depth floodwater."

On average, respondents perceived the level of danger when entering floodwater to be moderately low. When asked whether they would enter floodwater again under similar circumstances, almost 80% said yes, 10% said no, and 11% were unsure.

TABLE 13: ASPECTS OF ENTERING FLOODWATER

Did you enter flood water?		
Response	#	%
Yes, by foot	121	47.45%
Yes, by car	11	4.31%
Yes, by emergency services boat	3	1.18%
Yes, by private boat, kayak, canoe, etc	17	6.67%
No, I did not enter floodwater	103	40.39%
TOTAL	255	
Greatest depth of floodwater entered?		
Ankle-depth	14	9.21%
Up to my knees	53	34.87%
Waist-depth	49	32.24%
Up to my chin	13	8.55%
Above head height	19	12.50%
Don't know	3	1.97%
Other	1	0.66%
TOTAL	152	
How fast was the floodwater you travelled through flowing?		
Still	41	27.15%
Slight flow	49	32.45%
Moderate flow	35	23.18%
Rapid flow	22	14.57%
Raging flow	4	2.65%
TOTAL	151	
Why did you enter floodwater?		
To return home	3	
To check conditions	13	
To get provisions	7	
To rescue or help neighbours	2	
Secure or turn off gas, electricity, or water	5	
To reach a safer location	24	
To visit friends, neighbours, or family	12	
To rescue pets or livestock	10	
To rescue or secure property	57	
For fun or recreation	2	
To return from moving vehicle to a safer location	7	
Other	12	



Table 14 summarises the actions that people took during this flood event. Over 80% of responses involve sheltering-in-place, and 'Stayed at my property' was the most frequent response (163, 64%).

TABLE 14: ACTION DURING THE FLOOD

Action during the flood		
Response	#	%
Left before the flooding arrived in my town or suburb	24	9.41%
Left as the flooding started in my town or suburb	21	8.24%
Returned to my property after flooding had started and stayed there	13	5.10%
Stayed at my property	163	63.92%
Stayed at someone else's property (e.g. with neighbours, friends, or relatives)	8	3.14%
Began staying in my property, but left during the flood to a nearby house or property	15	5.88%
Began staying in my property, but left during the flood to an evacuation centre	11	4.31%
TOTAL	255	

4.5 Sheltering experiences

As shown in

Table 15, there was a diverse range of reasons for sheltering during this event, and most respondents identified several reasons for their decision. The most frequently cited reason is a belief that it is safe to shelter (114), followed by 'because I did not think my home or property would flood (73). Protecting property and belongings from floodwater (45) and from looting (24), and cleaning up as the water receded (41) were also significant reasons. Considering the needs and preferences of others was an important factor; respondents cited caring for pets (49), children (3) and other household members (8) as reasons for staying. Fourteen respondents also stated that it would be physically difficult for them to evacuate. The timing of the warning and conditions of roads were also important factors; 25 felt that it was too late to leave by the time they were warned, and 18 mentioned concerns about the roads. Some further explained that it would have been difficult to evacuate for practical reasons:

Car was flooded, and subsequently written off, street was flooded to chest-high, so had no options to be able to leave.

I couldn't have found bedding, etc after bringing everything upstairs. Too hard to leave in heavy rain, through water with a car up the hill. Bedding would be wet anyway.



Further, being uncertain of where to go or not having anywhere to go were identified by 36 people as a reason for sheltering. It is also important to note that some did not actively choose to 'shelter,' and became aware of the flooding in the area once they were already 'flooded in:'

I didn't know because I woke up in it.

By the time SES told us to evacuate we couldn't get out of our property because roads were under at our place. No one could have guessed how much water was on its way to drown our properties and animals. It was too dangerous for us to try and save our horses. We had 16 feet of water and nowhere to go

We did not receive any communication from SES about the severity of the flood and the need to evacuate until we had already been completely cut off for many hours, meaning we were stranded.

TABLE 15: STATED REASON FOR SHELTERING²

Reasons for sheltering	
Response	#
Stayed to protect my house or property from looting	24
Stayed because I think it's safe to do so	114
Stayed because I didn't want to be dependent on emergency services	10
Stayed because I did not think my home or property would flood in this event	73
Stayed to wait and see what would happen	52
Stayed to wash down my property as the water receded	41
Stayed to protect my house or property from the floodwater	45
Stayed to care for pets or stock	49
Stayed because I felt it was too late to leave	25
Stayed because I had nowhere else to go	25
Stayed because I didn't know if the roads were flooded or not	7
Stayed because SES, police or emergency services advised evacuation was no longer possible	6
Stayed because relatives, friends or neighbours advised me to stay	6
Stayed because my attempts to leave were unsuccessful	9
Stayed to care for a household member who was physically unable to leave	8
Stayed because it is physically difficult for me to leave	14
Stayed because I didn't know where to go	11
Stayed because roads were already flooded	11
Stayed because of my children	3
Stayed because I didn't know about the flooding, or had been advised that I would be safe	7
Other	23

² Please note that respondents could select up to five reasons for sheltering; hence, a total number of responses is not provided here.



Respondents' perceptions of safety while staying with their property varied during the night. When asked how safe they felt in the afternoon or early evening, the average score respondents gave was 65/100 (where 100 represents 'very safe,' and 0 represents 'very unsafe'). During the night, this dropped to 47/100, and by daybreak the average score was 59/100. Table 16 outlines the level of confidence that respondents had in various factors that could affect their safety.

While most people were very confident that their property was structurally sound (average score: 4.31/5), fewer were confident that their property was high enough (average score: 3.63). Respondents were confident that they had enough provisions for themselves and pets, but were far less confident that they would continue to have electricity (average score: 2.43). Notably, respondents were more confident of receiving help from friends, family or neighbours, than from emergency services.



TABLE 16: CONFIDENCE DURING THE FLOOD (N=186)

Confidence during the flood						
<i>Response</i>	<i>Average rating</i>	<i>Not confident at all</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>Very confident</i>
That your property was high enough?	3.63	12.95%	9.84%	20.21%	15.03%	41.97%
That your property was structurally sound?	4.31	3.09%	4.12%	12.37%	19.59%	60.82%
That you would continue to receive updates and information? (e.g., by phone, radio or internet)	3.42	21.47%	10.47%	12.57%	15.71%	39.79%
That your electricity supply would continue?	2.43	38.62%	16.93%	19.05%	13.76%	11.64%
That you had sufficient water and food for yourself and others?	4.12	6.99%	7.53%	10.22%	16.67%	58.60%
That you had sufficient medical supplies for yourself and other?	4.09	8.19%	6.43%	11.11%	16.96%	57.31%
That you had sufficient water and food for pets?	4.07	9.92%	6.61%	10.74%	12.40%	60.33%
That you would get help from neighbours, friends or relatives if needed?	3.61	18.23%	8.84%	11.60%	16.02%	45.30%
That you would get help from the SES, fire, or other emergency services if needed?	3.28	21.58%	10.00%	17.89%	19.47%	31.05%

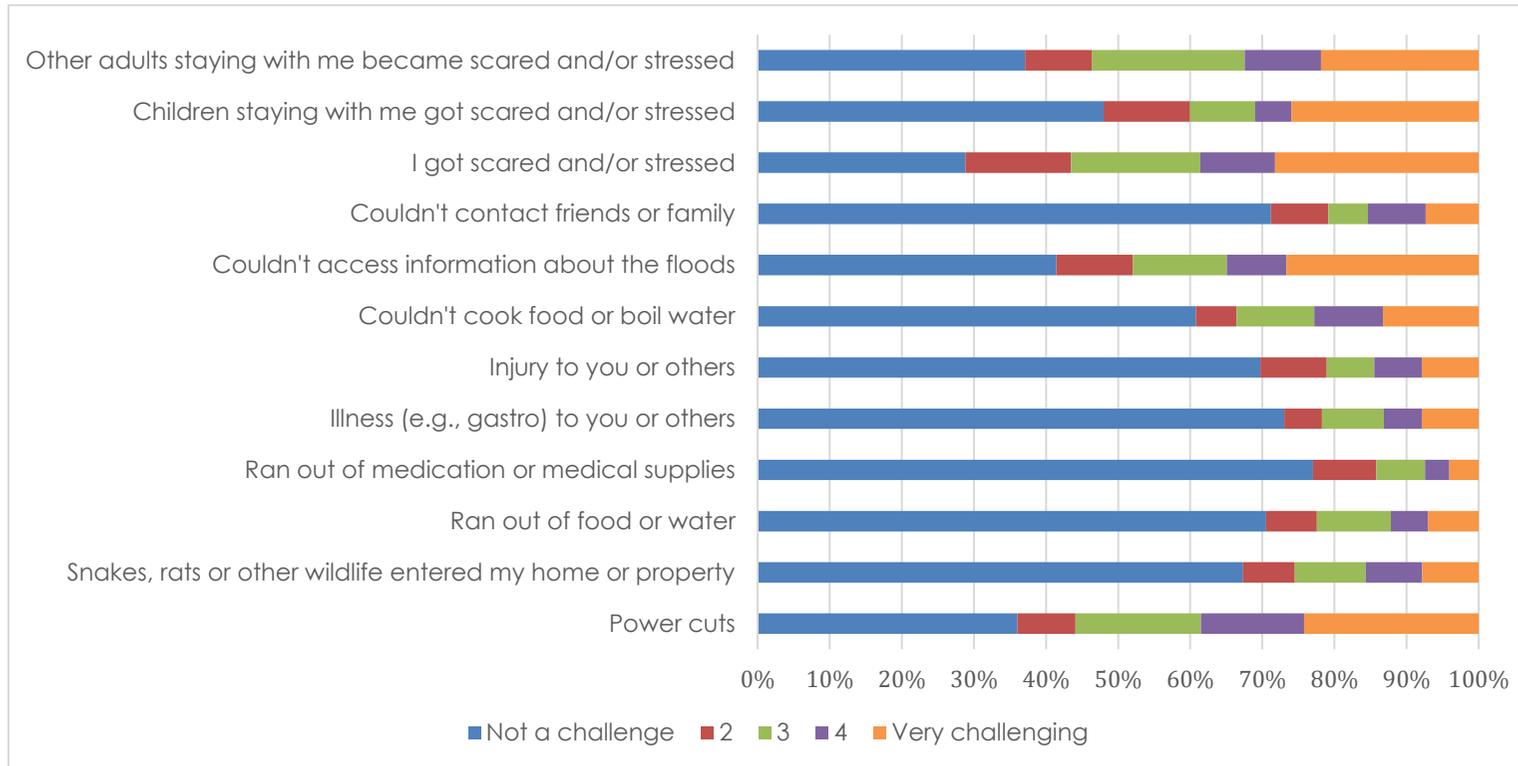


FIGURE 1: PERCEIVED DIFFICULTY OF VARIOUS CHALLENGES WHILE SHELTERING



Figure 1 shows the perceived difficulty of various challenges that can occur when sheltering during a flood. Among these, managing stress and fear of oneself and others at the property is most frequently identified as very challenging. Power cuts and being unable to access information about the floods were also often identified as being particularly challenging. For example, one respondent explained:

*You have to have gone through the flood to know what it was like. I always thought of a flood as slowly rising water - this was nothing like that. It was a raging, angry torrent of rapids that felt like it would never end. The noise made it impossible to even tell if it was still raining, and we were worried something heavy would hit our house and cause structural damage at any moment. We lost power to our power points but not lights, thank goodness - that made it bearable, just - it would have been absolutely terrifying to ride out the night in the dark, but it meant **we had to ration our phone battery** as it was our only means of accessing the internet, which we hadn't anticipated. **We also had trouble finding up-to-the-minute information, which added significantly to the stress. We felt very alone and isolated and when we thought the water was going to come into our house, very helpless and afraid.***

Whilst injuries and illnesses seem to have affected fewer respondents, it is important to note that some community members suffered considerably while sheltering and isolated:

***My autistic son broke his arm on day 2 of the flood and we were flooded for 3 more days** with him unable to get medical attention. We were stuck. With no power, phones did not work, internet did not work, could not contact anyone. Only one neighbour able to walk to and they were stuck also.*

As shown in Figure 2, just over half of the respondents either felt isolated at some points during the night, or felt isolated for most of the night. It is worth noting, too, that some respondents reported that they did not experience feeling stressed until well *after* the flood:

Weeks to months later, I felt stressed.

I didn't realise I was stressed until afterwards. I must have been in severe shock.

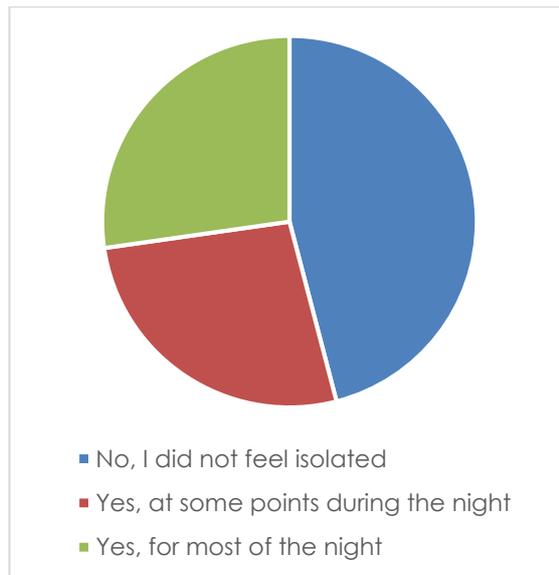


FIGURE 2: PROPORTION OF RESPONDENTS WHO FELT ISOLATED WHILE SHELTERING

Ongoing stress and mental health impacts of the flood were also discussed by some respondents:

I have been completely traumatised by this event and even worse, my housemate, who now has trouble sleeping, she cries a lot, she is very distressed still, she gets upset at having had her car written off and she is obviously suffering from PTSD as a result of what happened here....

Our house has never flooded before and this experience has been devastating. Our house and street has never flooded. We are still struggling after all this time, to come to terms with what actually happened. It still feels very surreal. We have lost so much of our belongings, things that can never be replaced.

Heavy rains make me nervous about possibility of flood happening again, particularly if I am rostered onto shift.

Table 17 summarises how respondents communicated with others while sheltering. Respondents were most frequently communicating with family and friends and with their neighbours. Whilst communication with family and friends was primarily by phone or social media, communication with neighbours was mostly in-person. Many people reported not communicating with the SES or other emergency services at all during the event; those who did have contact with the SES did so mainly via phone calls or in-person. The amount of communication among neighbours and with people that were previously strangers highlights the social aspect of sheltering, and is suggestive of the

potential extent to which communities communicate and work together during a flood.

TABLE 17: COMMUNICATION WHILE SHELTERING

Frequency of communication with others while sheltering						
	Family or friends	Neighbours	People you hadn't met before	SES	Other emergency services	Local council
<i>Not at all</i>	16	32	76	96	133	152
<i>Once or twice</i>	26	34	29	50	19	8
<i>A few times</i>	39	42	39	20	8	3
<i>Frequently</i>	105	76	20	12	4	1
Main mode of communication						
	Family or friends	Neighbours	People you hadn't met before	SES	Other emergency services	Local council
<i>Phone call</i>	75	23	2	27	10	4
<i>Text messages</i>	45	16	1	17	1	2
<i>Facebook or other social media</i>	41	5	10	3	1	4
<i>In person</i>	7	101	69	32	17	2

While 70% of respondents stayed with their property for the duration of the flood event, 10% began sheltering and then evacuated, and almost 19% left their property and returned during the flood. As shown in Table 18, the reasons for leaving during the flood were diverse. While leaving because the flooding was worse than expected and because it felt dangerous to stay were the most commonly cited reasons, several also left to check on flooding elsewhere or to visit or help neighbours.

TABLE 18: REASONS FOR LEAVING DURING THE FLOOD

Reasons for leaving during the flood	
Left because the flooding was worse than I expected	23
Left because SES, police, fire or emergency services told me to leave	3
Left because local council told me to leave	1
Left because relatives, friends or neighbours told me to leave	5
Left because it was too dangerous to stay	15
Left to visit neighbours, or nearby friends or relatives	8
Left because I wanted to remove other household members or visitors from danger	9
Left because our supplies ran out	3
Left because power went out	4
Left because couldn't access information or contact family and friends	3
Left to check on flooding elsewhere	11
Left to help my neighbours	4
Left for work	5
Other	14



As shown in Figure 3, the most common modes of transport when leaving during the flood were on foot or in a vehicle. Sixteen respondents reported leaving in a boat of some kind, and 2 people swam.

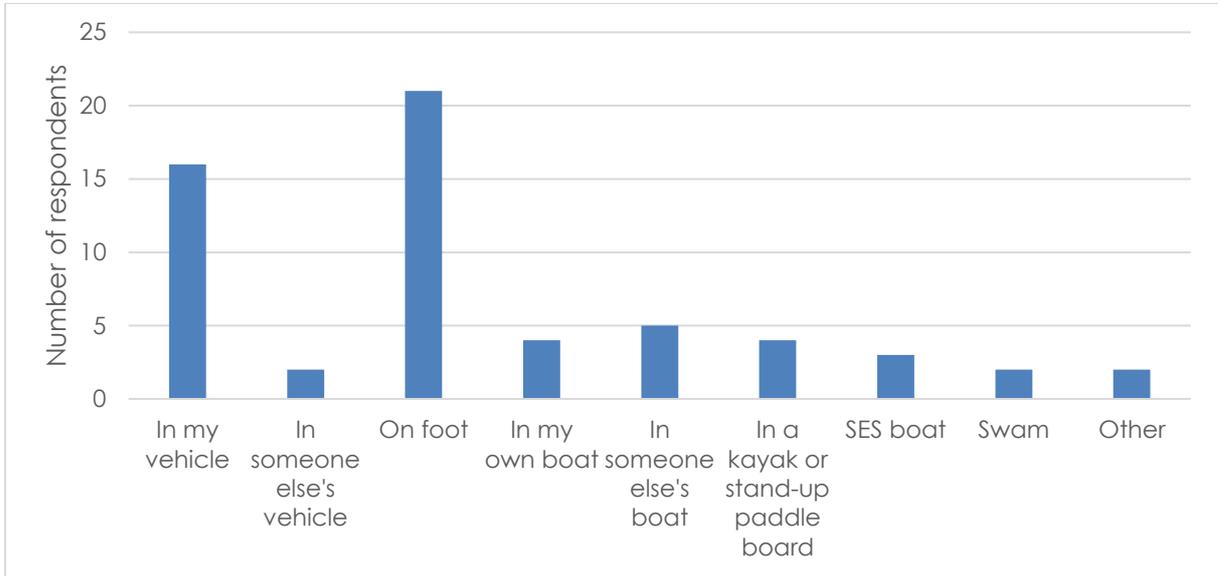


FIGURE 3: MODE OF TRANSPORT WHEN LEAVING DURING THE FLOOD

Future intentions

Overall, 75 percent of respondents stated that they would shelter again if a similar magnitude flood were predicted. As shown in Table 19, among those who sheltered for the duration of this event, 78% intend to shelter again in future, and up to 30% of those who began sheltering but left during the event intend to shelter again in future.

TABLE 19: ACTION DURING THIS FLOOD AND INTENDED ACTION IF THERE WERE A SIMILAR FLOOD IN FUTURE

Action taken during this event and future intentions				
Action taken during this event	Evacuate in future		Shelter in future	
	#	%	#	%
Sheltered	34	21.8	122	78.2
Began staying in my property, but left during the flood to a nearby house or property	7	70.0	3	30.0
Began staying in my property, but left during the flood to an evacuation centre	8	72.7	3	27.3



The reasons for this decision were influenced by responsibilities for pets, as well as wanting to stay to protect and save belongings, and to clean-up as soon as possible:

Because of my pets. My pets are my family and I had nowhere to go with them. The evacuation centre took pets but they had to remain outside and I wasn't going to leave my animals outside. So many people lost their pets because they were escaping, terrified and running away - others got their pets stolen.

I would stay as scary as it was but I couldn't leave the animals on their own, with 4 children couldn't leave.

For security reasons, because of the small percentage of bad people that may rob the property. Don't want to leave it unattended.

Our home is in the upper level and we would be safe there....by staying with our property and not evacuating when SES said to, we were able to save so much more of our business equipment by moving it to higher ground as the flood was much higher than expected.

Some also noted they are confident about staying in future, sometimes because of this experience:

My flood preparation plan worked and it was good to be home.

I am more confident with what will happen

Because I know water won't come inside. My power stays on and I can isolate the boards downstairs and turn them off. I'm not protected by the levy so water comes up quick and goes down quick and I keep very little stuff under my house. Only takes me about 1 hour to sort that out and bring things up. I have an evac box and bag and plan if I have to get out. I can wade through the flood water if needed cause it's quite still at my place.

Some respondents noted that they would stay as there was "nowhere else to go," while others explained that they are most comfortable at home and are reluctant to use evacuation centres:

Because we know we are safe at the house, we'd rather be in our own home.

Because I don't want to go to an evacuation centre or take anyone's place that needs it more than me.

The level of community support and culture of sheltering was referenced by some respondents:

We have a great neighbours/friends and we all help each other out. I felt a bit anxious as we didn't know how high the water was going to get, but would stay if the same situation arises.



Among those who thought they would evacuate in future, a number of reasons were identified. Concerns about taking care of children was mentioned by several respondents:

It was not safe with children, had we thought it could possibly be as bad as it was, we definitely would of left. Never ever has the water risen as high and fast as it did.

It was very stressful. In addition, I have a young baby and being stranded at our house for 3 days was concerning if anything were to happen to him as I would not have been be able to take him to medical help.

Entertaining 3 children in a confined space without power was a nightmare. Next time I would at least evacuate the children.

Some respondents also noted that this flood event was very stressful, and they would therefore prefer not be home for future floods:

There was not really anything we could have done to stop it if the water had risen to the point of coming in the house, plus it was terrifying to experience it - once was definitely our limit of tolerance. It was an awful, unprecedented event that we will do anything to avoid again.

However, many noted that in order to consider evacuation, early warnings and timely information would be key:

Would prefer to leave before it starts but need to have time to do so

If I had the chance to leave I would. (This time I didn't have the chance, I didn't know there was going to be a flood)

The speed of the flooding prevented us leaving by vehicle. All the roads were cut. If I knew a big flood was coming, I would make arrangements to stay with a friend on higher ground.

With the information I have now. I'd definitely evacuate. The flood was unavoidable but the destruction to people's property and businesses was. There was ample time to save possessions stock if the emergency services and council had done their jobs.

This further highlights the key role of information and warnings in evacuation decisions, and that some residents and businesses end up sheltering by default as it is too late to evacuate once they become aware of the flooding.

Respondents identified a number of lessons and practices for next time, particularly in relation to preparing for floods. Many residents reflected on the amount of items they store downstairs/at ground level, and the need to reduce this and to raise more belongings earlier in future:



I'd try and save precious belongings. We couldn't have saved our furniture the water went to high, but had we have known it was going to be that bad we would have tried to save(photos, birth certs, important documents etc.)

Have no complacency with belongings under our home

I would not underestimate how high the water would rise and try to move more belongings upstairs. I would also secure more items stored downstairs and in the garden to prevent floating hazards. I would also try to find somewhere higher to move my car to, although that is difficult in our area.

Moving cars earlier and to a higher location was also mentioned by several respondents, as was organising better provisions and equipment for coping with power outages:

I would make sure as many things as possible are charged. We now have a portable burner for cooking and a gas light.

Not get so cocky and think 2L of milk would last. Also stock up on alcohol

Stay at a friends from the first warning of a flood and make sure we had fuel for generator, gas, food, ice in esky, water, torches and a radio etc.

Some also mentioned acquiring a boat or kayak (or similar) to provide greater mobility during floods, and an alternative evacuation strategy:

I'm going to get a canoe so I don't have to wade through the flood water if I need to get out. I wouldn't have evacuated.

Several respondents identified a need to be more pro-active. For some, this included not relying on official information or warnings due to anger or disappointment with the information and support provided in this event:

Take the SES warning seriously. We thought it was just ultra-cautionary, a flood worthy of proper evacuation in our area was pretty unheard of.

Be more self-reliant

I would get my son out earlier and I would NOT believe the height level predictions. My floor level SHOULD have been well clear.

I have learnt that I need to use my own judgement to estimate flood levels and not rely on BOM

I would put NO trust in any emergency service, council or disaster relief.

Yes, be aware that I would need to fend for myself as no one was looking out for Mullumbimby or other areas of Byron Shire that flooded. We were ignored and still have been. Even though over 3000 houses were flooded, we were NEVER officially declared a disaster area, no assistance has been offered to anyone here either. Mullumbimby



*experienced EXACTLY the same flood as Lismore, which was immediately declared!
Very, very wrong!!!*

Therefore, among those who sheltered with their properties, the lessons taken from this event differ. Most intend to shelter again in future, and the reasons for this intention are diverse. For those who intend to evacuate in future, it is important to note that early warnings that provide the opportunity to evacuate before flooding occurs are key. Many respondents identified ways to improve their preparedness for future events, and the need to be more proactive seeking and responding to information in future.

4.6 Evacuation experiences

The reasons for evacuation were diverse (



Table 20). The most common reason was because it felt too dangerous to stay. Many business respondents noted that they left their business to return home; for some, this was a result of being told to leave by officials, for others this decision reflected concerns about road closures and a need to make sure that they could reach home. Most respondents evacuated to the home of a friend, family member or neighbour; only 3 reported going to official evacuation centres. Two respondents stated that they spent nights sleeping in their car; one noted that "we went to the evacuation centre but were told we couldn't stay as we have a small dog. Slept three nights in car." Almost 87% of respondents evacuated in their own vehicle, and in only 4 respondents noted that others stayed behind after they evacuated. Most respondents stated that they left on Thursday during the afternoon or evening; only 6 reported evacuating on Friday.



TABLE 20: EVACUATION EXPERIENCES

Main reason for evacuating		
Response	#	%
Left for other reasons (e.g. work or visiting friends)	4	6.25%
Left because the SES, fire, or emergency services told me to leave	11	17.19%
Left because the local council told me to leave	3	4.69%
Left because relatives, friends or neighbours told me to leave	6	9.38%
left because I felt it was too dangerous to stay	13	20.31%
Left because I wanted to remove other household members or visitors from any potential danger	8	12.50%
Left because my home or property became flooded	6	9.38%
Other	13	20.31%
TOTAL	64	
Where did you evacuate to?		
Friends or neighbours or relatives	21	46.67%
An evacuation centre	3	6.67%
A motel, hotel or other accommodation	1	2.22%
Home	16	35.56%
Car	2	4.44%
Other	2	4.44%
TOTAL	45	
When did you leave?		
Early on Thursday (before 4pm)	13	31.71%
Thursday afternoon (4pm to 7:59pm)	15	36.59%
Thursday evening (8:00pm to 11:59pm)	7	17.07%
Friday early morning (12:00am to 4:00am)	4	9.76%
Friday break (4am to 8am)	1	2.44%
After (after 8am on Friday)	1	2.44%
TOTAL	41	

Eighty percent of those who evacuated indicated that they would evacuate again in future; however, many businesses, in particular, noted that they intended to stay longer to pack up more and better prepare for the flood. The main stated reasons for evacuating in future were that there is little that can be done once the business is prepared:

“Once I lift my business stock etc. there is nothing more I can do until the water leaves the premises and then the clean-up begins.”

Residents noted the importance of ensuring health and safety, particularly of children, to explain their intention to evacuate in future. Interestingly, pets were cited as a reason to evacuate in future *and* a reason to stay:

“Would consider staying next time as having a pet is a problem. Plus you can start cleaning up sooner. We couldn't get home till Sunday morning”



4.7 Interaction with SES

During this event, 28.5% of respondents contacted the SES. As shown in Table 21, the most frequent reason for contacting the SES was to gain information, while requests for rescues (for self or others) accounted for 27% of the calls.

TABLE 21: REASONS FOR CONTACTING THE SES

Reason	#	%
For rescue	16	22.86
To gain more information	31	44.29
To inform them of your wellbeing	6	8.57
To provide information about the flood	2	2.86
To obtain sandbags	1	1.43
To request provisions (e.g., nappies)	2	2.86
For rescue for others	3	4.29
Other	9	12.86

Some respondents left very positive feedback about the SES during this event; for example:

SES were amazing with their communication

local SES are wonderful

I couldn't fault the Murwillumbah SES Unit. They made enquiries as to my well-being as they knew I was home alone & that my kids were helping them instead of helping me.

However, others highlighted issues with their interactions with the SES. Many respondents noted issues with the timing of evacuation orders, and a concern that these could be dangerous when issued after flooding has already begun:

*The SES needs to stop issuing evacuation orders when the flood waters are at dangerous levels. **They are "ordering" people to leave at the most dangerous point in the flooding. Were someone to innocently comply they would run a high risk of being killed.** They do it every flood and are warned every time that it is foolish, yet they continue to do it.*

I worry that the evacuation orders come too late and make it a dangerous situation for people who are not that familiar with the area.

The SES issue leave notices too frequently and inappropriately and have become the Boy who cried wolf.

Some respondents noted that there were not many SES staff and that they were not able to help all community members:

Being in a street that had never in 149 years of living history had a flood event, it was unbelievable, frightening & surreal to suddenly, be inundated by water. Had to ring the



Emergency Dept where I work to get SES number. **Of course, they weren't able to help. You felt totally isolated & at times vulnerable.**

There wasn't many people from the SES; it would be good to have more trained SES staff that could come out.

Others identified concerns about limited use of local knowledge and contacting the SES in Wollongong:

We need localised news updates about what is going on in our town and surrounding areas about weather etc. We needed local updates about the flooding. All the sources were centralised and when people called the SES they were talking to people in Wollongong who had no idea about our areas; this was not helpful at all.

The information we received from the SES was from the SES in Wollongong. The SES in Wollongong know nothing about the area, it was useless.

The information about the floods was coming from people in Dubbo and Wollongong. The local volunteers were overridden/overruled by SES people in Wollongong etc. These people didn't understand and haven't experienced flooding in our region before.

4.8 After the flood

Although the survey did not directly ask about what happened after the floods, many respondents noted a strong sense of community spirit and positive experiences after the flood:

I would never change the days after the flood because of the community spirit we experienced. I know way more neighbours now.

The community spirit that was alive during the flood cannot be described, the generosity and help from the village and strangers was overwhelming amazing.

The information and help we received from LCC and SES before the floods was great. They did a great job. The help we received after the floods from too many to name was incredible, and I can't thank them all enough. Our community is the best.

In contrast, some residents have decided to move as a result of this event, and face significant uncertainties:

Ultimately, we have decided to move as we cannot risk another such event - knowing we aren't insured (and after this probably won't be able to get insurance at any price) and risking everything we have, together with the after-effects the flood is still having on our mental wellbeing, makes it all too risky. We now have the uncertainty of trying to sell our property (once we have fixed it up a bit, including installing new fencing) after such a widely-publicised natural disaster, and not knowing what effect it will have on our property's value, if in fact anyone at all will be willing to buy it and take on that risk for themselves.

Many stated that their town felt 'neglected' or 'forgotten' during the response and recovery phase, and in media coverage:

Murwillumbah seem to have missed out on help i.e. Army, temporary housing accommodation. We were the forgotten town.

Mullumbimby was totally forgotten in this flood - we were told it wouldn't flood here and then when it did all the authorities acted like it hadn't flooded here - it was like no one realised what had happened here.

Our business was one of 4 businesses affected by flooding in Chinderah. The government assistance did not cover Chinderah AT ALL for businesses and only went as far as Tumbulgum...it is very disappointing that there is so much television coverage of the effects on Chinderah but we often get left out of the funding grants...

...Byron Shire was completely ignored by officials, emergency services and politicians, who just flew or drove back and forth between Lismore and the Tweed region, splashed these two areas all over the media, yet somehow managed to miss the fact that over 3000 homes in Byron Shire were flooded and most lost everything!

If you do anything with this information from this survey, we would strongly suggest that a very important outcome should be that in any future flood events, that Byron Shire is actually given assistance at a much higher level of Govt, to have all of the paperwork lodged immediately for disaster declaration. It has been four months now and still Byron Shire has not been acknowledged and none of our residents have had ANY genuine assistance...This is the first really big flood to hit this area, but we are all sure it won't be the last. Please, make sure that Byron Shire is not left out when the next big one hits!

Some respondents also suggested that the paucity of accurate information may reflect landscape modifications that have not previously been tested with flooding, and many noted comments about the levee systems and measures to improve long-term preparedness, such as raising or modifying houses.

4.9 Gender and Age

This section provides a series of cross-tabs where major findings presented so far are reanalysed by gender and age group to explore whether certain actions, experiences, or intentions are more common among particular groups.

Gender

As shown in Table 22, many of the flood behaviours were similar among men and women, with similar percentages reporting that they usually sheltered, and intended to, and did, shelter this time. While the perception of isolation while



sheltering was similar among men and women, more women reported feeling isolated for most of the night.

TABLE 22: SUMMARY OF GENDER AND FLOOD BEHAVIOURS

Summary of flood behaviours, intentions, and experiences by gender		
	<i>Male</i>	<i>Female</i>
Previous actions taken		
Evacuated	4 (4%)	8 (4%)
Sheltered	55 (59%)	96 (59%)
No previous experience	26 (28%)	43 (26%)
Waited to see	8 (9%)	16 (10%)
Intended action		
Wait and see / hadn't thought about it	23 (25%)	44 (28%)
Evacuate	12 (13%)	23 (14%)
Shelter in place	58 (62%)	92 (58%)
Action taken during this flood		
Began sheltering but then evacuated	7 (8%)	18 (11%)
Evacuate	16 (17%)	29 (18%)
Shelter in place	69 (75%)	112 (70%)
Perceived isolation		
No, not isolated	34 (46%)	55 (45%)
Yes, at some points	24 (32%)	30 (25%)
Yes, most of the night	16 (22%)	37 (30%)

As shown in Table 23, for both men and women, observing rainfall or rivers was the most frequently reported information source. Women were more likely than men to identify posts on social media and being told by friends, family or neighbours as how they first became aware of the potential for flooding.

TABLE 23: GENDER AND FIRST INFORMATION SOURCE DURING THIS EVENT

How did you first find out that your town or area might be affected by flooding?				
	<i>Male</i>		<i>Female</i>	
<i>Information Source</i>	<i>Number</i>	<i>%</i>	<i>Number</i>	<i>%</i>
Bureau of Meteorology website	9	10.2	19	11.8
Heard radio announcement	13	14.8	7	4.3
Observed heavy rainfall or rivers rising	24	27.3	43	26.7
Received SMS text message	9	10.2	20	12.4
Saw posts about it on social media	7	8.0	22	13.7
Saw television announcement	7	8.0	10	6.2
Saw water inside house/no warning	5	5.7	7	4.3
SES website	1	1.1	3	1.9
Told by family, friends, or neighbours	9	10.2	27	16.8
Told by emergency personnel	4	4.5	3	1.9

Table 24 shows that men and women undertook similar actions to prepare for flooding. A greater percentage of women than men reported preparing an evacuation kit and stocking up on food and water.



TABLE 24: GENDER AND PREPARATIONS

Which of the following actions did you take prior to the flooding?				
Preparation	Male		Female	
	Number	%	Number	%
Moved a vehicle	50	45.9	105	53.6
Moved stock	4	3.7	1	0.5
Moved pets	3	2.8	8	4.1
Sandbags	2	1.8	10	5.1
Battery powered radio	23	21.1	38	19.4
Evacuation kit	4	3.7	23	11.7
Stocked up on food & water	32	29.4	82	41.8
Stocked up on medications or health products	24	22.0	53	27.0
Obtained a torch or spare batteries	50	45.9	94	48.0
Charged up a cellphone or other devices	54	49.5	102	52.0
Moved furniture or other possessions	51	46.8	103	52.6
Secured objects likely to float or cause damage	35	32.1	62	31.6
Relocated or secured waste, chemicals or poisons	16	14.7	38	19.4
Turned off electricity or gas at the mains	18	16.5	43	21.9

Table 25 shows that men and women reported generally similar confidence in factors that influence their safety while sheltering (e.g., property is high enough, have enough food). While a greater percentage of men reported being very confident that their property was high enough and structurally sound, a greater percentage of women reported confidence that they had sufficient food and water and that they would receive help from neighbours, family and friends if needed.

TABLE 25: GENDER AND CONFIDENCE

Confidence as flooding approached										
Factors	1 Not confident at all		2		3		4		5 Very confident	
	M	F	M	F	M	F	M	F	M	F
Property height	7.2	16.2	5.8	11.1	15.9	21.4	20.3	12.0	50.7	39.3
Structurally sound	0.0	5.0	2.9	3.4	7.2	16.0	18.8	19.3	71.0	56.3
Continue to receive updates	19.4	23.1	13.4	7.7	11.9	13.7	17.9	14.5	37.3	41.0
Electricity	37.9	40.5	13.6	18.1	21.2	17.2	10.6	14.7	16.7	9.5
Enough food & water	5.9	8.0	8.8	6.2	8.8	10.6	20.6	12.4	55.9	62.8
Help from others	22.1	15.5	7.4	10.0	13.2	10.9	20.6	11.8	36.8	51.8
Help from SES	21.7	20.7	7.2	12.1	18.8	19.0	17.4	19.0	34.8	29.3



Interestingly, similar percentages of men and women entered floodwater during this event (Table 26).

TABLE 26: GENDER AND ENTERING FLOODWATER

Did you enter floodwater?				
	<i>Male</i>		<i>Female</i>	
	<i>Number</i>	<i>%</i>	<i>Number</i>	<i>%</i>
No, I did not enter floodwater	35	38.5	67	41.6
Yes, by car	5	5.5	6	3.7
Yes, by emergency services boat	1	1.1	2	1.2
Yes, by foot	45	49.5	74	46.0
Yes, by private boat, kayak, canoe, etc	5	5.5	12	7.5

AGE

When considered by age group, there were some notable trends in the data. As shown in Table 27, observing rainfall or rivers was frequently identified as the first information source across all age groups. Notably all age groups identified a variety of information sources. In each age group over 50% of respondents stated that prior to March 31st 2017, they intended to shelter during a flood; among residents over 60 this rises to over 60%.

Table 28 shows that around 80% of respondents aged 50 or more sheltered during this event, and a similar percentage of respondents aged 20-29 also sheltered. A greater percentage of respondents aged between 30-49 reported evacuating or sheltering then evacuating, but even among this cohort, a majority stated that they sheltered for the duration of this flood.

When considering what they would do if a similar flood were predicted, the majority of respondents across all age groups stated that they would shelter (Table 28). Among those aged 50 or more, between 70-80% of respondents stated that they intend to shelter in future events.



TABLE 27: AGE AND INFORMATION SOURCE AND INTENDED ACTION

How did you first find out that your town or area might be affected by flooding?												
Age group	20-29		30-39		40-49		50-59		60-69		>70	
	#	%	#	%	#	%	#	%	#	%	#	%
Bureau of Meteorology website	0	0.0	3	6.7	6	15	10	16.7	5	8.6	2	9.5
Heard radio announcement	1	5.6	1	2.2	3	7.5	4	6.7	7	12.1	3	14.3
Observed heavy rainfall or rivers rising	4	22.2	10	22.2	9	22.5	12	20.0	21	36.2	5	23.8
Received SMS text message	2	11.1	7	15.6	3	7.5	9	15.0	5	8.6	3	14.3
Saw posts about it on social media	2	11.1	5	11.1	7	17.5	11	18.3	5	8.6	0	0.0
Saw television announcement	1	5.6	6	13.3	2	5	1	1.7	4	6.9	3	14.3
Saw water inside house/no warning	0	0.0	2	4.4	1	2.5	3	5.0	1	1.7	2	9.5
SES website	1	5.6	2	4.4	1	2.5		0.0	3	5.2	0	0.0
Told by family, friends, or neighbours	5	27.8	8	17.8	7	17.5	8	13.3	7	12.1	2	9.5
Told by SES staff or volunteers	2	11.1	1	2.2	1	2.5	2	3.3	0	0	1	4.8
<i>Totals</i>	<i>18</i>	<i>100</i>	<i>45</i>	<i>100</i>	<i>40</i>	<i>100</i>	<i>60</i>	<i>100</i>	<i>58</i>	<i>100</i>	<i>21</i>	<i>100</i>
Intended action prior to March 31st 2017												
Stay at my home or business	10	62.5	24	52.2	20	51.3	35	59.3	42	66.6	16	69.6
Evacuate to a friend's, neighbour's, or relative's house	2	12.5	9	19.6	7	17.9	8	13.6	5	7.9	4	17.4
Wait and see/hadn't thought about it	4	25	13	28.3	12	30.8	16	27.1	16	25.4	3	13.0
<i>Totals</i>	<i>16</i>	<i>100</i>	<i>46</i>	<i>100</i>	<i>39</i>	<i>100</i>	<i>59</i>	<i>100</i>	<i>63</i>	<i>100</i>	<i>23</i>	<i>100</i>



TABLE 28: AGE AND ACTION TAKEN DURING THIS FLOOD AND INTENDED FUTURE ACTION

Action taken during this flood												
<i>Age group</i>	20-29		30-39		40-49		50-59		60-69		>70	
	#	%	#	%	#	%	#	%	#	%	#	%
Evacuated	0	0.00	13	28.89	10	26.32	8	13.56	7	11.11	4	18.18
Began sheltering but left	3	18.75	11	24.44	2	5.26	2	3.39	6	9.52	0	0.00
Sheltered	13	81.25	21	46.67	26	68.42	49	83.05	50	79.37	18	81.82
Future intentions												
No, I would not choose to stay at my home or property in a similar event in the future	6	37.5	11	37.9	7	30.4	10	22.2	11	21.6	4	26.7
Yes, I would choose to stay at my home or property in a similar event in the future	10	62.5	18	62.1	16	69.6	35	77.8	40	78.4	11	73.3



Error! Not a valid bookmark self-reference. shows feelings of isolation while sheltering by age group. The percentage of respondents who reported not feeling isolated during the night generally increases with age.

TABLE 29: PERCEIVED ISOLATION AND AGE

Isolation while sheltering						
	No, I did not feel isolated		Yes, at some points during the night		Yes, for most of the night	
Age group	Number	%	Number	%	Number	%
20-29	5	31.3	5	31.3	6	37.5
30-39	8	27.6	9	31.0	12	41.4
40-49	10	45.5	4	18.2	8	36.4
50-59	22	50.0	12	27.3	10	22.7
60-69	23	57.5	13	32.5	14	35.0
>70	12	80.0	2	13.3	1	6.7
Totals	80		45		51	

4.10 Summary

The survey findings indicate that sheltering during floods is common; some 57% of respondents stated that they usually stay during floods, and over 80% of respondents sheltered for at least part of this flood event. Although many reported significant stress and trauma during and after this event, approximately 75% stated that they would likely shelter again in future. Motivations for sheltering discussed are diverse and include the view that sheltering is safe, a desire to protect property and belongings, and the responsibility of caring for family members and pets for whom it would be difficult to evacuate. Early warning and the ability to safely evacuate once warned are important issues. Some respondents noted that they sheltered 'by default' and others stated that they received evacuation orders after local egress routes had already flooded.

5. INTERVIEW FINDINGS

Eighty-three interview transcripts have been included in this analysis. Most had only one interviewee; some interviews were done with couples, and one focus group discussion was conducted. The characteristics of interviewees are summarized in Table 30.

TABLE 30: SUMMARY OF INTERVIEWS

Location			Business/Home		
	Number	Percentage		Number	Percentage
Billinudgel	1	1.2	Home	65	78.31
Burringbar	1	1.2	Business	17	20.48
Golden Beach	2	2.4	Home (and business)	1	1.20
Lismore	9	10.8	Gender of interviewee		
Murwillumbah	2	2.4	Male	34	40.96
New Brighton	2	2.4	Female	35	43.37
North Lismore	4	4.8	Male & female (interviewed at the same time)	13	15.66
Ocean Shores	3	3.6	Action during the flood		
South Lismore	17	20.5	Sheltered	66	79.52
South Murwillumbah	37	44.6	Sheltered then evacuated	5	6.02
Tumbulgum	5	6.0	Evacuated	11	13.25
	83	100%	Not home	1	1.20

5.1 Awareness, Information and Warnings

Awareness of the flood risks and experiences with floods varied among the interviewees. Long-term residents and business owners noted that they had experienced flooding many times previously, and that they were well aware of the risk of flooding.

I've lived in this town all my life, since I was three days old. I grew up on the river bank, before we had the levy. So, I got to see the floods come in and out. It was always exciting. Maybe not this time. Yeah. (Resident, South Murwillumbah, Female)

Further, several residents and business owners discussed flood plans they had established, and followed, over the years. While some plans were written and formalized, other participants described the steps they typically take to prepare for flooding:

Yeah, we have a really clear flood plan. We know what to do. The kids know what to do. (Resident, North Lismore, Female)



I don't have much of a flood plan, you know outside of just stocking up and being prepared, make sure that animals are safe. (Resident, North Lismore, Female)

With our previous flood history, we record it, we write down real bad floods, where that rainfall or [river] heights were, so we have a history to go back on. We actually have a graph that lets us know that if a river height at Eungella is at a certain height, or at Uki, or at Tumbulgum or something like that, we know kind of what to expect, and don't have to rely on the SES or a radio message to let us know. We can make that judgement ourselves. Basically, that's what our flood plan boils down to, we can say, okay, it's going to be a moderate flood, or a major flood, and we can act on it straight away before having to rely on anything else. That's the arrow in our bow in that regards, we're well ahead of the game, just purely because of our previous history. (Business, South Murwillumbah, Male)

Several interviewees also noted that it had been several years since the last major flood. Consequently, many newer residents had not experienced serious flooding prior to Cyclone Debbie.

... I have spoken to a number of people - because it's been such a long time since we've had a major flood - that they started businesses or moved to the town and they thought that if the levy was there it was like a fortress... Everyone that's lived here forever and a day knows that that levy bank is only there for minor floods, and it's only there to hold back to give us time (Business, Lismore, Female)

Well, we probably know more than them because we've lived here - well, we've been out and come back here - so, we've lived here for a long time and we've been through a lot of floods (Resident and business owner, South Lismore, Female)

Indeed, while some newer residents knowingly bought properties in flood areas, others were less aware of the flood risk to their property:

I mean, we knew we'd bought on a flood plain. You don't buy here without knowing that's the risk, well, you shouldn't. ... But when you want to live on a river, it's the flip of the coin, isn't it, that's the risk you take. (Resident, Tumbulgum, Female)

Female: ... when we bought the house, we were told that we're not in the low-lying area... This is one of the reasons why we bought here, and didn't worry - well we couldn't get flood insurance anyway, unless we wanted to pay an enormous amount of money out each month, which we couldn't afford because we're only on a pension. (Resident, South Murwillumbah, Female)

Therefore, awareness of flood risks, and experiential knowledge of what to do during a flood, varied among community members and business owners in the region.



Formal information sources

Many official and informal sources of information and warnings about potential flooding associated with ex-tropical cyclone Debbie were used by communities. Participants discussed several online information sources, including Facebook and cell phone applications, to search for, and keep updated on, information about potential flooding:

The phones were going hot with Facebook, Facebook was going silly with a lot of the reports that were coming through. I tend to go the ABC radio myself most of the time, for the reports. (Resident, South Murwillumbah, Male).

There is a SES site and it was really good because it kept recording the levels, as the levels were going up and obviously going down. (Business owners, Lismore, Female)

BoM tools, such as gauge heights, rainfall, and the rain radar, as well as the SES website, were mentioned by a number of participants who actively monitored weather and river conditions in the days preceding, and the day of, the floods. However, several participants noted that finding and interpreting information online was time consuming (when they could have been preparing for the flood). Some participants mentioned using the radio or television as a key information source, and many expressed concern about the reliance on websites and mobile phones for sharing information and warnings about flooding – particularly for elderly residents.

Many participants recounted receiving flood warnings and evacuation orders via text messages and phone calls from the SES, alongside information obtained from websites. Some felt that there were 'plenty of warnings' about the flood:

...the BoM had their flood warnings out and major flood warnings out, SES automated phone calls were coming through, I probably got about four of them, I probably got about four or five texts. So, it was great, they were all over it. The SES were fantastic. (Resident, South Murwillumbah, Male).

However, limitations with the warnings and information provided were discussed by interviewees. Firstly, for some, more locally-specific information would have helped them to better appreciate the risk to their town and property. In particular, the absence of local radio stations providing locally-specific updates during this flood was noted by several interviewees:



But it was quite hard to not only access information other than - you got BOM site and kept looking at that, but BOM site it's the whole picture. It's not South Murwillumbah or something like that... So, we didn't even know - we only live a kilometre from town and we didn't know if it had gone into town. (Resident, South Murwillumbah, Male).

I think the biggest thing is more information like they used to do years ago on the local radio station, every half hour they'd be telling you what's happening. You'd sit there and listen to it, and then you'd know what to start doing. (Resident, South Murwillumbah, Female).

[The SES] sent the text messages through to evacuate the "low-lying areas", and we never thought we were in a low-lying area. These messages were coming through during the day, and then I phoned them and said, can you define the low-lying area? The lady said, if you're - if you go that message then you have to evacuate. We know people up in Hundred Hills got that message too, and people up in Banora Point got that message. (Resident, South Murwillumbah, Female)

We had SES alerts through the night at around midnight saying low lying areas of South Murwillumbah. We probably didn't class ourselves as a low lying area because we'd never had water here before, but we're obviously a low lying area. (Business, South Murwillumbah, Male).

In addition, as noted in the survey findings (section 4.7), some interviewees expressed frustration with the centralization of BoM and SES services, and stressed the importance of local knowledge in providing information and warnings. Whilst acknowledging that weather is 'not an exact science' (Resident, North Lismore, Female), some interviewees felt that the information and warnings they received were not accurate, timely, or frequent enough to allow them to adequately prepare:

We were travelling home on the Thursday before the flood and we didn't get any warnings from SES. The only way we knew that there was going to be a flood is we heard it on the radio. (Business, Lismore, Female).

To me to say next update in five hours, it was almost like - I felt deserted. You can't do that to us, we're trying to prepare and calculate our risk and all of those things. We can't do that with how fast that water came in, to say five hours later, we don't know what's going to happen in the next five hours. (Resident, North Lismore, Female)

So I watched [the BoM website] and they only ever said we'd get to a moderate flood level so in my view, I thought it would get to about the second stair out the front and I'd be able to handle that home alone. Then we got evacuation orders on our phones... But because that said moderate, I decided not to leave because you hear stories of your house getting ransacked and all that sort of stuff. So I stayed. I wish I hadn't. (Resident, South Murwillumbah, Female).



Previous flood experiences, and the warnings and orders received, affected how many interviewees interpreted the warnings provided in this flood event. While some business owners stated that they always take warnings seriously because of the (potential) risk to their business, many residents discussed the idea of 'crying wolf':

But the problem is, we often have messages to evacuate in South Murwillumbah. We just get a little bit of rain and it says, evacuate, and it never eventuates to anything. (Resident, South Murwillumbah, Female).

It's about the tenth or eleventh time [the SES have] come round and told us that we should go and we didn't. Each other time we had no water cross the levy. It's the old Peter and the Wolf story. This time the wolf did go up eventually, but the other times it was only Peter. That bugged us to a large extent. (Resident, South Murwillumbah, Male).

So, you don't know, honestly you don't know what to believe sometimes. You don't know whether they're over-dramatising it for news, for your 5:00 pm news, or whether they're legitimately being – and also everyone likes to wash their hands. So everyone will say "Oh, well, we warned you, so you can't go 'Oh, you didn't tell us' or 'You didn't warn us' or whatever". But then also it's a bit like the boy that cries wolf, if you say this to us every time, eventually you're going to go "You know what, I think you're just full of crap again". (Resident, Tumbulgum, Female).

Various aspects of the warnings on the 30th and 31st of March also affected how helpful residents and business owners perceived them to be. Some interviewees described the warnings throughout the day as repetitive and distracting, while one interviewee stated that the evacuation warning phone calls did not sound professional:

The warning we got – the evacuation warning that came over the phone – it was very, I guess, "cartoonish". It didn't sound credible. It was a mixture of various forms of sirens, with a robotic voice saying, "Evacuate. Evacuate." It sounded a bit like the Daleks off Doctor Who... It was a little hard to take seriously at first. Like, we first heard it, and I thought, "This has got to be hoax." Because it was so bizarre. I think something a little less cartoonish – a little more reassuring – even if they timed the voice a little slower – would have been more effective and more believable. (Business, South Murwillumbah, Male)

Several interviewees also noted that evacuation orders, in particular, sounded 'panicky' and added to the stress associated with the flood:

I did not approve of the panicky way I was being ordered to evacuate. That was one thing that - I feel that if you're in a situation which makes you nervous you should not



have a panic station [voice] - a suggestion, yes. Or how can we help you? But not the order. Because if you are nervous enough, you will go. (Resident, North Lismore, Female).

I wouldn't evacuate again, but having - a couple of problems with evacuations is that they weren't - they're quite histrionic, you know it was like "ah, evacuate!!". It was just like - they had sirens and they're screaming... (Resident, North Lismore, Female).

In summary, many participants engaged with official sources of information and warnings during this event, and for some, the information provided was sufficient. Others highlighted the need for more locally-specific information and more accurate and timely information, as well as factors that affected how residents interpreted warnings during this event.

Informal information sources

Many interviewees also highlighted the role of informal warnings, local knowledge, and environmental cues in making them aware of (potential) flood risk to their property, or of the severity of the flood warnings. For some interviewees, neighbours or other long-term residents were key to their awareness of the flood warning and of how to prepare for the flood. One couple recounted that:

Female: So if I hadn't of spoken to my neighbour, I would have lost everything downstairs. I had an enormous storage cupboard down there, with just so much stuff. So, I - it was random, me just speaking to the neighbour.

...

Male: I didn't - we weren't really keeping abreast of things. We got the SES messages a few times but we've had a lot of those over the years there and we just think that they don't know what they're talking about. So we rely on the old guys that live on the river, old river rats. They - like the guy across the road and my neighbour, they're the closest to me. (Residents, South Murwillumbah)

Local knowledge, networks, and experience were also important for many interviewees. This includes finding information about the rainfall or rivers from farmers in the hills and using community Facebook pages (e.g., Murwillumbah Matters). For some interviewees, observing the river was a key information source:

Generally, I watch the river heights and all that sort of thing through the website, and just by going down the back to the river. Went down there in the morning, and the water was pretty normal about six o'clock when I went and had a look. I knew it was raining quite heavily up in the catchment, so I come to work and I went home at nine o'clock to



check the water. The rise had been that sharp that I decided it was time to really start moving stuff from our house, because the water goes into the yard. (Resident, South Murwillumbah, Male)

We walked up to where that car yard was and the water had breached the levy bank and we could feel it rushing across the road and it was at that stage I said to [friend] this is significant. I can feel the pressure in the water. So even though it was only this deep, it wasn't just running across the road, it was forceful... So, we sort of rushed back a little bit and got into it from that point... that was when the penny really dropped that it was coming. (Business, South Murwillumbah, Male).

Thus, for many residents and business owners informal sources of information were used alongside, or in place of, official warnings and information provided by the BoM and the SES.

Notably, most stated that the flooding in March was more severe than previous floods:

Yeah and we've been through quite a few over 50 years. This one was just a bit extraordinary and we always prepare for it (Resident, South Murwillumbah, Male)

A few floods but they've never even got the garage wet and this time it got nasty (Resident, South Murwillumbah, Male)

This suggests that past flood experiences may not always provide a reliable guide for future events.

5.2 Preparations

This section explores how residents and business owners prepared for this flood, as well as factors that affected their preparedness or caused stress. Firstly, many interviewees identified adaptations or practices that meant that they were inherently prepared for floods, and sheltering-in-place. This includes methods for storing items at ground level and other modifications to their properties:

We have a rule about downstairs, that it's got to be - it's got to come up within two hours. If it's going to take longer than two hours to get our stuff up, then stuff's got to go. We regularly go to the tip. That's one of the things we do when see there's a flood coming. We look around, see what we don't need, take it down to the tip. (Resident, North Lismore, Female).

When we built, some of the things we did to allow for the flood area is that we put all our light switches on pull switches, so they're up high. All our power points are up high. And then the storage area, we've actually got it slatted so water can go through. And we try



*not to keep too much underneath, so there's no liveable areas underneath. We put our laundry upstairs... So, we did actually build the house on the basis that at some stage there will be a flood go through and tried to mitigate that as much as we could.
(Resident, Tumbulgum, Male).*

Many residents and business owners also noted that they always had provisions and equipment in the house that were useful for sheltering or when isolated. For example:

Everyone had a torch. We all had a small first aid kit and stuff like that. I wouldn't say - we don't have a flood kit as they advertise on TV. But we have torches ready and ready to go. We have first aid kits all around the place... So yeah, we always had candles and everything ready because in case the power does go out in any storm. We have them around the house and we always have them sitting there ready to go with the lighter or matches. We have gas stoves. Even if the power does go out we can use our gas cooker. (Resident, South Murwillumbah, Male)

Yeah, well I can do that off my camping kit anyway. Twelve-volt battery and a Waeco and a few camping lights, I live with that on an island so I can live with that during a flood. That's fine.... Yeah and food isn't usually a problem because your job is to eat what's in your fridge. If there's enough food in the fridge or freezer your job's actually to eat it down during the flood (Resident, North Lismore, Male)

Notably, some residents discussed factors that limited their ability to be 'flood-ready,' in general. For instance, when discussing the amount of items stored under her house that would need to be lifted before a flood, one resident explained:

... we're quite settled. So we did collect a lot of stuff over the years...[and] even though there was stuff that could have gone to the tip many years ago, I just - I don't have the capacity to take big stuff to the tip. I don't have a trailer, I don't have a man who can help me. It would be me coordinating various friends, and then getting childcare, and that just doesn't happen. That's unrealistic in my life, to be able to manage that kind of stuff. (Resident, North Lismore, Female).

Therefore, while some residents and business owners are generally well equipped to handle floods, the level of preparedness varies among community members.

While some residents began preparing throughout the week, most began their preparations on Thursday. Interviewees discussed such actions as moving vehicles, lifting belongings from ground level rooms or sheds, moving animals, and stocking up on provisions. Some residents and businesses followed either a formal flood plan, or an established series of steps, to prepare for this event in



response to either formal information and warnings, or local knowledge or intuition. The two experiences below illustrate these formalized or well-rehearsed preparation processes:

...we actually didn't have to do a lot in prep because there'd been a minor flood a few weeks before. We'd done all our flood prep for the minor flood. We'd done stuff like check our gas bottles, check our radio batteries. We'd gone through the checklist of the things that we needed and we knew all that was in place. We just had to get food in... We had everything up by - well before the water entered. It wasn't a rush. We just - we were actually taking our time. We had stops and cups of tea and were taking our time because we knew - we could see the water and we knew we had time to get everything up. We would bring our stuff upstairs and just put it on the deck. We used our front deck as well for stuff that can be in the rain, all the garbage bins and all that stuff goes out there. We load our cars up with stuff as well: the mower, the brush cutter, equipment that if the water enters the house that we won't be able to lift again. That goes in the car and gets evacuated. It was a very smooth operation for us. (Resident, North Lismore, Female).

On the Thursday morning as part of our plan, obviously weather reports will let us know what's going on... I woke up, I think, about four o'clock in the morning, because we had a lot of rain in town, and I just got onto the BOM website and had a look at rainfalls out in the hills. Then from that I was able to come into work and say, guys, we're going to move the cars now, eight o'clock, 8:30, and get them up to high ground, so that's one big job out of the way. That took about probably around about an hour and a half before we got all our cars out of here. Then in that time looking at the river, and what we'd sort of basically gathered, the information, we said this is going to happen, it'll at least be a minor to a moderate flood. By then we came back in after we finished moving the cars, I just say, stop work guys, we're in flood mode. Staff gets into that, they just stop their work, get people to pick up their cars that are in for servicing and take them away. Get anything that any customer owns out of here, and then concentrate on the dealership, raising everything up. We have a loft where we can move all our equipment, workshop equipment, the desks, all that sort of stuff. Minimal impact it's all about, and getting it up high, we have a loft upstairs. That was finished by about three o'clock, so now staff are home safe, no problems getting caught or anything like that (Business, South Murwillumbah, Male).

Many residents also noted that they either received assistance from others or helped neighbours to prepare, and that these initial preparations took place in the context of continually trying to assess the level of risk:

So, on the Thursday I put my car up on Tweed Valley Way about lunchtime, and then I spent some of the afternoon door knocking. We've got a lot of new people in Wardrop Street who just not long moved in. So, I went door knocking to say, we're going to get a flood. You need to move things up. Move your cars to high ground. (Resident, South Murwillumbah, Female).



So, my kids [aged 16 and 19] were wanting to run around and play and grass ski down the riverbank and muck around. I said, no we've got to get all this stuff out from the bottom bedroom. So, they thought it was a big joke and they were saying to me, 'oh this is just a joke, this is ridiculous, nothing's going to happen.' But we - I just said, 'look, we've got nothing to lose, let's just get it up.' (Resident, South Murwillumbah, Female).

One of the big hassles is the decision of how big's this flood going to be and do I need to get everything up? If it's an absolutely massive one like Debbie you suddenly realise you do and that's an easy decision... There's this guessing game of 'do I really need to go to all this effort?' Because it's a huge effort to take everything upstairs and then it didn't get flooded anyway and taking it down again. That's the biggest issue really for me when it comes to flooding. (Resident, North Lismore, Male).

Indeed, underestimating or believing that the flood would be minor or moderate affected the extent to which many people prepared for the event. In part, this reflects the local history and experiences of flooding, and the length of time since the last major flood:

No. I wasn't really that prepared because I didn't have any concept of - I knew it was going to flood, I knew it was going to come into South Murwillumbah where it normally does down in [Prospero] Street, that was a given, that was going to happen...No one had any - my old panel van, it was my pride and joy and it went under, up to the roof more or less. I lost a ute as well. I would have got those out if I had any concept it was going to come in here (Business, South Murwillumbah, Male).

We didn't really do much preparation at all because we didn't expect it to get to nearly this level. (Resident, South Murwillumbah, Male)

We were all down at the pub once we'd put everything up to what we considered to be high enough, and everyone was the traditional pre-flood drinks at the pub, and watched the river breach in front of - or just down the road from the pub by the boat ramp, and I've got photos of everyone laughing and playing in the water. No one was concerned. They thought "Oh, this will probably be as high as it gets, it will start flooding the back of the village". (Resident, Tumbulgum, Female).

A number of other factors that limited people's ability to prepare for the flood were also noted. Work commitments were discussed by many interviewees – particularly in terms of how much time they had to prepare at home – and many noted the need to pack up both at work, and at home. As a resident from North Lismore explains:

I think the reason it was really difficult was on Thursday morning...there was no warning all morning for a flood. Then, when the warning came out, I think it was a minor flood



warning. I was saying at work to people I'm going home because it's going to be a major flood, I need to pack up. They're going no, look, it's only been a minor flood warning. No, no, no, look how much rain's fallen, look what's coming... I had difficulty at work getting people to pack up and to go home because there wasn't a warning. Because we're a big organisation and we have to communicate with our head office in Sydney, it was very tricky to say this is what's going to happen, even though we didn't have any evidence at that point that - oh look, here's the warning, we've got to get out... Near the end I just said oh well, I'm going [laughs]. The people that live up on the hill can deal with the pack-up. That's what's really hard as a business. People have got to get home. Lots of people live all over the north coast. They've got to get out of here. Then you've got to find the people that are left that aren't flood affected and can get home to pack up. (Resident, North Lismore, Female).

Some interviewees further noted that physical limitations and the responsibility of looking after children affected how they prepared for flooding, and the importance of receiving help from neighbours or friends:

You know you need to get your car out of it. Fortunately for me [my son's] friends got the car out. Had they not been here I would have known what I had to do. I was just spoiled. But under normal circumstances, I would take my car over and I would park it and I would walk back. As I'm getting older that walking back was something at the back of my mind - I'm not so sure about this walking back bit. (Resident, North Lismore, Female)

... because I'm still feeding kids and dealing with all that sort of stuff that you've got to keep doing anyway. So yeah, the thought of having to move a whole lot more stuff while I'm doing breakfast and trying to - considering what was going to happen in the next 24 hours was - yeah, it was quite overwhelming I suppose. ...I'm quite a small person on my own. I just really did have to let go of everything. I can't lift heavy stuff by myself. So it's still - there would be losses that I'd have to incur just because of those physical restrictions on myself, you know? (Resident, North Lismore, Female).

If I had been home by myself with the two kids, [it] would be a problem but my wife was here so between the two of us I could lift stuff and one could look after the kids (Resident, South Lismore, Male).

Feeling stressed or rushed while preparing for the flood was also discussed by some interviewees, and this also impacted their ability to prepare well:

And then the next thing I remember was getting a warning from the SES to evacuate at 6:30, which was potentially confusing because it made you worry more than you perhaps had to... It would be good to be given more detailed information because we did get a bit more panicky then. Although we were already packing up and we did stay and finish. And we probably left in a bit more of a rush than we really needed to, especially given the levy bank didn't overtop until, you know, what was it, 3 or 4 in the



morning or something? ...And this was 6:30 the night before. So, yeah, I guess that message did agitate us a bit, which meant we just didn't do the finishing touches and those finishing touches were what caused us to lose a little bit of stuff. (Business, South Lismore, Female)

Lastly, weather conditions prior to the major flooding experienced were also significant, particularly in Lismore where minor local flooding and flash flooding were experienced during the day on Thursday. Road closures during the day, and the consequent traffic issues, therefore impacted on movements and preparations:

The other thing is, even before they were saying evacuate, like from about two o'clock in the afternoon, must have been before the schools closed because people were on Facebook talking about trying to get their kids from school and they couldn't drive across town...Their school might be just there, but because the roads, the flash flooding was just popping up and people couldn't get to and from their homes in that, you know between the first flood warning, only a couple of hours - [rush in] to school and they can't - they say don't drive through flood waters. (Resident, North Lismore, Female).

Therefore, issues of work commitments, physical ability, ongoing family responsibilities, being rushed, and weather conditions affected the extent to which some residents were able to prepare for this flood.

Many residents also described beginning or continuing to prepare as flooding began. For some, this involved lifting belongings again to an even higher location as the floodwater continued to rise; for others, the sight of floodwater on their properties was the first trigger to begin packing:

...it was only when we physically saw the water creeping over the backyard that night at about 11.30 that we realised that we had to act and that's when – so it was about midnight when we hopped in our cars and the water was already over the road, to take our cars to higher ground and that's when we started lifting everything up and saving as much as we could. (Resident, South Golden Beach, Female).

So, I was kind of just thinking oh yeah, well it was going to come up to the wall [at the rear of the property]... and then I started...that it was rising really quickly. I thought oh, that's interesting. It doesn't look like it's going to stop at the wall. Then it came over the wall of course. Then I was thinking hm, we're not really prepared for this - and we weren't. So we had to try and very quickly move stuff from underneath. We didn't actually have time - because once it came over the wall it was really fast. (Resident, South Murwillumbah, Female).

Preparations for the flooding were varied among community members. While some had detailed or well-rehearsed flood preparation steps, others improvised



or rushed preparations upon becoming aware of the flooding at their property. Preparedness was supported by people providing assistance to neighbours or other vulnerable community members, yet some important constraints on preparedness, such as work commitments, were also identified.

5.3 Sheltering in place: Motivations for Sheltering

Interviewees articulated a range of reasons for sheltering with their home or business during this event. Notably, many identified more than one reason for sheltering; put differently, the choice to shelter was influenced by several factors and concerns, and often personal assessments of risks and capacity. This suggests a need for a nuanced approach to understanding community behaviours during floods.

Culture of sheltering

A culture of sheltering was evident from many of the respondents. This was described in terms of a flood response handed down through families, a culture of staying with your home, business and community, of knowing what to do and how to respond. Respondents discussed how they wanted to be able to assist each other, that they didn't feel cut off or isolated because they knew their family and friends were around to help them if needed. People mentioned parties and friends dropping by on kayaks for cups of tea. Some went so far as to state that relationships within the community had been built up through preparing and responding to floods; that a culture of staying with your home and community was what brought people together and made it a great place to live.

*We actually don't mind it. Not that we wish for floods, but our attitude is that it's flushing the river and cleaning things up, and we live on a flood plain and it's what's meant to happen. we don't have this sense of tragedy about it. We don't have a sense of disaster about it. We just see it as a natural event and one that we need to be organised around.... We've organised ourselves into a self-help community as well. All the people that live round this wetland communicate and help each other. There are boats. People will assist. so, there's a lot of communication, a lot of support for each other if we need help. There's never any - there's no sense of feeling alone. There's no sense of feeling cut off, because you know you can row over there if you need to... borrow something if you needed it. People were coming to - we had visitors... **there's a culture here.** People would be pulling up all the time in their kayaks, coming in for a cup of tea and a chat. It's*



very social.... **When I came to live here I was aware that the reason it was so connected is because of the flood. My thing's always been what a great community to live in, and it wouldn't be the way it is if it didn't flood. It actually is what creates the connection for people.** (Resident, North Lismore, Female).

Usually we're quite happy for the flood, like we kind of enjoy our floods very often. I'm always telling my mum, who rings me every time she sees in the news there's a flood in Lismore, it's like oh, I'm okay, we're having a party out on the back deck... (Resident, North Lismore, Female).

Probably the fact that we've been here for so long, we've seen so many floods I suppose. I used to live in Wardrop Street when I was younger and we used to get it in the house down there. We never ever got out. (Resident, South Murwillumbah, Female)

We've always stayed with the house... do you desert your neighbours if they don't want to go? I think we stay together as a community. It's probably made the bonds of the community a lot stronger. (Resident, South Murwillumbah, Male)

Then through the night, because I was here on my own, and my next-door neighbour [Terry], she's there on her own, and the other neighbours were all around too, they all stayed too. I normally stay. Through the night, it was still pouring down rain, and I was out on my front veranda and [my neighbour] was out on hers, and we were having a chat across [laughs] looking, oh gosh, look what step it's up to now. Gradually it went up and up. (Resident, South Murwillumbah, Female)

Expected the flooding to be less severe

For some participants, the decision to stay with their property was partly based on local knowledge, history and personal experiences of previous floods, and an expectation that this flood would be similar, or uncertainty as to whether this flood would be more significant than previous floods:

This is - I [don't know] maybe complacency as well, like probably most [of the residents] this side of town. [It's like] we've had three floods in the last bit of time, and none of them topped the levy. So I think there was a bit of that... It was still like, oh even though the warnings were made it was like, yeah but still, maybe not. You know, so I still had that maybe not in my head. (Resident, Lismore, Female)

I guess at first it was sort of nervous excitement more than anything. It's sort of - you know the water's coming up and a lot of the locals that have been living here for years and years - I call it the Murwillumbah Salute now, they sort of point to halfway between the knee and the ankle and say, she'll be right in this area it won't come too much higher than that [Laughs]. When you see the top of a ute tray underwater in the middle of Tweed Valley Way on the high side - it was certainly a lot higher than that later on... I



guess it was a bit - I guess it's a bit naïve sometimes and we went sort of quite along on local knowledge and history. (Resident, South Murwillumbah, Male)

I just thought, we've never seen it here before, we'll never see it, but we did so, but it didn't come in the house. (Resident, South Murwillumbah, Male)

Safety

Building Type

People discussed how their houses, or at least the living spaces, were elevated above the recommended flood heights and were therefore safe. People noted how some homes had been raised following the 1954 or 1974 floods. Others discussed how they had even built higher than the recommendations in order to be extra safe. Also of consideration was egress to loft spaces and access to the roof if vertical evacuation became necessary. A few noted that they had put ladders in place in order that they could climb up if they needed to. One business discussed how they had prepared very comfortable living quarters on the top floor, with its own power supply, so that staff can shelter comfortably through a flood. Respondents also considered the structural integrity of their homes as a factor in their decision-making. People stated that either the house was securely fastened to the foundations or that the water could flow freely underneath. However, far fewer people discussed this as a factor with the majority only noting the height of their homes.

My house is - the floor level is at 7.6, which is very high. It's a new house. So I knew that my floor level was high enough that once the river came over the levy wall it would just go out to the cane fields, it wouldn't actually come into the top floor of my house. (Resident, South Murwillumbah, Male)

This place has been built for flood, with flood in mind. The gentleman who moved this current house He bought the land. He cleared it. He put five foot of [rock] and five foot of dirt, then he moved the house onto a large cement block and it's a very, very strongly supported. It was built for flood... which is why I don't move when I'm told. (Resident, North Lismore, Female)

It's got steel rods that far in the concrete and they're bolted to steel posts which are bolted to RSJs which is bolted to the house. It's right up to the roof. (Resident, South Murwillumbah, Male)

It was also noted by one homeowner that they had built flood adaptations into the design of their new home, building walls that could open and doors that could be removed. A number of businesses also discussed how they had to

ensure their garage doors were open to allow water to flow through and avoid any expensive damage. This necessitated that they were there as the water arrived to open up and remove doors etc. and to ensure that looters did not take contents or belongings. Once the water had arrived it was then too late to leave.

So my husband, he stayed for a few days because the doors have to be open to allow the flow-through, because otherwise if you don't - as a few of the buildings up here found out, that if don't leave them open they all explode out due to the force and the pressure of the water. (Business, South Murwillumbah, Female)

Low water velocity

The low velocity of the experienced and expected floodwater was also disused by respondents as a factor why they felt it was safe to shelter in their particular location, and perhaps not so in others:

We're not living in a raging torrent. If I was living down the river I would evacuate, no questions asked, but I wouldn't live there either... I wouldn't stay in floodway because I know I could get a log through the house. I mean all sorts of things could happen that would put my life at risk, but I don't feel living here puts my life at risk. I don't feel like the house is going to get washed away or any of those things are going to happen... I think the actual vegetation now actually protects us. (Resident, North Lismore, Female).

If my house was situated somewhere like here... [points to a house on the River edge]...with that sort of flow that they copped here, I would never have stayed, I would've been gone hours before. As I said, just at my place there it doesn't get any flow... it doesn't rush through there, it just rises. Basically, like a big bloody lake going straight up and down, it doesn't actually flow. (Resident, South Murwillumbah, Male).

Responding to the flood

Lift belongings as needed

Business owners, in particular, discussed staying on site to actively respond as the water rose. Some discussed a strategy of lifting stock to the predicted level, and then watching the water and lifting stock again if needed.

We'd always be here. Every flood that's come through regardless small or large, we always bed ourselves down here for this very purpose. If there's something does happen well we're here to deal with it... We run a 24-hour business anyway so it's critical that we're on site and making sure things are right... it's really dealing with issues that pop up during the course of the day and the night (Business, South Murwillumbah, Male).



Basically, just to watch the place. Of course, when the current gets too fast, it's actually tearing through here like a rapid, [it would be] really moving fast water. You can't do anything once that's happening, but the first part of it, when it's just still stagnant water, we can get around and maybe move a couple of things up a bit higher, make sure something is not going to break off the wall and that. That's our reason to be here, that and also just a little bit of security too. (Business, South Murwillumbah, Male).

Similarly, residents continued to lift belongings and respond as the floodwater arrived:

We moved gear up, but every time we moved it up we had to start again because it was coming up more. We were under the impression that we were going to get light to moderate flooding here. (Resident, South Murwillumbah, Male)

Clean-up

Many respondents discussed wanting to remain at their properties in order to clean up as the water recedes. This issue is discussed in more detail in section 5.5. It was noted that people wanted to float out large debris and furniture while the water was still high and also wanted to flush out the mud and sediment as the water drained away. If they had not done this then the clean-up job would have been significantly harder and more time-consuming.

We bring the hoses up. As soon as the water starts to recede and those taps pop up, we've got them plugged in and we're hosing. Also the garden. We're hosing the garden as the water's going down too. Logs - you get logs floating in. You get big stuff floating in that you can't move once the water's gone. Once the water gets to a - down low enough we'll put gumboots on and wade around and shift the heavy stuff while we've got the water to move it. We follow the mud out. As the water goes, we follow it out with the hose and get the mud out before it's got a chance to set. I wouldn't want to evacuate and then come home to mud that's drying. That would be a horrible clean-up. (Resident, North Lismore, Female).

Yes, that's another reason why people stay with their home so that they can wash the water out as it recedes. Otherwise if they really followed the rules of the state authorities they'd leave too early and they'd come back way too late. People stay with their homes so that they can respond during the flood and they can respond in the immediate aftermath rather than be sitting around twiddling their thumbs for a couple of days in an evacuation centre. (Resident, North Lismore, Male).

The second thing that happens in a flood is that people who've been in a flood know very well that if you stay where you are you clean up as the water goes down. If you're out of the house for four days it's great bricks of mud that you have to shovel and you can't clean it up, and it's a big deal trying to clean up. (Resident, South Murwillumbah, Male).



My home, my livelihood

My home, my pets

Several residents discussed being reluctant to leave their homes and their pets due to their emotional connection with their homes, the desire to protect their belongings, and for the comfort of being at home:

I don't know. I don't know. It's your castle. I don't know. It's your home. Just you look after it I suppose. (Resident, South Murwillumbah, Male).

I think the reason we stay is because we can't afford flood insurance. It's \$5000 to insure the house. It's \$5000 to insure the contents. I don't have \$10,000 a year, so we don't insure. We stay because we can actually look after our property. We bring the hoses up. As soon as the water starts to recede and those taps pop up, we've got them plugged in and we're hosing...I think it's our home and it's all we've got, so we're going to protect it. (Resident, North Lismore, Female).

...your life - your life's in that house, when you've been there as long as us. To walk away and leave it unattended - it's bad enough after - the day after the flood, when people are coming through picking up over the rubbish. Had a surf ski that washed away, some bloke came and took away and claimed it. A lot of those sorts of things. You want to protect your own goods. We've raised a family in that house, so we wouldn't leave it. Where do we go? We'd go to an evacuation centre that's up there. You don't know what's happening in your house, you don't know where your goods are. When there's no real danger of harm or anything in the place we're in. (Resident, South Murwillumbah, Male)

...and - I don't know, I'm just a homebody. I just felt like it was - I was able to protect - you know, just a protective thing maybe, I don't know. I just felt I needed to be here, and it's still my home. I knew - I was fairly confident the water wasn't going to come inside, so I knew that I'd be okay... Yeah, I just wanted to be here to monitor the situation. I didn't want to leave. I just hadn't - I was just - there was no question in my mind that I was going to stay. (Resident, Lismore, Female)

...the old brain starts to tick over and I think, hello, I've worked too hard for what I've got and I don't want to see it get shoved out in the water somewhere. (Resident, Ocean Shores, Female)

Some respondents also specifically noted that they did not want to evacuate, in part because they felt that by remaining at their homes they had the power to make their own decisions. For those who did not have vehicles the thought of being evacuated and then not knowing how they would return was unsettling. On balance, for some, the risks involved in evacuating and losing

control over their lives and possessions was by far a bigger challenge than sheltering and being without electricity or food. Respondents also noted that there were no real facilities set up to house evacuees. Some did not have family and friends they could go to and did not want to go to what they viewed to be poorly prepared and overcrowded evacuation centres.

It's a big thing to evacuate. It's a big thing to leave your house and you can't - you know you've got the shirt on your back and you can't get back, you can't deal with things as they happen. It's not a small thing, and I don't think anyone appreciates you know... It's a big - you put a lot at risk to evacuate. I can't drive, I've got no power over if I go out and stay somewhere, I'm stuffed, I've got no power over what I do and anything like that. I feel like I'm more in control in my home. I don't actually believe that I'll die if I can't access the shops for a few days. It's okay. Or if I don't have power. I'm pretty sure the human race has survived that for much longer than a few days. I've lived without power, so that's fine. (Resident, North Lismore, Female)

There's the comfort of staying in your home as well. There's your bed, there's everything, you've got your food, you know what you're doing. You evacuate, you just become this absolutely disempowered displaced person. The preparation for people who evacuate isn't that great. There's sort of this assumption they'll go to friends and relatives. I don't see why the SES wants to create a huge group of displaced people out of people who might otherwise be able to be self-sufficient in their homes... there isn't really great facilities for dealing with that displacement. They probably need to put more into evacuation centres. Just making it an order and disempowering a whole lot of people who could otherwise quite constructively deal with their situation, reduce their asset losses and stay safe is a problem. (Resident, North Lismore, Male).

Livelihoods

You can't just walk away from your business. You know, they say they're saving lives, but it's your livelihood. There's not much difference between your livelihood and your life, you know. It's a fine line. (Business, Lismore, Male)

Many business owners discussed wanting to remain at their businesses to protect their livelihoods. This is related to cleaning up, protecting stock and stopping looters, as is discussed in other sections, but also includes the need to remain in place so that they could continue their operations, service customers' needs and continue their operations as soon as possible:

...the main reason is to deal with flooding issues, but the next is planning the next day's business and dealing with customer issues. If we can't service customers well someone's got to be notifying them. Yeah, so as simple as that. So it's really just a management strategy to make sure that the business is looked after as well as the physical business. (Business, South Murwillumbah, Male).



It's our only means of income. We both work here and we have a family to support. We own the building so we're paying it off. We own our home so we're paying it off. We're bound by making the cogs turn. We've got to - we can't not - and we've got employees to support as well. (Business, South Murwillumbah, Female).

So I don't think you're mad for staying and looking after your business. Because ultimately you want to be able to reopen with as much product or whatever devices you need - tools and equipment. So you have to be protective of your business life. Yeah. So we never sort of closed. (Business, Murwillumbah, Male).

Well, I couldn't leave because I still had a heap of firearms on site. We took about 500 firearms off site and we left all these here in the racks, because they were secure there, but parked somewhere else. But as soon as I shut the power down the battery in the alarm would only last so long, so I had to stay with them. So we ended up having to take them out of the racks anyway to put them up in the ceiling. So that's why I stayed. (Business, Lismore, Male).

Evacuation issues

Warning was too late anyway

Several participants also explained that evacuation warnings and orders typically arrived too late for them to safely evacuate. This concern relates to road closures between homes and evacuation centres, or receiving evacuation orders after floodwater has already entered the property or street:

My front yard, by the time the evacuation warnings came through my front yard would've been at least a metre underwater, you couldn't have driven through it anyway, you couldn't have got out. So, it's just the way that place is situated, yeah. No, I'd stay, I'd stay for sure. (Resident, South Murwillumbah, Male)

Got a message after it was right up to evacuate but as everyone said, what are we supposed to do, swim out? ... Yeah. I wouldn't leave anyway but it was too - like, by the time I got the text message it was - the water was up anyway. You couldn't get out. You'd be risking your life if you tried to get out. I mean, it was getting higher and higher. (Resident, Tumbulgum, Female)

Lack of transport was mentioned by some participants. Because most people who have cars move them to a higher location earlier in the day as part of their preparations, evacuating later becomes a more difficult exercise:

Then of course you get an evacuation notice and it says something like take your blow-up mattress and your pillows and all your precious belongings and your paperwork and all the rest of it and go to the evacuation centre. That's fine but you've got no car by



that time so you're not going to load yourself up and walk a couple of miles to the evacuation centre. (Resident, South Murwillumbah, Female)

At about 1:30 in the morning I got another text from the SES saying evacuate, which I couldn't really do, because I can't drive (Resident, North Lismore, Female)

In addition, one respondent discussed the torrential rain and not wanting to drive in it with her children in the car. This family felt it was safer to stay home and shelter, particularly as the evacuation orders arrived after the roads were closed:

But I guess we were kind of going off what other people said, and even when we got the text messages to say "Evacuate" and stuff, for one we couldn't evacuate anyway because the roads were already closed... Yeah, and you had friends and stuff saying "Oh, come and stay here", and it was like "Well, you know, we would, but we can't drive anywhere anyway, so we'll just stay put"... Yeah, I mean, to be honest it was more about – I mean, we didn't have cars that can go through water, we've only got like a hatchback and a sedan. And my son was supposed to go to school that day, but we chose to stay at home, because we thought it was safer than to drive – well, to drive in the rain on the highway, like Three Valley Way is not the safest road to drive on when it's raining. So it was more about that at the time, I'm not going anywhere, I'm safer at home with my kids than to drive through torrential rain to do anything. Even to go to the shops to get food and stuff like that. (Resident, Tumbulgum, Female).

Evacuating would be difficult or stressful

Disabilities and mental health issues were discussed as significant factors influencing peoples' decisions to stay, as they could not physically leave and would not have been comfortable elsewhere:

I have two sons living with me here, one very active. The other one's not so quick in his movement and is quite large so if we're asked to actually take our gear and - me at 86 and my son at 48 - to take our gear and get out it would be a grave undertaking. Especially as he has five medications which must be taken so better to stay put... We're far better off in a home that's been built for flood so we know where we're going... There are a lot of people in town who are in wheelchairs or they're caring for older parents, [unclear] disabled. The disability side of things is a bit of a challenge insofar as suddenly being expected to move on, get out, evacuate. You think twice. (Resident, North Lismore, Female)

But now, [names wife] and I are both on that much medication it's not funny. It's not really easy to pack up and go so you take the risk and stay where you are. (Resident, South Murwillumbah, Male).



5.4 Sheltering experiences

People's experiences of staying with their home or business during this flood varied; while some were comfortable, others described it as a very stressful experience. In this section, we outline the activities people undertook during the flood, discuss the main challenges or stressors, explore participants' experiences of self-evacuating and being rescued during the night, and lastly highlight participants' descriptions of the flood and experience overall.

Activities while sheltering

Actively monitoring and saving belongings

As discussed in section 5.3, many participants decided to stay with their property to monitor the situation and protect their belongings. A key activity while sheltering experiences, therefore, is monitoring, responding to the conditions, and saving belongings wherever possible. Interviewees described their various strategies for monitoring the floods throughout the night; these included using such websites as the BoM website and Facebook to find information about the weather conditions and local impacts, as well as physically monitoring the water level at their property.

I was watching the - I was using the stairs, the front and back stairs as a gauge, and just counting stairs disappear hour or whatever it was and watching the weather reports. Just watching it, it just continued to come down over Murwillumbah (Resident, South Murwillumbah, Male).

we spent a lot of time standing on our decks with torches going - because there's a clothesline over there and that for some reason became our kind of mark. We were going oh, the clotheslines, it's nearly up to the peg basket on the clothesline. Then the clothesline disappeared. What we found out was that it snapped off and it ended up in these trees (Resident, South Murwillumbah, Female).

Yeah. Yes, I was checking the weather reports and just seeing - got onto a Murwillumbah Matters site and just checked what's going on with other people around the place that usually put on there and just checking what was happening and that and keeping an eye on it that way. (Resident, South Murwillumbah, Male).

Raising belongings (further) as the water level rose was discussed by many interviewees. This generally required entering floodwater, which was in some cases quite deep:



Yeah, and I think also because I'd moved stuff up and then I'd moved stuff up again, and then I had to move stuff up again I was just like, oh my goodness, [is this] going to end? (Resident, North Lismore, Female)

[My partner] went down into the water probably – which absolutely gave me the shits actually, but he went down probably five or six times and lifted stuff into the boat. So we didn't lose as much as we could have, because he went into the water, which I'd never want him to do it again, because you just don't know what's in it. (Resident, Tumbulgum, Female)

I had a lot of crocheting - I do a lot of crocheting and it was sitting in boxes down there. My daughter went down about two o'clock in the morning with water up to [gestures to her chest] ... with my grandson, and rescued it all. (Resident, South Murwillumbah, Female)

Others discussed rescuing belongings, stock or vehicles to the greatest extent possible after water unexpectedly came into the property:

But then all of a sudden my brother was - I actually went to bed there for a while and my brother was yelling and screaming saying get out here. We've got bloody water coming very quick and ultimately we ended up wading through four foot of water and were trying to move cars. He almost got washed out in one of our cars trying to rescue it and yeah basically the water just rose so quick. (Business, South Murwillumbah, Male)

Then within an hour or so we were just inundated, the water just came in really quick. I was trying to save stuff downstairs here... Didn't even contemplate it would come in here. Didn't even, yeah. It was just total shock. Just tried to lift a few things up thinking it might come in a couple of inches or a foot. Then it just kept coming and coming up... I managed to save the swag because me bed and everything went under water, everything went under water. [Laughs]. Fridges and freezers that I'd put up, they were all floating and I was just running around in circles trying to put up stuff higher. It just got to a stage where everything on table height was going under so I was like, can't really save anything. I took a lot of stuff upstairs, personal stuff. But tools and that sort of thing I couldn't save them. Just spent the rest of the night upstairs. Tried to sleep on the swag but just couldn't sleep. I was safe enough, I was fine. (Business, South Murwillumbah, Male)

Therefore, monitoring and responding to the situation to save belongings or stock whenever possible was a key motivation to shelter in place, and an important aspect of sheltering experiences.

Communicating with others

The importance of maintaining communication with others was discussed by many interviewees, and several mentioned sheltering with neighbours or nearby businesses to ensure that no-one stayed alone, and in particular, so that



those who had not experienced floods before were not alone. Some participants described the flood as a quite social experience because of visiting and talking with their neighbours.

And it could be quite a social event in a strange way, because there were four houses of the most wonderful neighbours. So really for the best part of the time we're all sitting on our respective verandas chatting like we're all in the one room just shooting the breeze. That was very comforting having that. (Resident, Tumbulgum, Female)

So everyone was ringing everyone to find out where the water was up to. Yeah, it was just really one of those things. A gentleman across the road that I spoke about that told me that this was going to be the one, he doesn't evacuate either. I was ringing him all through the night, and he was ringing me to make sure. Because he's actually right on the river, like I'm talking four metres off the river. So, he's really close to it. He said the noise that he could hear was just like a jet airplane from the water running down the river. (Resident, South Murwillumbah, Male)

... Yeah, if I needed to speak to my neighbour we'd shout to her... It's actually quite bonding, we got to know each other better and borrow hose attachments for her hose and [other] things and giving each other bottles of wine. (Resident, North Lismore, Female)

Several interviewees also discussed receiving help from their neighbours or friends while staying at their property during the flood. Examples included sharing food and electricity access, or providing assistance with lifting or saving belongings. One elderly resident recounted how her son's friends came to check on her throughout the flood:

Once that lovely, lovely man kept on coming in and when I found that I didn't have any batteries, this particular gentleman and his lovely big boat and his friend...came back with a little gadget which was a radio and little lights and batteries that worked so that was really good... During the flood itself the - because I was being cared for by my son's friends I was blessed so I was very fortunate member of the community. (Resident, North Lismore, Female)

Others highlighted the role that Facebook played in this flood. It was not only a significant source of (local) information about the flood, but also in keeping friends and family apprised of conditions.

The big thing was keeping the telephone just as charged as possible and my iPad so I could keep abreast of things and keeping the phone to a minimum for that, because you know people text and call and you just say can you not? I put all the information and let you know that I'm still alive, but we just need that to communicate about the flood. So Facebook was actually a really good tool, because we could all communicate



with each other and saying how are you? Where is the water up to and we knew when people were in trouble. So it was quite surprisingly useful. (Resident, North Lismore, Female)

Facebook was just full of floods really. So - and I have a few friends who are really onto all that monitoring stuff, so I was getting their commentary as well. (Resident, Lismore, Female)

Just reading through what people were going through on the Murwillumbah Matters [a community Facebook page] page was really good. Just to hear that other people were as terrified as me, that no one was really feeling terribly brave. (Resident, South Murwillumbah, Female).

The basics: food, water, electricity

Many interviewees described having access to torches, radios, and batteries either as an emergency kit, or as items they routinely have at home; however, many noted that they were quite reliant on electronic devices, such as phones and iPads, for both lighting (in the case of a power outage) and information. Most residents explained that they had plenty of food in their home, particularly as a result of stocking up before the flood. However, some lost food during the flood, either as a consequence of water entering the property or from losing electricity. Indeed, being unable to heat food or make a cup of tea was discussed by several interviewees. Many also noted that they shared food with neighbours:

I'd just went shopping that day so that was one of my things, when the water started coming I made sure all of the good food went up higher, but clearly everything in the fridge down the bottom got lost. (Resident, South Murwillumbah, Female)

...we lost power. That's why we wished we'd had ice. We've got a little freezer downstairs. We brought it upstairs and it kept everything frozen for the whole period of time. We've got the barbecue. We have extra gas for the barbecue. We finished up cooking up everything in the freezer and putting a call out. People paddled over and got food [laughs] so didn't waste anything. (Resident, North Lismore, Female).

The other was - just being in the neighbourhood, there's plenty of people pooling food. We just went in the freezer and grabbed a heap of sausages and that, and we had a barbecue. There's always those things. (Resident, South Murwillumbah, Male)

Among those who sheltered with their business, food supplies varied, with some having plenty and others just having some snacks to 'get through the night':

But food wise, yeah, we hadn't really thought much about food and I guess getting out as early as I did I felt pretty lucky to be out of here... I was more worried about - yeah,



[where the] water was - how long we'd be here and I can probably afford to lose a few pounds so I thought well I'll go without that food. But no, it was definitely an experience. (Business, South Murwillumbah, Male)

I had heaps of food. I had freezer full, fridges. I'm pretty self-sufficient here. I do spend a bit of time down here so yeah. I had heaps of food but it was all lost in the - it was all floating around in the fridges and the freezers. All my cooking equipment and everything, that all went under. (Business, South Murwillumbah, Male)

Just waiting, not stressed

The challenges that residents and businesses faced while sheltering during the floods will be discussed in greater detail in the next section; however, it is worthwhile noting that some did not experience significant stress whilst staying with their properties. Many of these interviewees described their sheltering experience as 'just waiting,' 'not worrying about it,' and 'killing time.'

My wife was a little bit freaked out. The boys and I thought it was exciting. We were really given plenty of warning that it was going to be a big flood. (Resident, South Murwillumbah, Male)

... it wasn't until we left we all went - we went oh, actually, it was terrible for others, whereas, for us, it was just like wow, that's amazing... I mean, I guess, people - it doesn't frighten me. It's just water. A lot of people say it must be terrifying having all that water around you and being trapped by it, but I don't find it frightening. I know other people do, the idea that they're cut off. (Resident, North Lismore, Female)

[A co-worker] and I didn't have a bed, but we had the intentions of staying up all night, and just to watch it. No problems, sit around making jokes, watching things float passed [laughs]. That's about it. I guess it's probably a lot different nowadays, probably back in the day it was probably a bit of party for some of the staff, and they'd get around and have a few beers, and things like that, just jovial stuff. Of course, the way the world is now, you can't do things like that. Pretty quiet, low key. (Business, South Murwillumbah, Male).

What was the water like?

Many interviewees described the floodwaters that they observed while staying with their property, and how the sights, smells, sounds, *inter alia*, were a significant part of their experience, and were powerful memories from the night. As will be discussed in the next section, very few people were able to sleep during the flood, in part because noises from the floodwater were loud, unknown, and different to previous floods:



... well a normal flood you think you're still in a houseboat, like there it goes, hello [laughs]. But the roar this time was, yeah, no houseboat was - like Niagara Falls I think [laughs]. (Resident, South Murwillumbah, Female)

The noise, the noise of the water coming across here, was deafening. It was terrifying. It was like jumbo jets on a runway constantly just doing their pre - you know when their engines are roaring before they take off. It was just like that was happening constantly. There was things banging into the house. I could hear everything under the house bashing around and wondering what was coming across the levy off the river was scary. That really worried me... I can still feel that absolute terror of listening to the river. That noise, that was unbelievable. It's lodged somewhere deep in my soul, that noise. (Resident, South Murwillumbah, Female)

...oh, as the night went by, hearing all the different noises of the glasses, because the glass in [neighbour's] shop was real - it sounded real thin and crisp. Then - another one was like a real big, deep baritone noise when it - I woke up to hearing one of the doors bang shut, and that's when I knew we were going to have some more trouble. Then a boat went up there, and they started popping everywhere. I watched trees, six, seven feet long, three tables, six-seater tables, just float through that shop. As we walked in that shop, the floor was dry, the water was coming in behind us as we walked in. The water was coming from the back of the shop. It joined up, and by the time we got off the first step it was already up on that step. (Business, South Murwillumbah, Female)

Many also discussed that these sounds – particularly banging and crashing under the house – were unsettling in part because the flood occurred during the night and there was no easy way to see what was happening. Others highlighted the apparent 'force' or 'strength' of the water:

You just don't realise how much fury is in a river when it breaks free. The river is just being the river, but yeah, we just happened to be in its path. (Resident, South Murwillumbah, Female)

Some also highlighted the smell of the flood water – particularly where cars, rubbish and waste were all in the flood water:

...like the smell is horrific. It will never leave my nostrils. The other thing is it covers everything in mud and everything dies and then that rots and so you get this double layer... It's gross, you know, like really stinky river bank mud (Resident, Lismore, Female).

Challenges and stress

A number of challenges or stressors were discussed by those who stayed with their home or business. For some, these caused significant distress. This section reviews five key aspects: Going higher; Isolation; Tiredness; Looking after others; and Animals.



Some interviewees also described a general sense of stress or fear throughout the night. Reflecting on their experience, they described the night overall as an anxious and tense time:

So yeah, it was pretty, it's pretty - you just sort of go into a state of shock, like you can't believe it. (Resident, South Murwillumbah, Male)

So I found the whole ordeal really terrifying. I woke up just like - I fell asleep maybe three or four o'clock and I just woke up and I just couldn't stop shaking. I was just - it was really horrible. (Resident, South Murwillumbah, Female)

So yeah, it was prolonged terror. You know like my body was terrified for 12 hours. You can get a fright and feel that kind of adrenaline rush, but this was just sustained, like it's, you feel it's in a constant state of sub-trembling. Yeah, I've never experienced anything over such a period of time. Usually you just have a fright or something and you get away or you deal with it or whatever. This was just so powerless, to stand out there and just see this water coming. Now I know why people used to pray to gods... You know, just like, just like the urge to appeal to something to stop the water was quite primal... (Resident, North Lismore, Female)

It wasn't - it's not - I guess you couldn't class it as outright fear, more anxiety, if that makes sense. I don't know. I think it would have been total fear had you had no choice but to get on to the roof and then you would have been going [unclear] because that was a rickety old [lean-to], if one of us went in - that's fear. It's nervousness, you're sort of - it's an anxious time. (Resident, South Murwillumbah, Male)

These quotes are indicative of the level of stress experienced by many who sheltered.

Going higher

As noted in section 5.1, this flood event was much higher than most people had previously experienced or expected in this instance. Several interviewees discussed the stress associated with watching the water continue to rise to unexpected levels:

*I think for me the - I knew that there was going to be a point where it was going to be okay, because I'd been in a flood before. But it didn't get to that point until it stopped rising. It rose really quickly up until probably about midday, and then for the next four hours **it just kept rising, but really slowly. That was the hard time for me. It was like, when is this going to stop?** Because it stopped probably about a metre under the ceiling downstairs in my garage... So I knew I was fairly safe upstairs, but **it was just that ongoingness of it.** It went into my water tanks and I was just a bit like, oh damn. So that was sort of my guide. I was just leaning over my veranda and looking at my water tanks, and I could see how much the water was still just rising very slowly. (Resident, Lismore, Female).*



Indeed, as the water levels continued to rise, many reflected on whether they could physically go higher, or whether they had a plan B. This caused some significant stress as demonstrated in the three accounts below:

*Well, I was worried about the water coming up, because it was coming up and up and up. I'm - **I've got low vision, so I didn't know how I was going to get out.** Then the rescue boat came for us, and they couldn't get through, could they?... They had come earlier in the night. They came earlier in the night and checked it out, and said, well look we think you're pretty safe for now. We'll just keep an eye on you and everything. Then they didn't really come back, did they? They didn't really come back, or not that we know of. Then **when we wanted to evacuate, they couldn't get to us. The water just came up and up and up...** We were just worried about - I'm thinking oh gosh, I hope the house doesn't catch on fire [because of gas]. That was my biggest worry, apart from having to wade through water. I'm not a very strong swimmer. Having to wade through dirty water and get out if I had to, yeah. (Resident, South Murwillumbah, Female)*

*Walked across there, we got over to our in-laws' place, opened the door, the water wasn't in. Within 10 minutes the water was creeping into their place. **We nearly died, it just kept coming in. We didn't know when this was going to stop. It just kept coming up and up and up.** So we told the girls, well what are we going - kids were panicking - we were trying to get onto the SES. They were stuck as well. They couldn't get access... this is what I can't understand. **You have emergency service departments, if they can't get to you, who gets to you? If they can't do it, and you're in trouble, what do you do? Do you die?** That's what I'm saying. This is what I can't get over. What happens if they're stuck and they can't get to you, how do you survive? ... I think at the time there would have been nine of us. My in-laws, two of my kids and their partners, and my granddaughter and my wife, so there was nine of us. We said, well girls you - if the water's going to keep coming up I can just sit on a table or whatever, but you - we thought we'll get them up into the ceiling part of the house, go in the manhole and they can sit up in there until it all goes away. So we just put the girls up in there and I just sat and watched the table and watched the leg on a table, see if the water was going to come up any further. It rose a bit and then after about 10 minutes it started dropping. (Resident, Male, Burringbar)*

*But yes it was quite daunting in that when I woke up and found out and looked and saw where I was and we were watching the neighbours place which is much higher set than ours and they had more room than us, **the thing is we weren't prepared in that we didn't have a ladder to get on our roof. There's no way my husband and I the telly tubbies could get up a ladder.** So the people next door, I can actually hand that man a beer that's how close we are, but as far as David and I climbing over it was a whole other ball game. So we were looking, that man next door even took a dining room table apart looking for planks for David and I to walk the plank. And I did try the ironing board and I*



went no wouldn't hold our weight. **So I found myself really quite anxious through that time I really did.** (Resident, Tumbulgum, Female)

These accounts each highlight stress associated with realizing that the sheltering location may not be safe, and the absence of planned or readily available options for vertical egress or rescue. Being unable to evacuate in circumstances where floodwater enters the house, thus, became a significant fear for some residents.

Isolation and being cut off

Many respondents discussed being isolated or 'cut off' while staying with their property in three main ways. Firstly, upon losing access to electricity, internet or phones, many interviewees described a sense of isolation due to no longer receiving information or updates, and more crucially, no longer being able to contact family and friends, or emergency services:

Once my power went off, my laptop's old. It doesn't hold a charge for very long... It felt - it left me feeling vulnerable, yeah. Because I don't have a mobile phone. So my phone's a modem. So if my power goes off, I lose my phone as well. I thought, well there was nothing I could do, so I just sat tight. (Resident, South Murwillumbah, Female).

My major difficulty was the loss of power... because I didn't have the battery I didn't have the radio and I couldn't - I'm so used to having [2NR] so I missed that. I missed that contact. (Resident, North Lismore, Female)

*I couldn't get my son on the phone, mobile or landlines, nothing was working but I got a call through to the police. I wanted them to know I was going to go into the roof, I wanted them to know I was there.... **I was worried that I would go into the roof and nobody would know I was there.** Police were beautiful, listened to the situation and said I was doing all the right things.* (Resident, South Murwillumbah, Female)

Secondly, respondents discussed the stress of being physically isolated during the floods and unable to leave or be reached by others:

We knew we were on our own. We basically felt like we were cut off from the world, because we had to wait for that water to go down. Then we didn't know what we were facing when we went out there. I didn't think it would be that bad. I thought, oh my God, you know? Yeah. (Resident, South Murwillumbah, Female)

When I say isolated, we were right with each other but we - my daughter panics a lot and she kept ringing 000 to see what's going on with the SES, but in the end they couldn't get through. (Resident, Burringbar, Male)

Interviewees who sheltered alone also felt especially isolated as demonstrated in the accounts below:



Interviewee: I lost power points so therefore I could not charge my phone or anything... I had lights, thank goodness, but no power. So therefore I couldn't charge my phone and I lost the computer. I had no contact whatsoever. I was trying to save my phone for just in case they had to come and get me. So that was really hard.

Facilitator: How long were you isolated here for?

Interviewee: From Thursday until Saturday morning. The water was gone off my property on Saturday morning.

Facilitator: how did you feel during the event, before the event and after the event?

Interviewee: Really isolated. Really scared. If I had known the magnitude, I would have gone to my neighbours next door where I could have kept an eye on my house but still been with people rather than be home alone. But by the time you realise that, you can't get that 10 feet to them. It's too dangerous. (Resident, South Murwillumbah, Female)

Very surreal feeling being here all alone... It was nice that the lights stayed on. That would have been pretty terrible if the lights went out. They went out for a second or two and I had a torch, and I'm - where's that torch, couldn't find me torch and I'm thinking oh no. Then the lights come back on again and I found the torch and I didn't let go of the torch all night. I kept it beside me all night... Yeah, you felt isolated but I was alright, didn't phase me too much. (Business, Murwillumbah, Male)

Lastly, participants discussed being cut off in terms of accessing supplies to meet their basic needs. This includes such aspects as toilet facilities, food (particularly where power cuts were prolonged), and crucial medical supplies.

I'm on medications that need to be in the fridge and had just picked up a three month supply and they are all spoiled... I had just enough to get me through. (Resident, South Lismore, Male)

I'm on oxygen... and I charged up the two batteries for the oxygen, but then the power went off because the water came over the switches downstairs. That was a bit scary. Because I'd had the oxygen on for a couple of hours, and I only get eight hours oxygen without having to charge up.... Well, I would have had to call on assistance, but the door was underwater so they couldn't come in the front way, and the back was channelling waves and surges, so they couldn't come round in a boat to the back, so I just went inside and made a cuppa. Said, righto, you come or you don't. Every hour I'd come out and shine the torch on these steps and it'd be up another step, and up another step. I have never been afraid in a flood, but I was a bit worried this time. (Resident, South Murwillumbah, Female).

There were 7 people and a dog in total, 2 extra people showed up when the flood occurred... If it had lasted another 12 hours we would have been in trouble. I had



bought extra food but didn't think about the power going off... [we had] 1 camp stove and 7 people to feed... (Resident, South Lismore, Female)

Sleep, tiredness, and watching the water

Many interviewees discussed staying awake for the night, and being unable to sleep. While some always intended to stay awake to monitor the situation and protect their property, others simply could not sleep because the uncertainty of the situation, and the sounds of the flood.

No, I didn't sleep at all. Stayed up all night, just watched the water, because we could hear the water coming through the house and we heard everything banging around. (Resident, South Murwillumbah, Male).

But yeah, you just couldn't sleep. Even if you wanted to, we were just really, really tired, but just adrenaline you just couldn't. (Resident, South Murwillumbah, Male).

We were completely anxious and nervous, particularly [my neighbor] and I who live down here. I got into bed at one stage thinking oh, just go to sleep. But the roar of the water under the apartment building was so loud and it was just really - it sort of - that was really frightening. (Resident, South Murwillumbah, Female)

Well it doesn't stop - I think manage is the word I would use, I think people are prepared to stay at home and try and manage the situation. But given that I think it was another high tide expected and I actually just knocked myself out with - I medicated myself. Yeah after two nights of not sleeping and I was really sillier than normal, not making much sense. So I just medicated myself and I woke up the next day and thank you God it started to go down. But that's how I managed with medi. (Resident, Tumbulgum, Female)

Many participants also described watching the floodwaters and their impacts throughout the night and the next morning. Residents described watching their possessions – and those of their neighbours – go under or get swept away, while in businesses, interviewees reflected on both watching their work go under and worrying about the likely long-term impacts:

It was - yeah, it's hard to describe the emotional impacts that things that you don't think about, like think about losing your furniture or your clothes or your photos or whatever, don't think I'm going to see a horse drown and nothing I can do about it. Like that's horrific. (Resident, North Lismore, Female).

It was horrific really. I mean you know when you're watching your business go under and go under in a very short space of time. We had freight and vehicles being washed out and yeah that was pretty horrific sort of an event. You're watching your computers go under, your full office set-up. Took us 20 years to get a mountain of computers like we have and offices set-up and what have you and to watch it all go in two minutes is not a

good thing. Or 10 minutes, not good at all. So no we knew we were in for some longer term pain at the end of it. But yeah it wasn't a good event. Scary is probably the best way to put it so... I thought shit this is going to have major implications for our business and it has. (Business, South Murwillumbah, Male)

I'm lying there and whilst I was trying to sleep it was terrible because I'm thinking about what we'd lost and all of a sudden I thought, oh get over it, get up, don't - you can't fix what you can't fix. (Business, South Murwillumbah, Male)

Looking after others, injuries and illness

For some interviewees, the responsibility of looking after others shaped their decisions and actions while sheltering. Many parents described steps they took to ensure that their children were in the safest location possible, and that they were comfortable. For example, a father described looking after his daughter and trying to keep her calm:

Yeah, we were just talking to her and stuff like that. **Obviously trying not to make out we were nervous, but it's pretty hard.** Then the point where I just grabbed a life jacket and put the life jacket on her and she was walking round how come I have to wear a life jacket? I'm like just in case. Just in case something happens. At least you've got something on. I only had one life jacket anyway. It went on her. It was a child one, so it went on her.

Trying to keep her calm but it was - I wouldn't say - what did we do? The TV was still on, we were just - I don't know. We were just talking and trying to take her - she was lying on the couch but I don't think she slept too much. She might have had half an hour's sleep but it wasn't much at all. (Resident, South Murwillumbah, Male).

Others recounted looking after elderly parents throughout the flood. This resident highlighted that it was important he was there to monitor the situation on the property and stay updated on the weather conditions as his mother would be unable to access online information:

Mum being old, fragile, 85-year old she just in a bit of a shock and stayed up and didn't go downstairs to see what the damage until probably three days later... We thought we were pretty well safe as far as household goes... There was always a plan. I even put a ladder on the front veranda so I could climb on the roof if I had to. That's just under extreme circumstances, but **I just did that as - because I had an old person there** and if it got to that extreme. We weren't expecting to be in the second level.

...**well she just gone to bed and just didn't want to face it** because she - yeah, she just don't want to face it... The night - because I kept checking on everything. I didn't sleep through the night of course. She slept I think reasonable good because she just didn't want to know about it. **She just shut herself off from it, which is not a bad idea. I was there**



to do the worrying for her. *It's the worst I've ever seen in my lifetime (Resident, South Murwillumbah, Male)*

For those sheltering with their businesses, maintaining contact with family at home was important, and was also one way of looking after each other. For example, this business owner recounts her discussions with her sons during the night:

*My younger son came down probably at eight o'clock to check on me in the shop, and...he got washed [in the floodwater] - only that he was a good swimmer, and knew the area. He knew to dive down and he grabbed hold of the embankment and crawled out under the water to get out. He said, if it was anyone else they would have drowned. **Then he rang me when he got home, and he was freaked out because of what had happened.** He said he wasn't going near the water again... **About 1:25 [elder son] rang up and said what to do, because it's hit the veranda. I just said, get the baby's bottles and nappies and shit in bags and hop up as high as you can. It's too late to get out.** He said by the time he walked from the front veranda to the back veranda, he said he felt - he can't explain it. He said it was like the pressure had suddenly been released off the house, and that was then the railway tracks blew out and the water got down there. (Business, South Murwillumbah, Female)*

Lastly, some interviewees discussed taking care of family members with illnesses or injuries. For instance, a mother in South Lismore recounted evacuating with her 3-year old daughter to her neighbours house because her daughter is on a ventilator at night, and needed to be somewhere with electricity. Others mentioned taking care of household members who had chronic health conditions.

Animals

Pets and other animals were an important part of the sheltering experience for many; indeed, as discussed in section 5.3, for some, taking care of their pets was a factor in their decision to shelter. Many residents described the steps they took to raise all their animals above the expected flood height. Some recalled their animals being stressed (for instance, one resident's dog did not want to toilet indoors, but was unable to go outdoors), and others recounted a curious truce amongst animals that would normally not get along. However, some residents lost pets during the floods, and this caused significant stress. One



family had a large number of birds as pets and were not able to raise them all to a safer location in time:

*Male: ...a lot of the birds that we lost were large parrots. It's one thing losing a couple of quail or a couple of budgies, but large parrots live for as long as we do almost and **you've got a big responsibility to protect them throughout their lives. We were unable to do that. We're still very disappointed that it happened, and we couldn't do anything about it.** We reached the stage down here - we were moving birds upstairs. We had to stop because [my wife] can't swim and the current was taking her away.*

Female: And it was... [gestures to chest height]

Male: Yeah. That was a pretty rough experience on its own, but because of that, some of the birds died and there was nothing we could do about it. Just wish it didn't happen. (Residents, South Murwillumbah, Male and Female).

Seeing animals suffering and worrying for their safety was another significant aspect for some residents. A resident in North Lismore recounted waking to see horses in floodwater:

*First thing I saw [when I got up in the morning] was a head of a horse sticking out of the water around here... the horses get brought up to my house. A woman brings them and puts them behind where my fence usually is. There's a railway kind of strip and they get put there when it floods, because that's a safe point. I tried to call the woman when I got up. **All I could see was he was standing here and it was just his head and it was the worst thing to wake up to. It's kind of, some of Shakespearean, sickening,** like this - and I'd heard some kind of struggle, like splashing and struggling through the night and when I rang the woman she said how is the little one? I thought...she said she'd tied the little one up down here, like tied it up next to - and I was so - yeah, that was pretty bad and I'm thought I'm going to have to deal with a dead horse.*

*But anyway, the little one, the struggle I heard was the little one breaking free and he likes the water. He was just having a swim, so it was all fine. **But it was strange, it was strange how horrific that was to wake up to, to seeing a horse that deep in water.***

(Resident, North Lismore, Female)

Therefore, the stress associated with caring for, responding to the needs of, and potentially witnessing the suffering of, animals is an important aspect of flood experiences.

Self-evacuation

Some interviewees began by sheltering at their home, but self-evacuated during the night to a nearby house as the water level rose and entered their home. These stories indicate the resourcefulness of these families when placed



under pressure, but also the dangers that attendant with staying at home and the risks taken to reach safe(r) locations.

The following is a story of a family in South Murwillumbah with two adults and three young children who left their home around 3:00am:

Male: So I started to get a little bit worried. [My wife] started getting everything up in the house, so she got kids' clothes, packed bags for the kids if we had to evacuate... It was probably about 3:00am that it started to come into the house and that's when I said to [my wife], you've got to get the boys and you've got to go. So, she got a big, I bought her a big paddleboard for her birthday, she basically had the kids on the front of the paddleboard going out the front door at 3:00am towing a kayak full of their clothes. So she paddle boarded out the front door to my next door neighbour who had a double storey brick place.

Female: ... yeah, they had a two storey house and as - when it - just in the beginnings of it in the afternoon - oh it wasn't in the afternoon actually, it was later in the evening, probably a bit after dinner time - I said to [my husband] oh, look I think we need to ring next door just in case, just in case something happens and see if we can go there if anything does happen. They're like 'yeah, yeah we'll leave beds out just in case'. So when it was like okay, 'it's here, we made a plan, we'll go when it's this high'.

So I've taken the first load with some evacuation clothes and all that for the kids and the eldest child to start setting up the beds and getting everything ready and I was going to go back. As we've gone in I've put my foot down in water, I went - this is in the neighbour's place - I went oh my goodness, there's water in here. So I've had to go and wake them up because they never expect it to have flood.

So that was another little adventure in itself. I've had to wake them up and they've had to - the beds that we were [meant to be] sleeping on were already floating...and wet because - it was like, oh my goodness. So we all stayed upstairs. So the kids thought it was great because at three o'clock they go to get up at three o'clock in the morning and watch movies and watch the sunrise.

This family explained that their plan had always been to leave once the water got to a certain height in their home, and rationalized that because the water near their property does not flow, it was safe to travel next door on the paddleboard. The enormity of the situation, though, and the practicalities of what to do next after an evacuation like this were significant:

...before, in the moments as the sun rose the next morning and we're looking out just kind of going oh, my goodness, we're not going to be able to go home for a while. Started looking on the real estate websites, we're going to have to find somewhere to live, we've got to hit the ground running. Yeah, there's nothing out there (Resident, South Murwillumbah, Female).

A resident in Burringbar also recounted evacuating with his family upon finding floodwater in their home. This family did not expect to get flooded, and therefore improvised their exit to a safer location once they became aware:

I checked that about 11:00 pm, walked back out, had a look at the road, it was all fine, there was no problems. So yeah, we went to bed. Next minute we got a phone call about 12:30 from my wife's sister saying that there's water on the road... near our place. There's water across the road there, you might want to move your cars. My wife put her foot out of the bed and there was water in the house. Never seen water there ever, never seen water near our house ever. So it's rose probably a metre and a half in that hour and a half and we weren't aware of it. My wife opened the front door - we opened the front door to see what was going on and water just started coming, gushing in from the road.

Yeah, we panicked. Had to go down and wake all the kids up. There was four or five, five kids there. When I say five, four of them are adults and my infant granddaughter. She was only nearly two at the time. Got all them, rang my wife's parents who live across the paddock from our place, across a vacant block. They said, no we've got no water here. They didn't even realise anything was going on and we opened the door and we walked out into probably three foot of water across that paddock and we couldn't see a thing. All I was doing was trying to hold the torch or phone from the torch I had [and run] across there and the water was just raging. We didn't know what was going to hit us. So we had to leave our poor cat in the house. Put her up on the stereo and thank God she stayed there. Walked across there, we got over to our in-laws' place, opened the door, the water wasn't in. (Resident, Burringbar, Male)

This story highlights both the dangers and the panic associated with unexpected flooding and moving to a safer location during the night.

Rescue

This section explores the views of interviewees who considered calling the SES to be rescued while sheltering in their home or business, and the experiences of those who were rescued by the SES.

When considering potential evacuation or rescue, many interviewees reflected carefully on whether they (i) actually needed to leave their home, (ii) whether an SES boat could safely reach them, (iii) whether they really needed to use the SES, and (iv) what to do with their pets:

No point at two o'clock in the morning, where it's dark, there's no way of getting flood boats down here. We didn't even know whether the SES would be operational on the river with the flow that was going. I wouldn't have been taking a boat out on it. I had my own boat there, but I wouldn't be putting the boat in the water, with the logs and that



that were moving down. **It would be just endangering other people, endangering yourself, to ring them.** If somebody was injured or something else, it would be a different matter. There wasn't any injuries and my wife's a nurse, so everybody was pretty well right. **To ring them at that stage, and with what they had on in town and the rest of it, the people they had to help and get out that were in water,** and they were in water up to their waist and still in a house. I knew South Murwillumbah was going pretty bad at the time. There was a lot of evacuations going on there. **Don't use a service you don't need.** Although it's not, no I don't need you or require, but it just puts extra work on somebody that's - we wouldn't have gained anything by ringing them. Not when we were, say, 30 metres away from safety. (Resident, South Murwillumbah, Male)

I wouldn't ask the SES. They had so much trouble themselves. (Resident, South Murwillumbah, Female)

As far as the SES is concerned, I put in another call in the morning and again it was almost like I was triaging myself, like I don't know if I need to leave, I don't know if I'm going to be okay, because this is, my house had never been tested since the levy had been built... They came, they did end up coming in a boat. They'd obviously been picking up a few people and my dog, she wasn't into people coming to the front of the house by boat. No, she wasn't a fan. Yeah, she used all sorts of horrific language, which I'm pretty sure that they understood the - and they couldn't get in anyway... So I would have had to swim to get to the boat and I would have had my dog being psychotic. They had said over the phone that she could come too, but they didn't [offer again] [laughs] funnily enough. I figured at that stage that the worst had happened and I was going to be safe and I was okay then, because I had plenty of food, you know candles, filled the bath up with water. I was prepared for being rained in. (Resident, North Lismore, Female).

Those who did leave during their night with the SES were very grateful for the help. Interestingly, some also recounted difficulty or risk-taking in order to access the SES boat in order to be evacuated. For instance, this couple in South Murwillumbah recounted their experience:

Female: Well no, what happened through the dark, we couldn't really see what was happening. So we stayed awake all night and by 3:30...

Male: In the morning of Friday.

Female: ... and decided, we just thought...

Male: We moved.

Female: ... this is bad, we've got to get all out or we may have to get on the roof and we got out of our house and we climbed onto...

Male: The neighbour's house.



Female: ... neighbour's front veranda because she's got no trees and we thought if the SES is going to rescue us they can't get through our trees.

Facilitator: So you had to walk through all that water to get there?

Female: It was chest high and so we decided to get [unclear]...

Male: ... and moving...

Female: It was surging down between, so we were hanging onto the house so that we didn't get swept away.

Male: You had to hang onto the building to get across and probably 10 minutes later we heard voices and the SES boat was coming along the road and asking who wanted to vacate. Numbers of families in this street probably four or five families - chose to go by boat, and they were dropped at [the evacuation centre] ...

Female: Very frightening.

Male: Yeah. A lot of people experienced chest pain. We did.

Female: We did.

Male: Like a tightness. Yeah, and the SES were marvellous. (Residents, South Murwillumbah, Male and Female).

Some interviewees also conducted rescues of their own to help neighbours whose properties had become inundated. As shown in the narrative below, these kinds of rescues involved significant risks, and were a response to the stress and anxiety during the flooding:

We had phone calls - we'd been up all night. It was around about 3:40am and [neighbor - male] who lives across the road...their back window is halfway down their staircase. So it's midlevel to the ground floor and they could see logs and things bashing up against the window as the water came rushing by and they were sitting in their lounge room. So it was a bit like being in the reverse of an aquarium for them... So [neighbor - female] started to panic... they've got two young ones, one that's under one and one that's about three... They're saying, can you help us get out of here? We're sitting up here and we're watching waves wash through. So there were only three of us here at the time.

We ultimately, we received six phone calls from them over there between 3:40am and 4:00am - 3:50am I suppose it would have been - saying can you get us out of here? ...if we had of had to walk across there, there's no way we would have got them out. It was over our heads at the garden out the front. But [a friend] had his kayak downstairs so we were looking and there were waves going across and we were saying, there's no way we're going out there in this. Not only that, we'd just gotten dry and thinking how comfortable we were and we're thinking, do we want to go back out there? After the sixth phone call [friend] had just hijacked it, gone down and grabbed his kayak and he had to lay down on the kayak to get through the front door.



... But he's paddled over and he brought back [female neighbor] and the baby and as [male neighbor], who lives in that house said to me, there's – [She] must have been terrified because there's no way she would have gone out with the children in that water without a jacket of some sort. So it was - she felt like it was life or death. (Business, South Murwillumbah, Male)

These narratives highlight the risks taken to access formal SES rescue, or to rescue neighbours and friends, and are suggestive of the level of stress experienced during this flood by some interviewees.

5.5 Moving around during the floods: entering water away from property

Entering water away from their properties and moving around during the floods was discussed by respondents. Interviewees were encouraged to discuss why they had done this and their perceptions of the dangers they encountered.

Returning to clean up and protect belongings

A number of business owners and residents who had evacuated entered water in order to return to their properties to begin the clean-up process. Some were also worried about looters and therefore returned earlier to ensure their contents were safe. Respondents recounted wading in water up to chest height to return. No respondents mentioned that the water was moving at any velocity. They all stated that it was easier to clean up if you started as soon as the water began to recede. One respondent also discussed how it is much easier to float out furniture rather than carry it out on slippery mud.

So that was Saturday morning, and then about nine o'clock I got on the roundabout, she dropped me off and I walked back in. It was still waist deep. I walked back in and started hosing, because it had dropped a bit. So I get the fire hose and started hosing down. These boys, I rang them and said, "Be here at 12 o'clock." So they all met at say Kentucky Fried Chicken and put their cars and then they just walked in. Come Saturday afternoon we were completely squeegeed out with the carpet, washed down, windows cleaned, everything done ready to start bringing the truck back in and start restocking. (Business, Lismore, Male.)

When the water recedes, even though the SES don't want you to come back in, really you need to be back here... and they probably do know individually, but as a collective they've got to advise you not to and that's the problem. You're wanting to get into your own premises while the water is going down because that's the only real time you can float out heavy furniture. Otherwise you've got to walk around in mud which is so dangerous... That is the only way. Once you get to the bottom, the sediment, you start using scrapers and you push out all of the actual mud and you start hosing it out to go



with the flood water, because that's your only advantage otherwise the clean-up is astronomical. You could put an extra week on if you don't come in while the flood water's going down, and that's something that maybe the authorities need to understand and the SES. We don't have a real choice in the matter. So we did have to actually avoid the SES and come in on surf skis. (Business, Lismore, Female).

I ended up walking back home because we heard that there were looters in South Murwillumbah going through people's houses... I actually had to walk through waist deep water. There were a lot of people doing it... it was just still water. It wasn't flowing by this stage. It had dropped down below the levee bank, so it wasn't - well, we couldn't class as dangerous. (Resident, South Murwillumbah, Male).

Returning for critical work

One respondent discussed how they had walked through chest deep water early on the Saturday morning in order to get to a seriously understaffed aged care facility where they usually worked. Although their manager had told them not to enter floodwaters they had done so anyway.

I walked to work in the morning and that was chest-deep water too. It had stopped running by then... we couldn't get staff in and the staff they had there, they put them in a motel just down the road. Then the road between the motel and work washed away so they couldn't get back and then the motel got flooded and apparently it's been condemned. So I rang my boss and there was three people there trying to look after 40 residents. She said, "Don't come in. Don't come through the water." But I've lived here all my life so I know the road pretty well. (Resident, South Murwillumbah, Male)

Moving cars and entering water

As discussed in section 5.2, the majority of respondents attempted to move their cars to flood safe locations prior to the flood. However, many ended up doing so too late and had to enter floodwater on foot in order to return to their homes. Some also described how they even encountered floodwater on the way to move their cars. One respondent recounted how she had moved her car to a location that she considered safe, however a neighbour warned her to move it up higher. While trying to do this she found the roads out were flooded and did not want to drive through, she therefore left her car and attempted to walk home. She found the floodwaters too deep and fast flowing and would have lost her step if a passer-by had not rescued her. On reaching home she found that the water was too deep and fast flowing for her to wade through,



but another neighbour kayaked her across. This story highlights the experience of many and that the act of moving your car and returning home to shelter, if not carried out early enough, will expose people to significant risks as they enter floodwaters.

It was just chock-a-block with cars. The road was already underwater near the motel, which end - the road ended up washing away. Cars were going through, but I said to [names friend], I'm not driving through it.... So we left our cars there and literally ran back. Because by then we couldn't get through Smith Street. It was well under water. Collins was under. We got back to Stafford Street and it was under water and running really fast. We thought, oh we'll go Prospero. Prospero was just like a raging river. It was just roaring along. So we came back to come back through Stafford. That was moving so fast, and she was frightened. I had her with me. I couldn't keep my balance trying to coax her through the water. It was sort of hip high. Some young man, I don't know where he came from, he came galloping through the water and scooped her up in his arm. I mean she's not a little dog. Scooped her up, grabbed hold of me, told [names friend] to hang on to the back of his shirt, and he pulled us through the water, put us on our feet and said, do you want me to see you home? Literally we ran - we raced all the way back down Wardrop Street because I thought, if Stafford filled up that quickly in 20 minutes, I didn't know what it would be like here. We came round the corner off Wardrop Street and the levy had broken in that half hour. The water was almost up to the laneway up there. This was just a sea. My fences were underwater, were already underwater then. Everything. There was just water as far as you could see. I was on the other side of it. I just said, I want to go home.... [names friend] heard me and she said, if you want to get there, I'll kayak you across. I was a bit - I said, oh I don't want to - I mean she's got a little toddler and - I said, I don't want to put you at risk because you'll get me across but you've still got to get back and home, and it's coming fast... she did it once to check the best way to go. Then dog and I, piled us on. She sat up the front as if she'd always kayaked. She's good at doing the lean. It was a bit bumpy but it was alright. Once we got onto River Street it was really flowing fast. It was - really was pushing us along.... She brought me to the steps. All my steps were pretty much underwater, three or four steps up. It was flowing really fast through here, just - it took me all my time to walk against it to get up the stairs. (Resident, South Murwillumbah, Female).

Exiting and re-entering

A few respondents discussed how they entered floodwaters a number of times in order to access their property or business. For some, this was because they had stayed for as long as they could and wanted to temporarily evacuate to a non-flood impacted residence in order to eat, sleep and shower. Once they had recovered they then travelled back to their property to continue with the



clean-up and salvage work. One couple discussed how they took turns to stay with their flooded business, with the husband taking the first shift and then swapping with his wife early on the Saturday morning.

I noticed it started going down, so I got out, put me work clothes back on and walked out to the roundabout and the wife picked me up and took me home for a shower and a coffee. So that was Saturday morning, and then about nine o'clock.. she dropped me off and I walked back in. It was still waist deep. (Business, Lismore, Male).

Helping others

A number of people entered floodwater to help friends, family and colleagues clean up. However, one respondent discussed how he regularly uses his boat in floods to travel around the Lismore area to offer assistance to those in need.

When it comes to moderate to major floods at about eight metres - I've got a 50-horsepower tinny... Once I get can from my property into the river then I can move to other places and start doing things... you've just got to watch out for the bridges... the Simes Bridge goes completely underwater and I've got to know that I've got enough water to go over the railings. Then I've got a track. It goes up the river, it goes across some playing fields and lands pretty much where the SES launch their boats... On the day of the Cyclone Debbie flood when it was peaking in the morning my daughter had a ticket to get on an aeroplane in Ballina and fly to Sydney for her cousin's wedding. I managed to - in the midst of a major flood - get her into a boat, get her up the river and get her to dry land. I'd arranged for a friend to pick her up in a car, drive her to Ballina, put her on her flight and fly her to Sydney.... I bump into the SES when I'm out there and they just wave... The things I'm doing are arguably supplementing and relieving their load so that's all good. Resident, North Lismore, Male.

5.6 After the floods: Reflections and lessons

In relation to their sheltering, or evacuation experience, respondents were encouraged to think about anything they had learnt and would do differently next time and any potential improvements that could be made in emergency management policy and practice.

More informed – Being proactive

As noted in section 5.1, the majority felt that the information and warnings had not been adequate. In particular, people discussed how they had not been aware of the magnitude of the flood. However, others noted that the information was there but they had not been proactive in searching for it or did not have the ability to interpret it. Although a number of people relied successfully on informal local information a few discussed how the blasé attitude of some residents had led to inaction on their part.

I think the main thing for me was that I just felt like I wasn't proactive enough. I just - I didn't equip myself with enough information. In future I'd be getting onto the social media, getting onto news sites and... I would make a point of finding out a lot more about what was going on and joining the dots myself, rather than listening to other people - because I think you can get very complacent... people were like oh, this is just going to be another one of those. (Resident, South Murwillumbah, Female).

Freedom to choose: More tailored information around evacuation and sheltering-in-place

It was discussed by many that people needed more information in order to make informed decisions around sheltering or evacuating. Although it was understood that evacuation was the preferred option for the SES, they felt that information and advice should be framed in terms of self-responsibility with people informed of the challenges and what could be done to make it safer; be that evacuation or better preparation to shelter-in-place. One resident noted how there used to be more information provided over the radio related to preparing to shelter and stocking up on food. Others discussed wanting more information about why they should evacuate, with some questioning the rationale behind mass mandatory evacuation. On the whole respondents wanted the freedom to choose their response strategy, however, they wanted to make an informed decision. One respondent discussed the fear and anxiety, that many others had also noted in their interviews, they had felt while sheltering because they were concerned about the structural integrity of their home or business. They stated that greater information to assist people to better understanding their risks, and judge if their shelter was structurally sound and high enough, would ease the anxiety of many and reduce the calls for rescue.

Well maybe information packages about what you need to stay at home better, what might happen, what you need and so on. I understand their position that if people can



all get out now they don't want to have to come and get them all by boat. I think it'd be alright to say we recommend evacuation but if you choose to stay that's your choice, you might be there for the duration of the flood and these are the precautions you should take... instead of an evacuation order, an evacuation recommendation with an explanation, possible consequences and challenges and what they need to do.

(Resident, North Lismore, Male)

There has to be more communication. It has to be by radio... I think people have to be told. Let's be honest. The radio used to tell us, go and stock up. Get your long life milk. Get your bread. Get whatever you need. Because you might not get some more.

(Resident, South Murwillumbah, Female).

Yeah I don't know, what is it that people, why do they want people to evacuate? I suppose that's what I'd like to know... I can make an informed decision, but I need to know what I'm dealing with here. I don't understand why, why do they want people to evacuate? I don't understand that. If their houses aren't going to go under, why get thousands and thousands and thousands of people to evacuate when only a small handful might actually have water coming in their house and they should ordinarily know. It's a lot of imposition just to be on the safe side, like on the extreme safe side, in case your house floats down the river, which no one's house did... I think people make good informed decisions if they've got the best information available. (Resident, North Lismore, Female)

A gentle outreach. Gentle, polite, calm way of doing things. There was just that attitude of, you've got to get out, you've got to get out. Who do you think you are to tell us that we have to get out when we've been through this all before and we know when we've got to get out. We know when the situation... and what we can handle. We know. Just don't bully. (Resident, North Lismore, Female)

Respondents also discussed the need for more locally specific information, as the flood risk, and therefore the necessary or appropriate response, was not equal within the catchment. This was particularly the case with respect to Lismore where respondents noted that much of the warnings and advice had been generic, however the flood experience was quite different depending on your location. One business owner who was frustrated at being evacuated too early and losing stock that could otherwise have been lifted noted that the SES should consider two levels of warning, with residents evacuated first.

That's one of the things that we mentioned to the SES when we were there, was that when they talk about North Lismore they talk about it as North Lismore, as being this homogenous group, but some people live on the Wilson River, some people live on the wetland and some people live on Leycester Creek. They're three different experiences of flooding, really quite different. The people that live on the other side of Terania Street would only ever see a major flood. (Resident, North Lismore, Female)



I'm not council, so that's one of those things that I'd like to see us deliver is actually coding so that when you hear the radio say, the green zone, you can find that information on a rates notice to tell you what your zone is. You're going to be inundated. So it's being - having relative information to where you are and not just hearing a flood level and going, well what does that mean to me? Business, South Murwillumbah, Male.

One respondent discussed how the difference in the views of the community, who wanted to stay, and the SES, who wanted people to leave, meant that there was a poor relationship between the two:

People have always stayed. That's been, I think, highly contentious between us and the SES over the 20 years I've been here, because in the early days of talking to the SES, the SES was you've got to go. You've got to go. We're not going to rescue you. When we say evacuate you've got to go. Because there's a culture of people staying at home and looking after their property, it's meant that people don't actually want to have a relationship with the SES because their view of what we should do is not our view of how we're going to operate. It's meaningless really because their whole initiative is to - their whole approach is to say evacuate. It would even help if their warnings were about pack up, you should be packing up now. Yeah, it's really - look, personally, I think it's a really great lesson in permanence, in being just really - and not having attachment to things. It's really a good practice at that - and figure out what's important. It's a really good community down here. It's a really connected community. (Resident, North Lismore, Female.)

Preparedness to shelter

A number of people in Lismore discussed how the power outage had been unexpected and very difficult to cope with. The main challenges included being unable to cook and food becoming stale. People discussed how they would plan in future to have an alternative cooking source and would think more about the food that they bought. Losing power to mobile phones and laptops was also a significant challenge with people planning to stock up on additional charging devices for a future event. A few respondents from Lismore noted how they had bought a generator since the floods or intended to purchase one. One resident in North Lismore discussed how they used their two-way radios to communicate and that they planned during a future flood to position a few more radios with friends around Lismore.

For the majority, access to their usual supply of tap water was secure for the duration of the flood. However, a number of respondents discussed how they

would continue to plan to store water in future floods. Others noted the need for torches, candles and standard batteries. Some worried about losing sewage facilities, or access to those facilities if they had evacuated vertically, and one discussed how they would prepare a bucket with sawdust to use as a temporary toilet.

No. I think just making sure you've got food and making sure you've got an alternate (sic) cooking source and you've got food that you could cook on that alternate (sic) cooking source, and recognise you might lose power and have something planned for that. I think, after that, it's good. You probably - a bucket of sawdust, a bucket with sawdust in it that you can use for a toilet if you need to, if you have to stop using your toilet. I think that's a good idea. You have to - I think you have to think: probably I might not have a toilet. I might not have water. I might not have power, so having an alternate (sic) plan for all of those things is a good idea. (Resident, North Lismore, Female)

I never needed the water in the bath, but I think that's good advice. Also phone chargers, those little... [external phone batteries]... Genius. Someone lent me one and that was really, ,really good, because that's your - to me that was the most important thing. I knew I wasn't going to starve, but yeah having contact, maintaining contact to the outside world. Watching the little bars go down on my phone was like oh my god it's heartbreaking. (Resident, North Lismore, Female)

Yeah, we'll know next time. Actually, we'll know to store some more water... we didn't have enough water filled up, and we ran out. (Resident, South Murwillumbah, Female)

I have two-way radios too that I could use. That's something I'm thinking of doing next time is putting a few line-of-sight two-way radios around North Lismore because I've got two or three of those I use boating so I could put them at friends' houses (Resident, North Lismore, Male)

Psychological preparedness

One respondent discussed the need to have a plan in place to manage fear whilst sheltering. Although it was clear that a number of people had gone through a certain amount of stress, no others verbalised that it would be something they would have to deal with when sheltering again:

So I guess if you're going to stay I guess have some kind of plan in place to manage that, to manage the terror and the fear, because that's something I wasn't prepared for. (Resident, North Lismore, Female)



Cars and contents

The majority of respondents commented that they wished they had started lifting belongings and stock up earlier. For many this meant that they were still lifting when the water arrived. For some this meant it was too late to leave, if that had been their plan, or that they ended up continuing to work while wading through floodwaters. Almost all of the respondents discussed how they would plan to begin lifting earlier next time and would also reduce the storage under their properties. A few discussed having things stored in large plastic boxes that could be easily moved and would be waterproof if it was raining. Some planned to make more permanent adaptations such as relocating their laundry facilities upstairs or keeping extra stock off site in flood safe storage facilities.

I would just have things under the house that I can carry upstairs. I won't ever, ever have anything stored under there. It will just be a big empty space. Get my car out, and there's nothing to worry about. (Resident, South Murwillumbah, Female)

We've sort of stopped how much we carry on site now. We carry a lot more in the sheds instead of having it here, so it's a bit less work. But we wouldn't be a bit more organised. We'll still do the same thing, only do it quicker, in and out. (Business, North Lismore, Male)

I'd certainly be more prepared and I've since bought a pallet jack, which I've got a forklift, but inside the shop I intend to store my stock as much as I can and my display stands on a pallet style arrangement where I can wheel them down to my lift and throw things on there and move it out. (Business, South Murwillumbah, Male)

Similarly, a number of people who did not move their cars in time, or did not move them high enough, noted how they would do so earlier and higher next time. Identifying other safe locations for people to park was considered important as many of the usual spots were congested. People also discussed having a more organised system for bringing people back to their homes after dropping their cars off. This would save significant time and therefore the chances of people having to enter water to return to their properties, enabling them to get home and continue preparing.

Probably one of the big mistakes people make is not getting cars out in time and gambling, just gambling that it won't come in when it does. It can always be higher than the prediction. It should be no surprise. (Resident, North Lismore, Male)

Take my car off somewhere higher. But nobody did. All these cars – there was about 20 cars here. What people have traditionally done here is put their cars up at Tweed Valley



Way. That gets about that much water and they washed off it. I don't know how many cars got wrecked. Hundreds. (Resident, South Murwillumbah, Male)

And that's one of the biggest things coming out of all the forums, is that where do we take our cars? Like people park on the bridge, but there's only so much parking that can be on the bridge. Like 100 cars got lost. So they've talked about there's a Seventh Day Adventist church over there, parking up there, but because that gets cut off quickly, one, you've got to get there quickly, and two, how do you get back once you've parked there. So there's all these problems and issues that need to be looked at. (Resident, Tumbulgum, Male).

Pets

A number of respondents noted that their plans to shelter had been influenced by their pets or livestock. As pets were not welcome at many of the evacuation centres, thinking about what they would do in the future was a serious consideration. For some, this meant working out where they could evacuate their animals, for others it was around more practical solutions to shelter with them at home. In some cases, the serious nature of the flood had not become apparent until it was too late to make appropriate measures to save pets, such as birds, bees, and chickens, that cannot easily be carried into the house. They were therefore determined to be more prepared for future flooding.

Yeah, an arrangement for your pets. Where are you going to take your pets? If you're going to have a flock of chickens and all that stuff, what are you going to do with that? (Resident, North Lismore, Female)

My advice to myself for next time is build a raft for the chicken pen (Resident, North Lismore, Female)

From our point of view to make the event less traumatic then you've got to make a decision on what you do with these birds. That's part of the problem here. (Resident, South Murwillumbah, Male).

Vertical/self-evacuation

A few respondents discussed being better prepared for vertical evacuation or self-evacuation. This involved ensuring they had access to the loft space, with ladders and also a way to get out and on to the roof if needed. Others talked about ensuring that they had their boat in the right position or other crafts such as canoes and paddleboards to self-evacuate if sheltering became untenable.



One or two also planned to ensure they had food, water and toileting facilities if they undertook vertical evacuation.

For me I would like to have access to - have some form of ladder hand... My husband's a roofer would you believe, so it wouldn't be any great problem for him sitting on a roof, but we just had no way to access the roof. (Resident, Tumbulgum, female)

I mean I've thought about it a lot since because I've never really been prepared to go to the loft, but when the water came so close it made me - mm, probably should start to have a really clear plan about that. I think, actually, part of it would be to have some big - those big garden bags and chuck some clothes in them and do that sort of thing. At least have clothing to wear and have some towels and things like that that you take upstairs. (Resident, North Lismore, Female)

I guess we've always - I mean in our craziness we think oh well, nobody's going to - if it is really big and we finish up in the loft, nobody's going to get us out of here, so we actually do need to be able to survive in the loft until the water goes down. You don't - if it's that bad you don't have to live like a king. You just need to be able to stay warm and have some food that you can eat. You're not going to starve to death in a couple of days, as long as you've got water. (Resident, North Lismore, Female)

I'd probably get a canoe next time, you know it would be not bad, if worst came to worse and I had to do it again, I'd probably like to have a canoe just tied up to the back. Because there were a few things floating around in water that I could of gone to get once it all settled down a bit. (Resident, North Lismore, Female)

So I guess I've got kayaks at home and I guess I'd be storing my kayaks at work in future. I guess I'd stay here given that I've got so much potentially dry space (Business, South Murwillumbah, Male).

Consider evacuation next time

The majority discussed how they planned to shelter in future floods; however, a minority stated that they would consider evacuating in a similar event, although they would probably wait to see how bad it would get first. More women than men discussed the possibility of evacuating in the future, and some of those who had sheltered with young children did not wish to do so again. This links to the discussion above, in relation to stress and fear, with women more commonly communicating that they had suffered, particularly those who were isolated. Some also mentioned their animals and the need to ensure they were safe.

I'd probably give the option to my wife and my daughter. Maybe if they wanted to leave and go and stay somewhere else. (Resident, South Murwillumbah, Male).



I think I'd pack up and leave I think and just let the water take its toll. Because the wife was genuinely scared about one o'clock in the morning... (Resident, South Murwillumbah, Male).

I wouldn't take the chance with my dogs. If it was definitely a cyclone flood or a cyclone coming down that could form into another one, definitely would leave and take my dogs. (Resident, South Murwillumbah, Female).

I would evacuate. I won't stay. I'm too scared to stay even if my husband will be home. He will stay home but I will have to leave. (Resident, South Murwillumbah, Female).

I would just head home, get everything as high as we can and I'd evacuate immediately. I'd go up to my in-laws' house and spend a few days there. It's just not worth that anxiety, I mean as exciting as it was and seeing mother nature in all her glory, it's just not worth the added stress. At the end of the day material goods can be replaced, I mean life can't. I would look at it differently, certainly, and I would have a bit more planning go on in that event... I'd err on the side of caution and leave. Definitely. (Resident, South Murwillumbah, Male).

It would depend on how old my kids were and things like that as well. Yeah, I think that was the main concern at that point. If it was just myself and my husband in the house, no, I probably wouldn't do anything differently. But if it say happens again next year and my kids are still little, I don't want to be in a situation where they're having to get onto the roof of a house, or rescued by a chopper. (Resident, Tumbulgum, female).

Disagreements on evacuating or sheltering next time were discussed. With one couple, who had sheltered this time, undecided on their future strategy. Although the wife wanted to evacuate she did not want to leave her partner at their property alone. Although she had found the experience of sheltering traumatic, she knew that worrying about her husband through a future event would be equally stressful. She therefore stated that she would likely shelter, even though she didn't want to.

If I evacuated and he didn't, he'd know I was safe, but I wouldn't know if he was safe. I don't think I'd want that anxiety. It was high anxiety as it was, for me anyway. I know he's all the legend, and he acts all calm and collected, but I think he was worried too. Yeah, but I don't know... I might have to drag you out next time. A shotgun evacuation. (Resident, South Murwillumbah, Female).

As discussed in section 5.3, many respondents, even those who had already lifted their contents, stated that they had stayed because of a need to remain with their home / business and contents. However, one respondent noted that once everything was lifted he did not feel there was any use in being there. Therefore, next time he would ensure all the contents and valuables at his



business were elevated and then he would evacuate. He noted that it was important to be there to clean as soon as the floodwater receded, however he didn't feel the need to remain at the property while the flood peaked.

I think next time if I'm - if it's going to flood I'll make sure that everything of value's up at a height that - I think we worked out how high it can go and I'll just bail. I won't bother staying here. You can't achieve much. (Business, South Murwillumbah, Male).

Discussions around sheltering or evacuating in the future also centred around people's interpretations of the risks they had faced in the flood and perceptions of future risks. A few respondents in Murwillumbah, who had been worried during the flood about the water rising into their elevated properties, had since found out that it would have to be a considerably bigger flood for this to occur. The water would first have to overtop the levee that protected the town, which would release water and actually lower the level at their properties. This increased knowledge of the likely flood behavior in town, assisted in their mental recovery and planning for future floods.

Probably, yeah. Probably. I've learnt since talking to [names council worker] but also [names informed local] that the water won't ever come in - it would be a really, really big flood if the water comes in my house, because we had 10 centimetres before it breached the town wall. If it came up another 10 centimetres I still have about 20 centimetres before it hits my floorboards, so once it goes over the town wall, the levels here drop... So that's kind of a comfort, yeah. But no I don't want to go through it again. Logically I can tick off, I'm quite safe. The water won't come in the house. (Resident, Murwillumbah, Female).

Respondents also discussed the ferocity of the water and the large pieces of debris (cars, boats, trees) that had been washed against the foundations of their homes. Some were worried that in a large future flood the integrity of their building could be undermined and therefore they did not want to shelter in the future.

But I wouldn't want to do it again. It really frightens me living here now. Despite logically I believe that water won't come in the house, cars got washed down the river. I think if they come ashore on my south side, or there was a huge tree just over here, just the other side of my fence line. A huge tree, the root ball and all the trunk and the branches that came ashore on my north side, if that had come ashore on the south side, it would have just rammed my house. Then I don't know what I would do, once the walls are breached and there's water roaring in. I mean how do you come back from that (Resident, Murwillumbah, Female).



Being alone was also a consideration, with respondents noting that they would be more inclined to shelter in the future if other family were present. However, they would probably evacuate if alone. One South Murwillumbah respondent discussed how she and her husband, who had recently passed away, had sheltered through many floods together. She had thought she would do the same this time but had rapidly felt isolated and afraid and had been rescued by the SES. Others noted that as they got older they would be less likely to shelter.

...don't think I'd stay on my own. I don't think I'd want to be here on my own because sometimes you need strength... physical strength, yeah. I think because we're all here, then, physically, we're together, we're able to do things that we might need to do at times.... I wouldn't like to be old and fragile in a home in a flood. (Resident, North Lismore, Female)

Maybe if it got to look like it - as big as that one, because we're both getting on, we might consider it if they came to rescue us. (Resident, South Murwillumbah, Female).

But I think I probably would go next time. When we had all the other floods I was a lot younger then obviously, and had a husband alive then too, so it was a bit different. (Resident, South Murwillumbah, Female).

Others mentioned the inconvenience of being without power and not having enough food or the ability to cook. Rather than planning to shelter without power as many others were doing, they would rather evacuate.

Next time I will evacuate as didn't like being without power... everything in the fridge went off and I couldn't cook it (Resident, South Lismore, Female)

Preparing for the worst – dealing with uncertainty

Some interviewees discussed the problem of preparing for an uncertain future. One business owner reflected on how there were some changes that they could make to make them more flood resistant, but was uncertain as to whether the investment worth the saving. Others noted the time investment in shifting stock, only for the majority of cases to eventuate to small floods. Balancing the risk against the cost is difficult. Some noted that with climate change the likelihood of bigger floods had increased and that this flood was a taste of the future. It was also noted that people had become too used to preparing for small floods and that preparing for the worst rather than the usual was the better approach anyway.



Well, like I said it's probably to expect the unexpected... even though it's been 50 years and it's never gone over our knee and then you get another metre on top of that was a bit of a shock. So, we probably after this one it's been a wakeup call to prepare for the highest level possible. Just preparation. We've been through it probably - well in 50 years probably been through about 10 or 12 floods we knew what to do at the original, but this one was a bit too high for what we are used to... it's a wakeup call to prepare for the worst. (Business, South Murwillumbah, Male).

I can make the precautions downstairs and have something organised where I can get the machinery up and things like that, like a pulley or a lift or something that but it's once in every 100 years. It could happen twice in a year. That's the trap. When's the next one? (Business, South Murwillumbah, Male).

We've had 17 occasions where they've told us to evacuate and this is the first one [where serious flooding occurred], I would have spent - preparation for leaving a shop or a business is probably five hours to move stuff. So I would have to have spent five times 17 moving everything for only the one occasion, to have been a real life drama. So it's very hard, you've almost got to leave everything to the last minute to find out whether or not it's the right time to move (Business, South Murwillumbah, Male).

A couple of respondents were so traumatised by their experience of sheltering that they wanted to sell their properties and move. One homeowner, who lived near the river, was aware that their property was eligible for the voluntary purchasing scheme and was seriously considering this option as they did not want to experience another large flood.

We are now thinking about moving and selling this house. We have lived here for 30 years but my husband is terrified with shock. Resident, South Murwillumbah, Female.



RESEARCH OBSERVATIONS

Awareness, information and warnings

Awareness of flood risks varied. As shown in the survey findings, although the vast majority of respondents were aware of the general risk of flooding, many did not expect their property to get flooded (Section 4.2). Many felt that the information and warnings they received did not provide accurate, locally-specific, and timely information, and this affected their preparedness and their options, particularly in terms of evacuation (Section 4.2, 5.3). Specific suggestions and issues for consideration include:

- Many identified a need for more locally specific information, for example, through local radio stations.
- The communication of flood risks in ways that enable residents and businesses to understand the flood risk for their town, street, and property. For instance, some did not realise that the phrase 'low-lying areas' applied to their home or business and consequently disregarded the message.
- Greater use of local knowledge and expertise when providing official flood warnings and advice was discussed by many.
- Informal warnings and information were important for many residents. This includes advice from long-term residents, and observing 'environmental cues.'
- The predominance of online information sources (e.g., BoM and SES websites, Facebook pages) was an important tool for many; however, several expressed concerns about relying on online information. Power cuts were a particular concern, as were elderly residents who were less likely to use computers or cellphones.
- The notion of 'the boy who cried wolf' was discussed by many residents and businesses who noted that 'warning fatigue' meant the flood and evacuation warnings in this event were taken less seriously.
- The timing of evacuation warnings and orders was an important issue, as many received these warnings after roads were already flooded.
- Some felt that evacuation orders were too 'bossy' and 'panicky' – particularly in a context where residents were already 'flooded in' and a culture of sheltering exists.



Preparedness

The long-term level of preparedness and the extent to which residents and businesses were able to prepare on the day of the flood varied significantly (Section 4.3, 5.2). Some residents and businesses had formal plans or a well-known set of steps that they take to prepare for floods and had early suspicions that a large flood would occur (generally based on local knowledge) were able to prepare methodically and thoroughly. Others realised the imminent flood risk much later and prepared under much different conditions. Key points for consideration include:

- For some residents, work commitments affected their ability to prepare their homes. Many people also continued to prepare as the flood began, or upon discovering floodwater near or on their property. The timing of official flood warnings are particularly important for enabling staff to leave work to prepare, and for providing businesses enough time to pack up and ensure that staff safely get home.
- Many people described providing or receiving help from others to raise their belongings or move cars. This was particularly important for elderly residents. Others noted that they simply had to 'let go' of some possessions because it was not possible for them to lift them in the time available and continue caring for children or other household members.

Sheltering in place: Motivations

A culture of sheltering exists in the Northern Rivers area with people having sheltered before in numerous floods (Section 4.5, 5.3). This should be recognised by the SES in order that they can work collaboratively with the community to reduce flood risks.

- The height of liveable spaces was a dominant reason people felt safe to shelter. People were less aware of the structural integrity of their homes. People require information in order to determine if their property is structurally sound and if not what changes are necessary to make it safer in future floods. This would also motivate evacuations if people realised their homes were not safe in some potentially high velocity areas.



- People wished to be at their properties as the water began to recede in order to clean up. Protecting property from looters and needing to maintain livelihoods were also important factors. The SES will need to work with people in order to ensure people can either shelter safely or return safely as flood waters begin to recede. Working with the police to maintain security in evacuated areas will also reduce the need to shelter.
- People who have a disability, are not mobile, or suffer from mental health issues are unlikely to evacuate. Alternatives to large evacuation centres are needed for some vulnerable population groups.
- Pets were also an important consideration; many residents cited their pets as a reason for staying at home, or for not being able to use evacuation centres.
- Some people only became aware of the flood once they were already 'flooded in' and evacuation was no longer a safe option.

Sheltering in place: Experiences

Experiences of sheltering varied. Whilst some were fairly comfortable, for many others it was a stressful and scary experience (section 4.5 and 5.4).

- Whilst sheltering many people actively monitored the flood and weather conditions and the impacts on their property, and many made an effort to save or secure belongings – particularly as the flood began. For some this was a deliberate strategy for responding to the flood and the inherent uncertainty with flood height predictions, for others, this was a reflection of limited warning times.
- Some identified a social culture around sheltering, and described socialising with neighbours during the flood. Many reflected on the importance of having communication and information channels, and the stress and anxiety associated with losing phonedlines and/or electricity.
- Key challenges identified include:
 - Lack of sleep and sustained anxiety throughout the event;
 - Uncertainty as to how high the water was going to rise and whether vertical egress or rescue would be possible, and the stress associated with questioning whether any help would be available if it were needed;



- Physical isolation due to flood waters was stressful for some, and particularly for those with limited provisions or medical supplies;
 - Being unable to access medical services for those with injuries or illnesses;
 - Caring for vulnerable household members. In some cases, this involved prioritising the safety of others (e.g., children), in others, it involved caring for stressed or panicked family members;
 - Caring for pets and other animals;
 - Coping with power cuts – particularly prolonged ones.
- In addition to these challenges, ongoing stress associated with the flood remains an important issue. Some described 'running on adrenaline' during the flood itself, and only feeling stressed afterwards.
 - The sounds, smells, and sights of the flood left a strong impression on many interviewees.
 - Several respondents reported self-evacuating or being rescued by the SES or by a neighbour. Their narratives illustrate the dangers that are attendant with staying at home and the risks taken to reach safe(r) locations.
 - Before calling the SES, seeking to be rescued, or even accepting an offer to be evacuated, many carefully reflected on whether they (i) actually needed to leave their home, (ii) whether an SES boat could safely reach them, (iii) whether they really needed to use the SES, and (iv) what to do with their pets. This is suggestive of an awareness of limited emergency resources during floods and a desire to be self-sufficient.

Moving around during the floods: entering water away from property

- People entered deep water on foot, in boats and other watercraft in order to return to their homes and businesses to clean up, protect their contents, attend to critical work and assist others. A number of people left their properties and then returned or took shifts protecting and cleaning up businesses. Entering water multiple times. The SES will need to work with people in order to ensure people can either shelter safely or return safely as flood waters being to recede.
- A number of people who moved their vehicles late, encountered deep and fast flowing water as they attempted to return. Some also drove through



water to get their cars to higher ground. Improved warnings with information about where people should move their cars to, and assistance transporting people back to their homes, would reduce the risk of people entering water.

After the floods: Reflections and lessons

- People want large and catastrophic floods to be better communicated in order that they are distinguishable from average and usual floods.
- People want the freedom to be able to choose between evacuation or sheltering. They want more timely and localised information in order to make informed decisions.
- Planning for power outages in future floods was common, particularly in Lismore, with people preparing alternate cooking sources, additional batteries and charging devices.
- Only one respondent discussed the need for psychological preparedness for sheltering in future floods. However, given the trauma experienced by many this is likely to be a significant issue that needs planning for.
- People planned to reduce storage under their homes, start lifting things and move their cars earlier.
- A few stated that they would evacuate in future as they had found the experience too challenging and traumatic. This was particularly the case for those who had sheltered on their own, some women, the elderly and those who had sheltered with young children.

Therefore, when managing the residual risk of already existing towns and developments in floodplains, the SES will need to work with communities in order to identify the issues in current warnings and develop improved strategies. The findings from this project indicate that a large percentage of residents and businesses will continue to shelter in place during floods. The reasons for sheltering are diverse and are often influenced by personal capacities, resources, and responsibilities, as well as the timing of evacuation warnings. Information that enables residents and businesses to effectively plan and prepare for the realities of sheltering, or to recognise that early evacuation is a



better strategy and to take steps to ensure that evacuation is possible, is needed.



REFERENCES

- Alesch, D & Siembieda, W 2012, 'The role of the built environment in the recovery of cities and communities from extreme event', *International Journal of Mass Emergencies and Disasters*, vol. 30, pp. 197-211.
- Allan, P, Bryant, M, Wirsching, C, Garcia, D, & Teresa Rodriguez, M 2013, 'The influence of urban morphology on the resilience of cities following an earthquake' *Journal of Urban Design*, vol. 18, pp. 242-262.
- Ashley, S & Ashley, W 2008, 'Flood casualties in the United States', *Journal of Applied Meteorology and Climatology*, vol. 47, pp. 805-818.
- Austin, J 2013, 'Shelter from the storm: companion animal emergency planning in nine states', *Journal of Sociology and Social Welfare*, vol. 4, pp. 185-210.
- Australian Bureau of Meteorology, 2017, *Climate Data Online*, viewed 11 August 2017, <http://www.bom.gov.au/climate/data/index.shtml?bookmark=136>
- Australian Institute of Disaster Resilience, 2009, *Manual 22 Flood Response*, pp. 1-78.
- Baker, E 1979, 'Predicting response to hurricane warnings: a reanalysis of data from four studies', *Mass Emergency*, vol. 4, pp. 9-24.
- Christie, N, Griffin, L, Chan, N, Twigg, J & Titherage, H 2016 'Private needs, public responses: vulnerable people's flood-disrupted mobility', *Disaster Prevention and Management*, vol. 25(2), pp. 244-260.
- Coats, L, 1999, 'Flood fatalities in Australia, 1788-1996', *Australian Geographer*, vol. 30(3), pp. 391-408.
- Cools, J, Innocenti, D & O'brien, S 2016, 'Lessons from early flood warning systems', *Environmental Science and Policy*, vol. 58, pp. 117-122.
- 'Cyclone Debbie: Floodwater crisis hits Lismore' 2017, *The Daily Telegraph*, viewed 8 August 2017, <http://www.dailytelegraph.com.au/technology/cyclone-debbies-wind-to-wreak-more-disaster-in-queensland-and-nsw/news-story/792a232bc2bf1ab0d8c389405dd81c4e>
- Drabek, T 1999, 'Understanding disaster warning responses', *The Social Science Journal*, vol. 36(3), pp. 515-522.
- Drobot, S, Benight, C & Grunfest, E 2007, 'Risk factors for driving into flooded roads', *Environmental Hazards*, vol. 7(3), pp. 227-234.
- Farmer, A, DeYoung, S & Wachtendorf, T 2016, 'Pets and evacuation: an ongoing challenge in disasters', *Journal of Homeland Security and Emergency Management*, vol. 13(4), pp. 1-13.
- Gozu, K, Morooka, Y, Terai, S & Yamada, T 2016, 'A study of timing for providing information affecting evacuation decision-making at flooding', *Procedia Engineering*, vol. 154, pp. 861-867.



- Grow Sun, L 2012, 'Disaster mythology and availability cascades', *Duke Environmental Law and Policy Forum*, vol. 21 (3), pp. 73-92.
- Handmer, J & O'Neill 2016, 'Examining bushfire policy in action: preparedness and behaviour in the 2009 black Saturday fires', *Environmental Science and Policy*, vol. 63, pp. 55-62.
- Haynes, K, Coates, L, Leigh, R, Handmer, J, Whittaker, J, Gissing, A, Mcaneney, J & Opper, S 2009, 'Shelter-in-place' vs. evacuation in flash floods', *Environmental Hazard*, vol. 8, pp. 291-303.
- Howard, J 2017, 'Record breaking Tweed flood', *Tweed Valley Weekly*, 30 March, viewed 10 August 2017, <http://www.tweedvalleyweekly.net.au/flood-warning-issued-tweed-river/>
- Jonkman, S & Kelman, I 2005, 'An analysis of the causes and circumstances of flood disaster deaths', *Disasters*, vol. 1, pp. 75-97.
- Kure, S, Jibiki, Y, Iuchi, K & Udo, K 2016, 'Overview of super Typhoon Haiyan and characteristics of human damage due to its storm surge in the coastal region, Philippines', *Journal of Coastal Research*, vol. 75, pp. 1152-1156.
- León, J & March, M 2014, 'Urban morphology as a tool for supporting tsunami rapid resilience: A case study of Talcahuano, Chile', *Habitat International*, vol. 43, pp. 250-262.
- Levy, M & Mitchell, G 2017, 'NSW floods live coverage: Lismore, Northern Rivers hit in Cyclone Debbie aftermath', *The Sydney Morning Herald*, 31 March, viewed 10 August 2017, <http://www.smh.com.au/nsw/nsw-floods-torrential-rain-hits-lismore-northern-rivers-region-after-cyclone-debbie-20170330-gvahow.html>
- Lindell, M & Perry 1991, 'Understanding evacuation behaviour: an editorial introduction', *International Journal of Mass Emergencies and Disasters*, vol. 9(2), pp. 133-136.
- Lismore City Council, 2014, *Lismore Flood Management Risk Assessment Plan*, pp. 3-46.
- Lismore City Council, 2014, *Lismore Flood Management Risk Assessment Plan 2014 – Glossary and Appendices*, pp. 3-24.
- Liu, D, Li, Y, Fang, S & Zhang, Y 2017, 'Influencing factors for emergency evacuation capability of rural households to flood hazards in western mountainous regions of Henan province, China', *International Journal of Disaster Risk Reduction*, vol. 21, pp. 187-195.
- Lowe, S, Rhodes, J, Zwiebach & Chan, C 2009, 'The impact of pet loss on the perceived social support and psychological distress of hurricane survivors', *Journal of Traumatic Stress*, vol. 20, pp. 244-247.
- Maghelal, P, Li, Xiangyu & Peacock, W 2017, 'Highway congestion during evacuation: examining the household's choice of number of vehicles to evacuate', *Natural Hazards*, vol.87(3), pp. 1399-1411.
- 'NSW Flooding: Lismore ordered to evacuate, Murwillumbah residents stuck on roofs' 2017, ABC News, viewed 9 August 2017, <http://www.abc.net.au/news/2017-03-31/floods-hit-northern-nsw-with-heavy-rain,-winds,-floods/8402788>



- Paul, B & Dutt, S 2010, 'Hazard warnings and responses to evacuation orders: the case of Bangladesh's cyclone sidr,' *The Geographical Review*, vol. 3, pp. 336-355.
- Paterson, A 2017, Lismore floods, did you stay or did you go? *The Northern Star*, viewed 12 August 2017, <https://www.northernstar.com.au/news/lismore-floods-did-you-stay-or-did-you-go/3202256/>
- 'Regular floods are now history' 2012, *Tweed Daily News*, viewed 9 August 2017, <http://www.pressreader.com/australia/tweed-daily-news/20121201/282419871550830>
- Roads and Stormwater, Tweed Shire Council, 2017, *March 2017 Flood Report*, pp. 1-17.
- Schwecke, M, Thomson, R & Griffin, M 2015 'Risk to life policy – shelter or flee? A case study in Pittwater Council, 2015 Floodplain Management Association National Conference, viewed 9 August 2017, <http://www.floodplainconference.com/papers2015/Melanie%20Schwecke.pdf>
- Sharwood, A 2017, '900mm in 48 Hours, And Other Astonishing Flood Facts, Graphs And Images', *Huffington Post*, 31 March, viewed 9 August 2017, http://www.huffingtonpost.com.au/2017/03/30/900mm-in-48-hours-and-other-astonishing-flood-facts-graphs-and_a_22019347/
- Smith, J, Brown, S & Dugar, S 2017, 'Community-based early warning systems for flood risk mitigation in Nepal', *Natural Hazards and Earth System Sciences*, vol. 17(3), pp. 423-437).
- Tierney, K 1999, 'Reviewed Work(s): Hurricane Andrew: Ethnicity, Gender and the Sociology of Disasters by Walter Gillis Peacock, Betty Hearn Morrow and Hugh Gladwin, *American Journal of Sociology*, vol. 104(5), pp. 1557-1559.
- Tierney, K 1999, 'Reviewed Work(s): Hurricane Andrew: Ethnicity, Gender and the Sociology of Disasters by Walter Gillis Peacock, Betty Hearn Morrow and Hugh Gladwin, *American Journal of Sociology*, vol. 104(5), pp. 1557-1559.
- Todd, N, Craig, M, McKenzie, D & Brennan, A 2017, 'Flood Wrap: Thousands evacuated, river to peak on high tide', *Tweed Daily News*, 30 March, viewed 9 August, <https://www.tweeddailynews.com.au/news/flood-wrap-thousands-evacuated-river-to-peak-on-hi/3161230/#/0>
- Tweed Shire Council, 2012, *Tweed Valley Floodplain Risk Management Plan – Draft for Exhibition*, pp. 1-42.
- United Nations (UN) 2005, *UN: Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters, Resolution 2*, World Conference on Disaster Reduction in Kobe, Japan, 18–22 January 2005, viewed 11 August 2017, <http://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf>
- United Nations 2015, *UN: Sendai Framework for Disaster Risk Reduction 2015–2030*, Third UN World Conference in Sendai, Japan, viewed 11 August 2017, https://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf

Appendix 1: Questionnaire



Community experiences of flooding in northern NSW after cyclone Debbie

Welcome

We invite you to participate in a survey about your experience of the floods following tropical cyclone Debbie on March 31st. We are inviting residents in the Richmond, Brunswick and Tweed river catchments. We are interested in your experiences of evacuating and / or staying with your property during the floods.

We recognise that many families have experienced significant losses as a result of the flooding and we sincerely apologise for any distress receiving and completing this survey may cause. If you require support, you can access free counselling and support services through Lifeline (ph: 13 11 14) or the Flood Support Line (available Mon-Fri, 8am-6pm, ph: 1300 137 934).

This survey is being conducted by Risk Frontiers at Macquarie University in conjunction with the NSW State Emergency Service (SES) and the Bushfire and Natural Hazards Co-operative Research Centre (BNHCRC). By telling us about your experience, expectations, and knowledge of flooding, you will be making an important contribution to improving community safety during extreme flooding events. The results of this survey will help improve community engagement and emergency management policy, and will be available publicly.

Participation in this survey is voluntary. All information will remain confidential. This project has been approved by the Macquarie University Human Research Ethics Committee. The survey should take 15 minutes to complete.

If you have any questions or concerns about this survey, please contact Dr. Katharine Haynes on haynes.katharine@gmail.com.



Community experiences of flooding in northern NSW after cyclone Debbie

Information about you and your property

1. What is your gender?

- Male
- Female
- Transgender
- Prefer not to say
- Other (please specify)

2. What year were you born?

* 3. Are you answering this survey about your home or business? If both your business and home were affected by the floods, please select the one where you spent most time during the floods.

- Home
- Business



Community experiences of flooding in northern NSW after cyclone Debbie

Information about you and your property

4. What is your town or suburb? (e.g., North Lismore, South Murwillumbah)

5. On March 31st, what type of property did you reside in?

- House on a residential block
- House on a hobby farm or small acreage
- House on a large farm or other large property
- Townhouse
- Unit or apartment
- Other (please specify)

6. On March 31st, what best described your home?

- Raised house with storage and/or parking underneath
- Two or more story house with living areas on all levels (including ground level)
- Two or more story villa, unit or townhouse with living areas on all levels (including ground level)
- Single story house
- Single story flat, villa or townhouse
- Multistory apartment building
- Other (please specify)



7. Did you own your property or were you renting?

- Owned/paying mortgage
- Renting
- Staying with friends or family
- Other (please specify)

8. When you moved into this property, were you aware of the flood risk?

- Yes, I knew the area flooded, but I didn't think it would impact this property
- Yes, I knew this property might get flooded
- No

9. How many years had you lived at this property?

10. How many years had you been living in this town or suburb?

11. Who lives in your household?

- Couple with children or other dependents
- One adult with children or other dependents
- Couple without children or other dependents
- I live alone
- Shared house with other adults
- Other (please specify)

**12. On March 31st, what pets or animals did you have?**

- I don't have pets
- Dogs
- Cats
- Chickens
- Horses
- Cows
- Other (please specify)

13. Have you experienced the impacts of flooding in this area before?

- Yes, many times
- Yes, once or twice
- No, never

14. Do you have your own transport?

- Yes, I have my own car or other vehicle
- Yes, I share a car or other vehicle with other household members
- I can drive, but there are no cars or vehicles at my household
- No, I cannot drive

15. What language do you normally speak at home?

- English
- Auslan (Australian sign language)
- Other (please specify)

16. Do you identify as Aboriginal or Torres Strait Islander?

- Yes
- No



17. On March 31st, did you have flood insurance for your property?

- Yes, for my home
- Yes, for my home and contents
- Yes, for my contents only
- No, I was not insured

18. On March 31st, did you have a plan for what you would do in a flood? (Please tick all that apply)

- Yes, we had a written plan
- Yes, we had talked about it as a household
- No, we didn't



Community experiences of flooding in northern NSW after cyclone Debbie

Information about you and your property

19. On March 31st, what kind of business did you have?

- Retail
- Industrial
- Education
- Accommodation
- Cafe, Restaurant, Bar
- Office
- Health or medical
- Beauty, leisure, fitness
- Agriculture, horticulture
- Mining
- Construction or landscaping
- Private consultant or contractor
- Other (please specify)

20. On March 31st, what suburb or town was your business located in? (e.g., North Lismore, South Murwillumbah)

21. On March 31st, what level, or levels, did your business occupy? (Please select all that apply).

- Ground floor/level
- Raised level (e.g. mezzanine or second floor)
- Basement



22. How many years had you run or operated this business at this location?

23. When you moved into this property, were you aware of the flood risk?

- Yes, I knew the area flooded, but I didn't think it would impact this property
- Yes, I knew this property might get flooded
- No

24. On March 31st, did you have flood insurance for your business?
(Tick as many as apply)

- No, I was not insured
- Yes, for the building
- Yes, for stock
- Yes, for plant and equipment
- Yes, business continuity insurance

25. How many years had you been living or working in this town or suburb?

26. Approximately how many full time employees did your business have on March 31st?

27. What language do you normally speak at home?

- English
- Auslan (Australian sign language)
- Other (please specify)



28. Have you experienced the impacts of flooding at your business before?

- Yes, many times
- Yes, once or twice
- No, never

29. Approximately how many kilometres is your home from your business?

30. On March 31st, did you have a plan for what you would do in a flood? (Please tick all that apply)

- Yes, we had a written plan
- Yes, we had talked about it
- No, we didn't



Community experiences of flooding in northern NSW after cyclone Debbie

Information about you and your property

31. How concerned are you about the following issues?

	Not concerned			Very Concerned	
Heatwaves	<input type="radio"/>				
Climate change	<input type="radio"/>				
Unemployment	<input type="radio"/>				
Housing affordability and supply	<input type="radio"/>				
The potential for severe flooding	<input type="radio"/>				
Quality of public transport	<input type="radio"/>				
Bushfires	<input type="radio"/>				
House fires	<input type="radio"/>				
Your health, or the health of a close family member	<input type="radio"/>				
Viability of local business	<input type="radio"/>				
Education affordability	<input type="radio"/>				
Saving for retirement	<input type="radio"/>				
Local crime	<input type="radio"/>				
Terrorism	<input type="radio"/>				
Quality of local infrastructure (e.g., roads)	<input type="radio"/>				

Other (please specify)



Community experiences of flooding in northern NSW after cyclone Debbie

Information about you and your property

* 32. How did you **FIRST** find out that your town or suburb was likely to experience flooding on the 31st of March?

- Heard radio announcement
- Radio talk back
- SES website
- Received SMS text message
- Bureau of Meteorology website
- Saw posts about it on social media (e.g., Facebook, Twitter) from the SES, Bureau of Meteorology or other official sources
- Saw posts about it on social media (e.g., Facebook, Twitter) from friends and family
- Saw television announcement
- Told by family, friends, or neighbours
- Told by SES staff or volunteers
- Told by other emergency personnel (e.g., police, firefighters)
- Observed heavy rainfall or rivers rising
- Other (please specify)



33. After finding out that your town or suburb was likely to be flooded, how long was it before you saw floodwater approaching your home or business?

- Between half an hour and one hour
- 1-2 hours
- About half a day
- One day
- More than one day
- My town/suburb wasn't flooded
- Don't know/Don't remember
- Other (please specify)

34. Did the floodwater reach your house or property?

- Yes
- No

35. Did the floodwater get into your home or building?

- No
- Yes, into ground level rooms
- Yes, into raised level rooms



Community experiences of flooding in northern NSW after cyclone Debbie

36. Approximately how deep did the water get in your ground level rooms?

- Ankle-depth
- Up to my knees
- Waist-depth
- Up to my chin
- Above head height
- I don't know
- Other (please specify)

37. Approximately how deep did the water get in your raised level rooms?

- Ankle-depth
- Up to my knees
- Waist-depth
- Up to my chin
- Above head height
- I don't know
- Other (please specify)



Community experiences of flooding in northern NSW after cyclone Debbie

Information and Warnings

38. Which source was the **MOST IMPORTANT** in helping you understand the likely impact of the flooding on March 31st? Please select one only.

- ABC radio
- Other local radio
- Emergency personnel (e.g., police, firefighters)
- SES staff or volunteers
- Bureau of Meteorology
- Local council
- Television
- Friends, family or neighbours
- Social media (e.g., Facebook)
- Other (please specify)

39. From the information I received about the flooding on March 31st, I understood **if** my property was likely to be affected by the floods.

Strongly disagree Strongly agree

☆ ☆ ☆ ☆ ☆

40. From the information I received about the flooding on March 31st, I understood **when** my property was likely to be affected by the floods.

Strongly disagree Strongly agree

☆ ☆ ☆ ☆ ☆



41. From the information I received about the flooding on March 31st, I understood what the **height** of the floodwater at my property was likely to be.

Strongly disagree Strongly agree

☆ ☆ ☆ ☆ ☆

42. I received an evacuation **warning** (e.g., flooding is likely; prepare to evacuate) with enough time to take appropriate action.

Strongly disagree Strongly agree Did not receive/Don't know

☆ ☆ ☆ ☆ ☆ ○

43. I received an evacuation **order** (e.g., evacuate immediately) with enough time to take appropriate action.

Strongly disagree Strongly agree Did not receive

☆ ☆ ☆ ☆ ☆ ○



Community experiences of flooding in northern NSW after cyclone Debbie

Before the flooding started

44. Before March 31st, did you think you were **most likely** to evacuate or stay with your home or business if flooding occurred in your town or suburb?

- Evacuate to a shelter
- Evacuate to a friend's, neighbour's, or relative's house
- Stay at my home or business
- Wait and see before making a decision
- Wait for NSW SES, fire or emergency services to tell me what to do on the day
- Hadn't thought about it
- Other (please specify)

45. In previous floods, what have you usually done?

- Usually stayed at my home or business
- Usually evacuated to a shelter
- Usually evacuated to a friend's, neighbour's or relative's house
- Usually wait and see before making a decision
- Not experienced a flood before
- Other (please specify)



46. Which of the following actions had you undertaken prior to the flooding? Please select as many as appropriate.

	Yes	No	Not applicable
Moved vehicle(s) to a safer location	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moved stock to a safer location	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moved pets to a safer location	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Placed sandbags	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Obtained a battery-powered radio	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prepared an evacuation kit for each member of the household	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stocked up on food and water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stocked up on personal medications and health products	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Obtained a torch and spare batteries, or candles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Charged up cellphone, laptop, and other devices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moved furniture, other possessions/stock higher up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Secured objects that were likely to float or cause damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relocated or secured waste containers, chemicals and poisons	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Turned off electricity or gas at mains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify)	<input type="text"/>		



Community experiences of flooding in northern NSW after cyclone Debbie

47. How effective were the actions you took to prepare for the flood?

	Not helpful			Very helpful	
Moved vehicle(s) to a safer location	<input type="radio"/>				
Moved stock to a safer location	<input type="radio"/>				
Moved pets to a safer location	<input type="radio"/>				
Placed sandbags	<input type="radio"/>				
Prepared an evacuation kit for each member of the household	<input type="radio"/>				
Moved important documents and possessions to a water-resistant or safer location	<input type="radio"/>				
Moved furniture, other possessions/stock higher up	<input type="radio"/>				
Secured objects that were likely to float or cause damage	<input type="radio"/>				
Relocated or secured waste containers, chemicals and poisons	<input type="radio"/>				



48. How useful were the following preparations during the flood?

	Not useful			Very useful	
Obtained a battery-powered radio	<input type="radio"/>				
Prepared an evacuation kit for each member of the household	<input type="radio"/>				
Stocked up on food and water	<input type="radio"/>				
Bought additional pet food	<input type="radio"/>				
Stocked up on personal medications and health products	<input type="radio"/>				
Obtained a torch and spare batteries, or candles	<input type="radio"/>				
Charged up cellphone, laptop, and other devices	<input type="radio"/>				
Obtained or checked generator	<input type="radio"/>				
Obtained or checked BBQ or camping stove	<input type="radio"/>				
Backed up electronic records	<input type="radio"/>				



Community experiences of flooding in northern NSW after cyclone Debbie

During the flooding

In this section we'd like to find out about what your household did during the flooding in your town or suburb.

49. Were there members of your household, colleagues or friends who needed looking after during the flooding? Please select as many as appropriate.

- No
- Yes, infants or children
- Yes, elderly person/s
- Yes, disabled persons
- Yes, ill person/s (physical or mental health)
- Yes, other able-bodied adults who became ill or stressed during the flooding
- Yes, other (please specify)

50. Did you, at any time, enter floodwater? Please select as many as needed.

- Yes, by foot
- Yes, by car
- Yes, by emergency services boat
- Yes, by private boat, kayak, canoe, etc
- No, I did not enter floodwater



54. Why did you enter floodwater? Please select all that apply.

- To reach a safer location
- To visit friends, neighbours, or family
- To rescue people
- To rescue pets or livestock
- To rescue or secure property
- For fun or recreation
- To return from moving vehicle to a safer location
- To return from moving pets or stock to a safer location
- Other (please specify)

55. Faced with the same circumstances, would you enter floodwater again?

- Yes
- No
- Not sure



Community experiences of flooding in northern NSW after cyclone Debbie

* 56. What **best describes** what you did during the flooding?

- Left before the flooding arrived in my town or suburb
- Left as the flooding started in my town or suburb
- Returned to my property after flooding had started and stayed there
- Stayed at my property
- Stayed at someone else's property (e.g. with neighbours, friends, or relatives)
- Began staying in my property, but left during the flood to a nearby house or property
- Began staying in my property, but left during the flood to an evacuation centre



Community experiences of flooding in northern NSW after cyclone Debbie

Experiences of evacuating

57. Why did you leave your house or property? You may select more than one.

- Left for other reasons (e.g. work or visiting friends)
- Left because the SES, fire, or emergency services told me to leave
- Left because the local council told me to leave
- Left because relatives, friends or neighbours told me to leave
- Left because I felt it was too dangerous to stay
- Left because I wanted to remove other household members or visitors from any potential danger
- Left because my home or property became flooded
- Other (please specify)

58. When you left, where did you go?

- Friends or neighbours or relatives
- Another business nearby
- An evacuation centre
- A motel, hotel, or other accommodation
- Other (please specify)



59. How did you get there?

- In my vehicle
- In someone else's vehicle
- On foot
- On my own boat
- On an SES boat
- On someone else's boat
- Other (please specify)

60. Did any members of your household or workplace stay with the property?

- Yes
- No

If yes, what did they do?

61. Approximately, what time did you leave? (e.g., Thursday 3pm, Late evening on Thursday)



Community experiences of flooding in northern NSW after cyclone Debbie

Experiences of evacuating

62. If there was another flood of similar magnitude in your town or suburb, would you evacuate or stay with your property?

- Evacuate
- Stay
- Undecided

Why?



Community experiences of flooding in northern NSW after cyclone Debbie

Experiences of staying with my property

* 63. Why did you stay with your home or property during the flooding?
Please select up to 5 reasons.

- Stayed to protect my house or property from looting
- Stayed because I think it's safe to do so
- Stayed because I didn't want to be dependent on emergency services
- Stayed because I did not think my home or property would flood in this event
- Stayed to wait and see what would happen
- Stayed to wash down my property as the water receded
- Stayed to protect my house or property from the floodwater
- Stayed to care for pets or stock
- Stayed because I felt it was too late to leave
- Stayed because I had nowhere else to go
- Stayed because I didn't know if the roads were flooded or not
- Stayed because SES, police or emergency services advised evacuation was no longer possible
- Stayed because relatives, friends or neighbours advised me to stay
- Stayed because my attempts to leave were unsuccessful
- Stayed to care for a household member who was physically unable to leave
- Stayed because it is physically difficult for me to leave
- Stayed because I didn't know where to go
- Other (please specify)



Community experiences of flooding in northern NSW after cyclone Debbie

Experiences of staying with my property

64. How important were each of these reasons for you when deciding to stay?

	Not important			Very important		
Stayed to protect my house or property from looting	<input type="radio"/>					
Stayed to protect my house or property from the floodwater	<input type="radio"/>					
Stayed because I think it's safe to do so	<input type="radio"/>					
Stayed because I did not think my home or property would flood in this event	<input type="radio"/>					
Stayed because I didn't want to be dependent on emergency services	<input type="radio"/>					
Stayed to care for pets or stock	<input type="radio"/>					
Stayed because I felt it was too late to leave	<input type="radio"/>					
Stayed to wait and see what would happen	<input type="radio"/>					
Stayed because SES, police or emergency services advised evacuation was no longer possible	<input type="radio"/>					
Stayed because relatives, friends or neighbours advised me to stay	<input type="radio"/>					



	Not important			Very important	
Stayed to wash down my property as the water receded	<input type="radio"/>				
Stayed to care for a household member who was physically unable to leave	<input type="radio"/>				
Stayed because I didn't know where to go	<input type="radio"/>				
Stayed because I had nowhere else to go	<input type="radio"/>				
[Insert text from Other]	<input type="radio"/>				
Stayed because I didn't know if the roads were flooded or not	<input type="radio"/>				
Stayed because it is physically difficult for me to leave	<input type="radio"/>				



Community experiences of flooding in northern NSW after cyclone Debbie

Experiences of staying with my property

65. Thinking about the whole night, how safe did you feel in the **late afternoon/evening** at your home or property?

Very unsafe Neither safe nor unsafe Very safe

66. Thinking about the whole night, how safe did you feel in the **night/early morning** at your home or property?

Very unsafe Neither safe nor unsafe Very safe

67. Thinking about the whole night, how safe did you feel **at daybreak** at your home or property?

Very unsafe Neither safe nor unsafe Very safe



68. As the flooding approached your town or suburb, how confident were you...

	Not confident at all			Very confident		N/A
That your property was high enough?	<input type="radio"/>					
That your property was structurally sound?	<input type="radio"/>					
That you would continue to receive updates and information? (e.g., by phone, radio or internet)	<input type="radio"/>					
That your electricity supply would continue?	<input type="radio"/>					
That you had sufficient water and food for yourself and others?	<input type="radio"/>					
That you had sufficient medical supplies for yourself and other?	<input type="radio"/>					
That you had sufficient water and food for pets?	<input type="radio"/>					
That you would get help from neighbours, friends or relatives if needed?	<input type="radio"/>					
That you would get help from the SES, fire, or other emergency services if needed?	<input type="radio"/>					



Community experiences of flooding in northern NSW after cyclone Debbie

Experiences of staying with my property

69. How frequently were you in contact with other people while staying with your home or business during the flood?

	Not at all	Once or twice	A few times	Frequently	N/A
Family or friends	<input type="radio"/>				
Neighbours	<input type="radio"/>				
Other people you hadn't met before	<input type="radio"/>				
SES	<input type="radio"/>				
Other emergency services	<input type="radio"/>				
Local council	<input type="radio"/>				

Other (please specify)



Community experiences of flooding in northern NSW after cyclone Debbie

70. How were you in contact with people who weren't staying with you during the flood?

	Phone call	Text messages	Facebook or other social media	In person
Family or friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Neighbours	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other people you hadn't met before	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
SES	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other emergency services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Local council	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="text"/>			

71. Did you feel isolated while staying with your home or business during the flood?

- Yes, for most of the night
- Yes, at some points during the night
- No, I did not feel isolated



72. Of the difficulties listed below, please rate how challenging these were for you during this flood?

	Not a challenge			Extremely challenging			N/A
Power cuts	<input type="radio"/>						
Snakes, rats or other wildlife entered my home or property	<input type="radio"/>						
Ran out of food or water	<input type="radio"/>						
Ran out of medication or medical supplies	<input type="radio"/>						
Illness (e.g., gastro) to you or others	<input type="radio"/>						
Injury to you or others	<input type="radio"/>						
Couldn't cook food or boil water	<input type="radio"/>						
Couldn't access information about the floods	<input type="radio"/>						
Couldn't contact friends or family	<input type="radio"/>						
I got scared and/or stressed	<input type="radio"/>						
Children staying with me got scared and/or stressed	<input type="radio"/>						
Other adults staying with me became scared and/or stressed	<input type="radio"/>						

Other (please specify)

73. Did you leave your property at any stage during the flooding?

- Yes, I left for a short time and then returned
- Yes, I evacuated or left for the duration of the flood
- No, I stayed with my property



74. Did any members of your household or workplace evacuate?

- Yes
- No

If yes, why and where did they go?



Community experiences of flooding in northern NSW after cyclone Debbie

Experiences of staying with my property

75. Why did you leave your house or property? You may select more than one.

- Left because the flooding was worse than I expected
- Left because SES, police, fire or emergency services told me to leave
- Left because local council told me to leave
- Left because relatives, friends or neighbours told me to leave
- Left because it was too dangerous to stay
- Left to visit neighbours, or nearby friends or relatives
- Left because I wanted to remove other household members or visitors from danger
- Left because our supplies ran out
- Left because of an injury or illness
- Left because power went out
- Left because couldn't access information or contact family and friends
- Left to check on flooding elsewhere
- Other (please specify)

76. When you left, where did you go?

- Friends, neighbours, or relatives
- Another business nearby
- An evacuation centre
- A motel, hotel, or other accommodation
- Other (please specify)



77. How did you get there?

- In my vehicle
- In someone else's vehicle
- On foot
- In my own boat
- In someone else's boat
- In a kayak or stand-up paddle board (or similar)
- Other (please specify)



Community experiences of flooding in northern NSW after cyclone Debbie

Experiences of staying with my property

78. If there was another flood of similar magnitude in your town or suburb, would you stay with your home or property again?

Yes

No

Why/why not?

79. Is there anything you would do differently next time?

80. How often do you have negative thoughts about the night of the flood and what you experienced?

Never

Frequently



81. Do you have any other feedback or comments about your experience?



Community experiences of flooding in northern NSW after cyclone Debbie

82. Did you contact the SES or other emergency services during this flood?

Yes

No



Community experiences of flooding in northern NSW after cyclone Debbie

83. Why did you contact emergency services?

- For rescue
- To gain more information
- To inform them of your wellbeing
- Other (please specify)



Community experiences of flooding in northern NSW after cyclone Debbie

Thank you and optional section

* 84. You have now finished all the questions about staying with your home or evacuating. The next section is about ways to reduce flood risk in the future and will take you 2 minutes to complete.

- Yes
- No



Community experiences of flooding in northern NSW after cyclone Debbie

Optional: Flood mitigation and policies

85. On March 31st, what structural measures or modifications did you have in place at your home or business to reduce the impacts of flooding?

- Tiled floors (instead of carpet)
- House or building had been raised
- Raised power points
- Raised air-conditioning units
- Raised taps for hoses (to use for flood clean-up)
- Had constructed a mezzanine or upper level to use for storage or shelter during floods
- Used water-resistant building materials on lower levels
- Removable walls, cladding or shelving
- Removed fencing
- Other (please specify)

86. Since levees have been installed, how do you think the level of preparedness for floods among your community has changed?

Much less prepared About the same Much more prepared

87. To what extent do you support the following policy measures for flood mitigation?

Strongly disagree Strongly agree

Restrict new developments in flood prone areas



	Strongly disagree				Strongly agree
Restrict homeowners from building under their homes (i.e., at ground level)	<input type="radio"/>				
Offer landswaps or buy backs to home or business owners whose properties have been flooded and are likely to be flooded in future	<input type="radio"/>				
Offer incentives or assistance to encourage home or business owners to modify their properties to make them more flood resistant (e.g., building materials, tiles instead of carpet, raising power points)	<input type="radio"/>				
Raise the levee(s)	<input type="radio"/>				
Build new levee(s)	<input type="radio"/>				
Other modifications to the floodplain (e.g. channelling/excavation works to divert water)	<input type="radio"/>				
Incentives and assistance to raise homes or business properties	<input type="radio"/>				
More affordable insurance	<input type="radio"/>				
Street flood wardens to assist with preparations and lifting belongings	<input type="radio"/>				
Better information about flood risk for my property	<input type="radio"/>				



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88. Please add any final comments here.



Appendix 2: Interview Guide

Question topics to guide the interview

Warnings received

Were any official or informal warnings received?

What is their opinion on the usefulness and timeliness of the information received and how did it influence their decisions and behavior?

Actions taken

What actions did they take during the recent event? Did they evacuate or shelter? Why?

What had they intended to do during a flood? Why?

If they sheltered what was it like?

If they evacuated, where did they go? How did they get there?

Did they encounter any challenges?

Preparations

What preparations, if any had they undertaken for the flood?

Flood impact

How high did the water get?

Was anything damaged?

Do they have flood insurance?

Background

Who lives in the property?

Are they renting or do they own their home?



How long have they lived in the property?

How long have they lived in the area?