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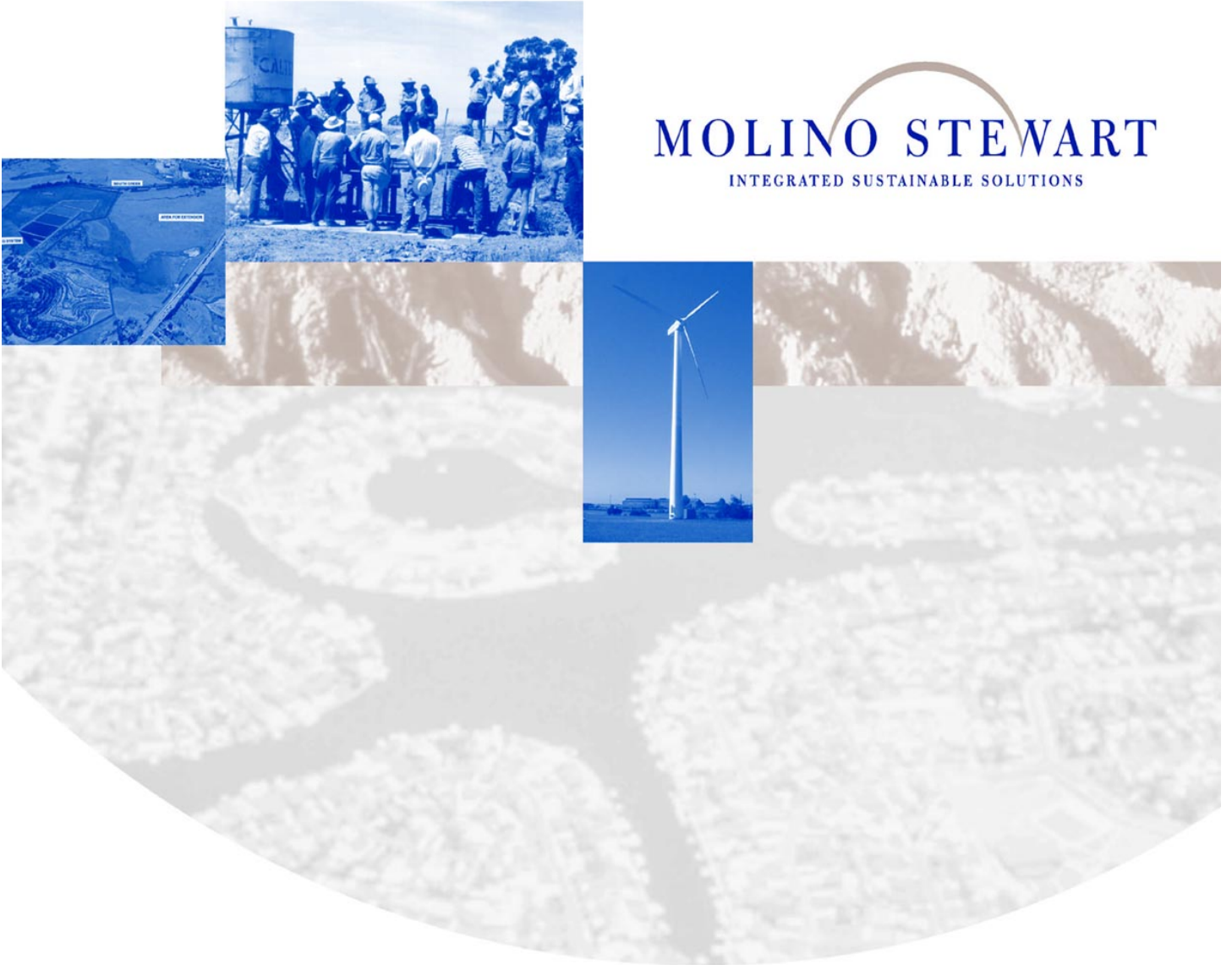
# Evaluation of the FloodSmart and StormSmart pilot programs and their transferability to the urban environment (report)

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**Evaluation of the  
FloodSmart and  
StormSmart pilot  
programs and their  
transferability to the  
urban environment**



**MOLINO STEWART**  
INTEGRATED SUSTAINABLE SOLUTIONS



**Final Report**





**Evaluation of the FloodSmart and StormSmart pilot  
programs and their transferability to the urban  
environment**

FINAL REPORT

for

The Victoria State Emergency Service and Melbourne Water

by

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# 1 EXECUTIVE SUMMARY

The Victoria State Emergency Service (VICSES), in partnership with Benalla Rural City and the City of Wodonga, developed and implemented two pilot community education programs – FloodSmart and StormSmart – in Benalla and Wodonga respectively. VICSES is keen to ascertain the success of these pilot education programs and to identify improvements to them before they are transferred elsewhere.

Melbourne Water has recently issued its 'Port Phillip and Westernport Region Flood Management and Drainage Strategy' that calls for the development and implementation of a flood education program in its region. Melbourne Water has already commenced a partnership with VICSES to implement flood education based on its Strategy, and is therefore keen to gauge the transferability of FloodSmart and StormSmart to its region.

VICSES and Melbourne Water engaged flood education experts Molino Stewart Pty Ltd to evaluate the Benalla FloodSmart and Wodonga StormSmart programs and their transferability to the urban environment, such as the Melbourne Water region.

To conduct the evaluation, Molino Stewart compared the results of social research carried out in Benalla and Wodonga, prior to, just after and two months after the programs were implemented. Molino Stewart also interviewed VICSES, local council and other agency staff involved in the programs.

The evaluation found that both pilot programs greatly improved several aspects of awareness and preparedness. These results included:

- An increase from 61 to 86 percent of Benalla respondents that thought they were at risk of being flooded
- A decrease from 31 to two percent in the respondents from Benalla who believed they were unprepared for a flood
- An increase from eight to 39 percent of Benalla respondents who stated they had a home emergency plan
- An increase from 74 to 98 percent of Wodonga respondents who accepted there was a medium to high risk of storms in their area
- A decrease from 17 to six percent in the respondents from Wodonga who believed they were unprepared for a severe storm
- An increase from 12 to 20 percent of Wodonga respondents who stated they had a home emergency plan.

It appears that the FloodSmart pilot had greater impact across the community than StormSmart mainly due to better support from the local SES unit and engagement of community groups.

The suite of engagement tools and community events used in the pilot programs generally appear to have been effective in helping to prepare communities for floods and storms. The most effective tools appear to be the flipcharts, action guides and the meter box stickers (only for FloodSmart). The community barbeques and stalls (for FloodSmart) appear to be the most effective types of community events.

Molino Stewart also identified best practices in community hazard education. It then assessed the pilot programs in relation to these practices. It found that FloodSmart addressed eight of the ten best practices; StormSmart addressed five of the ten practices.

Based on this assessment and the findings of the social research, the main recommendations to improve FloodSmart and StormSmart are:



- Extend the programs from education campaigns into ongoing programs. It is recommended that this is achieved through local flood education plans linked to local flood management plans e.g. council sub-plans
- Encourage more community participation in the design, implementation and evaluation of the programs.
- Use social research, through longitudinal studies, to guide the planning and ongoing evaluation of the programs.
- Ensure that VICSES staff supports the programs at all levels and that SES volunteers are adequately trained in community education to help implement the programs.
- Ensure that VICSES is better profiled in the programs as the lead emergency agency and that the 132 500 number is better promoted.

It is also recommended that prior to their transference to other settings, FloodSmart and StormSmart need to be redesigned so that they relate better to building community resilience to flooding and not just raising awareness and preparedness levels.

Molino Stewart identified several flood and storm education programs that relate to urban environments, especially urban flash flooding (overland flows). It found that only two of these programs (from Sydney) strongly comply with the ten best practices in hazard education. The two programs were described in detail to provide Melbourne Water and VICSES with an understanding of their design.

After making the improvements listed above and using the best practice examples as a guide, it was found that FloodSmart and StormSmart are transferable to urban environments such as Melbourne. It is critical that the adapted programs are designed based on a detailed understanding of urban flooding scenarios and urban communities and their social systems. The linkage of flash flood education programs with StormSmart appears to be appropriate and potentially effective.

In the Melbourne Water region, it is important to link the planning of the education programs with planning around the Port Phillip and Westernport Region Flood Management and Drainage Strategy. Adequate funding is required to ensure that local flood education plans are developed, implemented and evaluated through community participation around the FloodSmart and StormSmart brands.

## 2 INTRODUCTION

### 2.1 Background

In August 2006, Benalla Rural City and the City of Wodonga in partnership with the Victoria State Emergency Service (VICSES), received funding from the Federal Attorney General's Department under the Local Grants Scheme, to develop and implement community flood and storm education programs in Benalla and Wodonga respectively.

These pilot programs, titled 'FloodSmart' and 'StormSmart', were developed based on the NSWSES FloodSafe and StormSafe education programs, with elements drawn from fire education programs such as 'Bushfire Blitz' and 'Fire Safe Victoria'.

The FloodSmart and StormSmart pilot programs were designed to be proactive community engagement programs aimed at preparing 'at risk' communities for flood and storm events. They consisted of ongoing static engagement strategies complemented by an eight week, high intensity program providing people with highly specialised, specific advice.

### 2.2 The FloodSmart and StormSmart pilots

According to VICSES (2008), the purpose of the Benalla FloodSmart program was to:

- Raise awareness within the Benalla community to the risk of flood
- Improve community capacity to prepare, respond and recover from flood events
- Promote VICSES and Benalla Rural City as proactively seeking to address flood risk
- Develop and improve the suite of resources available to educate and engage at risk communities
- Develop a program considered world's best practice for flood education.

The project outputs were intended to be the development and implementation of:

- Localised household action kit for distribution to high risk households
- Action guides to provide specific advice to residents before, during and after events
- Meter box stickers that identify flood risk relative to flood height and provide practical advice to mitigate household risk
- A downloadable business continuity guide for businesses
- A flood signage strategy designed to improve the residents' awareness of flood activity in the Rural City of Benalla
- A schools program to provide ongoing engagement and awareness
- An eight week intensive 'grass roots' campaign involving local SES units, municipality and community event aimed at involving communities on a one-on-one basis.

According to VICSES (2008), the Benalla FloodSmart program was developed and implemented through three phases.

Phase 1 The FloodSmart program was developed over an 18 month period between VICSES staff, volunteers and Benalla City. During the developmental phases, VICSES

project managed a steering committee, which met monthly, comprising VICSES staff and volunteers and representatives from Benalla Rural City. Concurrently, a community development group was engaged 'to keep community groups, other agencies and the broader community and engaged in the program development and provide guidance regarding tools and strategies'.

Phase 2 Static elements were implemented in the Benalla community which according to VICSES (2008), 'were aimed at introducing product branding, raising awareness, confirmation of messages and to provide residents with a point of reference for ongoing reaffirmation of program objectives.' The following static engagement tools were distributed or displayed:

- FloodSmart Action Guide
- FloodSmart generic flip chart
- FloodSmart signage
- FloodSmart posters
- FloodSmart web pages on the VICSES website
- Promotional items such as tote bags, frisbees, pens, magnets and stickers
- Benalla FloodSmart Zoning and metre box stickers.

Phase 3 The dynamic implementation phase was framed around an eight week intensive campaign involving the local SES unit, regional and state staff with Benalla Rural City and community organisations. The activities in this phase were:

- Community presentations, meetings, focus groups and door knocks
- Community events coordinated by SES volunteers and supported by other community groups (e.g. Lions Club, Neighbourhood Watch). These community events included free community barbeques and local market stalls.
- A pilot schools program to provide ongoing early engagement and awareness regarding all hazards household planning and preparedness
- Rolling static displays held at local banks and supermarkets.

There was a similar approach used for the StormSmart pilot in Wodonga. Engagement tools developed and implemented in Wodonga StormSmart included:

- StormSmart Action Brochure
- StormSmart DL brochure
- StormSmart poster
- StormSmart meter box sticker
- Promotional items such as tote bags, frisbees, pens, magnets and stickers

The dynamic implementation phase at Wodonga included community events such as barbeques.

Considerable investment was made in the development and implementation of the two pilot programs. For example, approximately \$50,000 was expended in the production of the FloodSmart engagement tools and the community events (VICSES, 2008). In addition to this is the significant cost of staff time from VICSES, Benalla City and community representatives.

Due to this considerable investment, there is a need for VICSES to evaluate the success of the pilot programs, especially in relation to their appropriateness and effectiveness, and to identify improvements to the programs.

## 2.3 Melbourne Water

Melbourne Water is owned by the Victorian Government. 'We manage Melbourne's water supply catchments, remove and treat most of Melbourne's sewage, and manage rivers and creeks and major drainage systems throughout the Port Phillip and Westernport region. We are a significant business, responsible for managing \$8.4 billion in water supply, sewerage and drainage assets, and we are committed to looking after these in a way that protects and improves their environmental, social and financial values' (Melbourne Water website).

As part of its role, Melbourne Water is the regional drainage and floodplain management authority for the region and is responsible for the management and maintenance of numerous retarding basins, water quality treatment wetlands, levee banks, pump stations, flood gates and 1,500 kilometres of underground drains. One of its long term objectives for the region is to 'provide a safe level of flood protection for communities' (Melbourne Water, 2006).

Flooding in the Melbourne Water region can occur in three ways (Melbourne Water, 2006).

1. Riverine flooding. Around 20,000 properties across the region are at risk of being affected by riverine flooding, and approximately 3,000 buildings could be flooded above floor level.
2. Flash flooding (or 'overland flows'). Around 82,000 properties are at risk of flooding from flash flooding, with approximately 37,000 properties vulnerable to flooding above floor level.
3. Coastal tidal flooding and storm surge. Coastal suburbs and properties along the lower reaches of tidal rivers such as the Maribyrnong and Yarra Rivers are prone to this type of flooding, especially when combined with intense rainfall.

According to Melbourne Water (2006), 'Current efforts by Melbourne Water and councils to reduce the consequences of flooding in known flood prone areas are making little impact on the overall problem given the large number of properties at risk.' In response to this concern, Melbourne Water developed a 'Port Phillip and Westernport Region Flood Management and Drainage Strategy Discussion Paper' and issued it in January 2007. It received 18 formal responses to the Discussion Paper and used these to develop the Strategy which was released in November 2007. The Strategy addresses five flood management issues:

1. Completing the knowledge base
2. Potential long term future pressures on existing drainage systems
3. An agreed approach to managing existing regional flooding problems
4. Enhanced community education, awareness and preparation
5. Agreed responsibilities and improved collaboration between flood management agencies.

In relation to issue 4 above, Melbourne Water notes in the Strategy that, 'Historically, there has been no agency in Victoria with clear responsibility for the development and implementation of community awareness, engagement and education programs focused on urban flooding' (Melbourne Water, 2007).

Melbourne Water has implemented or supported some flood education programs in the past. For example, it has developed the animated 'Floods Explorer', available on its website, where 'students and the community can explore what happens when it rains in urban areas, how houses and parks are affected, and the consequences of blocked gutters and stormwater pollution.' It also funded a booklet titled 'After the Deluge', produced by the City of Darebin.

In the Strategy, Melbourne Water has acknowledged that VICSES is exploring opportunities to take a leading role in community flood education in the State. As a result, it has included the following action.

*Action 4.1 A community flood education, awareness and preparedness program, including flood warning, will be developed and implemented for Port Phillip and Westernport region in partnership with Victoria State Emergency Service, and other key stakeholders. (Melbourne Water, 2007)*

Related to this action, Melbourne Water has provided funds for a VICSES educator to implement a holistic flood education program in the region.

Based on this action and support, Melbourne Water is interested in the success of the FloodSmart and StormSmart pilot programs and especially how they can be transferred into its urban flooding scenarios.

## 2.4 Project objectives

VICSES and Melbourne Water engaged flood management consultancy Molino Stewart Pty Ltd to evaluate the FloodSmart and StormSmart pilot programs and to determine their transferability to Melbourne Water's urban environment.

Molino Stewart's evaluation is in two parts and related to the following objectives:

### Part 1

- a. To determine to what extent the pilot FloodSmart and StormSmart programs have improved community awareness and preparedness for flood/storm risk.
- b. To review elements of the pilot programs in relation to best education practices and identify improvement opportunities.

### Part 2

- a. To ascertain best education practices related to urban flash flooding scenarios, by identifying critical success factors and processes.
- b. To identify improvement strategies related to the pilot programs to ensure successful implementation into an urban flash flood environment.

A methodology for this evaluation, related to the above objectives, is outlined in Section 3.2.

## 2.5 This report

This report describes the methodology used in the Molino Stewart evaluation in Section 3. It analyses the findings of the evaluation and discusses important aspects of these findings and their implications in Section 4. It also identifies improvements to the FloodSmart and StormSmart pilot programs in Section 4. In Section 5, the report assesses the transferability of the pilot programs to the urban environment, particularly that of the region under the management of Melbourne Water. Section 6 of the report provides a conclusion and recommendations for VICSES.

## 3 METHODOLOGY

### 3.1 Approach

The approach used by Molino Stewart was based on social research. It involved comparing surveys conducted before, during and after both the FloodSmart and StormSmart pilot programs. Through the comparison and analysis of these survey results, an 'objective positivist' approach was taken to provide some empirical understanding of the impacts of the two programs on their respective communities.

Coupled with this quantitative social research, Molino Stewart used a more qualitative approach by conducting a focus group with VICSES staff at Benalla and interviewing other VICSES staff involved in the programs. The focus group and interview responses add 'depth' to the survey findings.

### 3.2 Tasks

The following research tasks were conducted by Molino Stewart as prescribed by the clients and in line with the overall approach outlined in Section 3.1.

#### Part 1

- Review data collected through VICSES baseline survey<sup>1</sup> in January 2006 (questions provided in Appendix A).
- Establish a baseline position based on supplied data.
- Review data collected through VICSES survey during and just after program implementation in October 2007 (questions provided in Appendix B).
- Review VICSES survey (questions provided in Appendix C) carried out during December 2007 and suggest improvement opportunities based on project brief and intent.
- Review data collected by VICSES and evaluate based on project brief and intent.
- Provide tabularised summary of all quantitative survey results.
- Develop a qualitative survey for internal stakeholder feedback.
- Conduct telephone interviews or a focus group (questions provided in Appendix D) with the following internal stakeholders to identify improvement opportunities
  - VICSES Manager Community Awareness & Education
  - VICSES EMS Project Officer
  - VICSES North East Regional Manager
  - VICSES North East Regional EM Staff
  - Benalla Unit Controller
  - FloodSmart/StormSmart Community Education Coordinators
  - FloodSmart/StormSmart Community Facilitators

The focus group in Benalla also consisted of staff from Benalla Rural City and the Country Fire Authority (CFA).

<sup>1</sup> None of the three surveys were conducted by Molino Stewart.

- Assess education tools used in FloodSmart and StormSmart pilot programs for best practice.
- Make recommendations for improvements based on the survey results and best practice.

## Part 2

- Review best practice in urban flash flooding education.
- Review education tools used in the FloodSmart and StormSmart pilot programs based on urban flash flooding best practice.
- Review the following FloodSmart/StormSmart tools in terms of appropriateness and effectiveness:
  - Action Guide
  - Flip Chart
  - Brochure
  - Posters
  - Meter box stickers
  - VICSES FloodSmart/StormSmart Website
  - Melbourne Water Website
  - Promotional material
  - Community BBQ's
  - Engagement Scripts

to make recommendations for improvement of the FloodSmart/StormSmart pilots to ensure the model leads best practice in urban flash flooding community education.

### **3.3 Limitations**

The relatively small sample size of the resident surveys limits the statistical confidence of their results. Only 120 Benalla residents completed the pre-FloodSmart program survey in January 2006, 43 completed the feedback survey immediately after the program and 50 completed the post – program survey. There are over 4,000 properties in Benalla that are at risk of inundation or isolation due to flooding.

In Wodonga, 132 surveys were completed prior to the StormSmart program, 12 immediately after the program and 50 surveys completed after the program. The population of Wodonga, all at risk of storms, is 28,160 (2001 census).

Moreover, as there was no tracking of responses by using the same respondents for each survey, this does not constitute a longitudinal study and hence no direct comparisons can be made of findings related to before, during and after the pilot programs. Any comparison can only be viewed as indicative, not definitive.

The small sample sizes limit any opportunity to analyse the survey data in terms of certain cohorts e.g. age, gender, length of residence, prior experience of flooding.

It is also important to note that resident survey responses only constitute 'reported' actions or behaviours e.g. if a home has an emergency plan. There was no opportunity within time and budgetary constraints to verify responses.

Also due to time and budgetary constraints, a focus group was only held in Benalla for the FloodSmart pilot - no focus group was held in Wodonga for StormSmart. This

means that there was a greater insight into the success of FloodSmart than the StormSmart pilot program.



## 4 FINDINGS

### 4.1 Success of the FloodSmart pilot program

#### 4.1.1 Awareness

Resident surveys were conducted in Benalla before (January 2006), immediately after (October 2007) and two months after (December 2007) the FloodSmart program was implemented. Comparisons in relation to several flood awareness indicators can be made between the January 2006 and October 2007 survey results. These comparisons are shown in Table 1.

**Table 1: Comparison of flood awareness indicators before and immediately after the Benalla FloodSmart program**

<b>Flood awareness indicator</b>	<b>Before FloodSmart %</b>	<b>Immediately after FloodSmart %</b>
<i>Live in a flood prone zone</i>	52	83
<i>At risk of being flooded</i>	61	86
<i>Seen information about flooding</i>	59	96
<i>Use the ABC or other local radio station for flood warnings</i>	27	68
<i>Noticed the flood signs in Benalla</i>	47	56
<i>Contact VICSES for emergency help</i>	37	37

It should be again stressed that these figures in Table 1 are only indicative (see limitations in Section 3.3). However, there is some veracity in this comparison as exactly the same percentage (60 percent) of respondents in the two surveys said that they had experienced a flood before in Benalla (most cited the 1993 Flood).

Regardless of their limitations, the results in Table 1 do indicate that the Benalla FloodSmart program had an immediate impact on these aspects of awareness related to flood risk and sources of information. Note that the awareness of VICSES as the agency to contact for emergency help did not increase as a result of the program.

Some interesting aspects of flood awareness from the January 2006 (before the FloodSmart program) survey that were not tested in subsequent surveys include:

- Twenty three percent of respondents viewed 'flood' as the biggest threat to their properties compared with 27 percent for 'theft' as the biggest threat, 26 percent for 'fires' and 24 percent for 'storm'.
- Sixty one percent of respondents believed that the local council has the responsibility to prepare residents for a flood event, whilst 25 percent believe it

is the responsibility of VICSES. Only ten percent thought it was their own responsibility.

- Over half of the respondents believed that they had flood insurance (28 percent) or did not know if they had flood insurance (26 percent). Note that flood insurance is rare in Australia and it is doubtful that these respondents would have flood insurance.

#### 4.1.2 Preparedness

'Preparedness' in this report relates to the level of planning before a flood event and the intended response to an event. Some comparisons can be made in relation to preparedness indicators across the three surveys (see Table 2).

**Table 2: Comparison of flood preparedness indicators prior to, immediately after and two months after the Benalla FloodSmart program**

<i>Flood preparedness indicator</i>	<b>Level</b>	<b>Before FloodSmart %</b>	<b>Immediately after FloodSmart %</b>	<b>Two months after FloodSmart %</b>
<i>Perceived level of preparedness</i>	Unprepared	31	19	2
	Slightly prepared	30	30	23
	Moderately well prepared	28	37	41
	Very well prepared	0	9	25
	Extremely well prepared	1	5	9
<i>Have a home emergency plan</i>	Yes	8	39	24
	No	92	61	76

Again considering the limitations outlined in Section 3.3, it appears from Table 2 that the FloodSmart program has improved levels of perceived flood preparedness. For instance, the levels of 'unprepared' respondents have declined from 31 percent prior to the program to two percent in the survey conducted two months after the program finished. On the other hand, the level of 'very well' and 'extremely well' prepared have increased from one percent to 34 percent in the same timeframe.

The percentage of those that reported to have a home emergency plan also increased significantly from before the FloodSmart program to after the program. Although the percentages with a plan drop from the immediately after survey to the two month after survey, it should be remembered that these are two different samples. Nevertheless, both post-program survey results are considerably higher than those from before the survey.

Of those respondents who said they did not have a home emergency plan in the two month after (December 2007) survey, 77 percent would consider preparing a plan, 18

percent would possibly consider preparing one and only five percent would not prepare one.

The October 2007 survey also focused on intended responses to a flood event<sup>1</sup>. Findings include:

- The most popular way to be warned about a flood was through radio (60 percent). Thirty seven percent identified VICSES as a source of warning information, 35 percent identified the Flood Information Line and 16 percent used television<sup>2</sup>.
- All respondents identified at least one action to prepare their property when flooding was imminent. For example, 88 percent of respondents said they would lift contents to a higher level, 28 percent would place valuables in a waterproof container and 26 percent would block points at which water could enter the building<sup>3</sup>.
- Every respondent said they warn someone else of an imminent flood. Neighbours (84 percent) were the most favoured people to warn.
- Sixty three percent of respondents said they would evacuate in a flood, with the remaining 37 percent not wishing to evacuate. The most popular reason for evacuating was threat to their property and safety. The most popular reason for not evacuating was the desire to protect property and possessions from floodwaters.
- Sixty three percent of respondents stated that they would not drive or walk through floodwaters, whereas 37 percent felt they would drive or walk through floodwaters.

Although these are generally very favourable levels for intended responses, it is difficult to gauge the impact of the Benalla FloodSmart program on them as there was no pre-program testing.

#### 4.1.3 Appropriateness

All VICSES and Benalla Rural City staff interviewed, personally and in the focus group, believed that the FloodSmart program was an appropriate activity for VICSES. Reasons for this response included:

- Program gives VICSES unit expertise in community education
- Raises VICSES local profile as the lead emergency agency for flooding
- Increases individual and community flood preparedness – ‘VICSES can’t help everyone at once!’
- Should be part of VICSES core business
- Improves capabilities of VICSES in community education and helps position it as a ‘champion’ in this field.

All staff interviewed believed that the program was a valid use of local SES volunteers and resources. The volunteers provide an insight into local flooding issues and are generally seen as trusted members of the community. Several interviewees noted that further specialist training is required for volunteers in community education.

Benalla residents surveyed also believed that VICSES should play a lead role in informing them about flooding. In the January 2006 survey, 44 percent of respondents

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<sup>1</sup> ‘Intended responses’ were not tested in the two other surveys.

<sup>2</sup> Multiple answers were permitted in this question.

<sup>3</sup> Multiple answers were permitted in this question.

expected to receive flood information from VICSES, with 40 percent opting for the local council.

#### 4.1.4 Effectiveness

Apart from the trends related to Benalla FloodSmart's impact on awareness and preparedness outlined in Sections 4.1.1 and 4.1.2, there are several other indicators of the effectiveness of the pilot program.

The Benalla FloodSmart program appears to have been easily accessed and understood by the community. All people surveyed in December 2007 were aware of the FloodSmart program. Sixty five percent of people surveyed in October 2007 found the FloodSmart information very easy to understand and 30 percent found the information easy to understand. No one found the information very difficult to understand.

Benalla FloodSmart used community networks and agencies in an effective way to help develop and implement the program. According to VICSES (2008), 'VICSES volunteers actively sought the assistance of established community groups in a multi-pronged approach'. This approach included presentations, active engagement and implementation e.g. Neighbourhood Watch distributing meter box stickers. VICSES (2008) concludes that 'Formative evaluations indicate a high level of success from this approach. This approach generated a significant level of interest by established groups, so much so that the local unit was approached in one case to a group that they had not previously engaged.' This view was supported by the Benalla focus group that stressed the value of broader community participation in the program.

Several agencies also participated in the program development and implementation including:

- Benalla Rural City
- Victoria Police
- Country Fire Authority
- Department of Human Services
- Goulburn Broken Catchment Management Authority
- Bureau of Meteorology (BOM)
- Office of the Emergency Services Commissioner
- North East Water
- North East Catchment Management Authority

There was a positive community response to the information received through the Benalla FloodSmart program. In the survey immediately after the program (October 2007), 60 percent of respondents were extremely satisfied with the flood information they received. Nineteen percent were satisfied with the information, 12 percent unsure and nine percent in some way dissatisfied with the information.

##### a) Engagement tools

Most of the engagement tools used in the FloodSmart program were viewed as being effective in increasing awareness and preparedness levels in the community. The fridge flip chart was seen by the focus group and VICSES interviewees as being especially well-received by the community. According to Haley (2007), VICSES viewed the flip chart as a 'high level, quick reference engagement tool with the potential for a medium to long lifespan.'

Respondents to the December 2007 survey supported the value of the flip chart as a useful engagement tool. Seventy seven percent of respondents had already placed the magnetised flip chart on their fridge. Fifty seven percent viewed the flip chart as being 'very helpful' in helping their household prepare for floods, with 43 percent rating it as being 'of some help'. No one believed the flip chart would be 'useless'. There were also several positive comments from respondents about the flip chart, typical of which was 'the flip chart is very useful, good for an emergency'.

The community specific action guide was seen as being reasonably effective as an engagement tool. According to Haley (2007), 'The action guide included localised historical information, prevention, response and recovery information, check sheets and local contact information.' The guide also provided a template to develop a home emergency plan.

The focus group and interviewees believed that the action guide, along with the flip chart, was especially useful as tools to support face-to-face engagement with residents at community events such as barbeques and stalls. The focus group noted that the action guide was too small (only A5 size) and this somewhat diminished its appeal and importance. However, there was a high level of readership of the action guide with 94 percent of the December 2007 survey respondents stating that they had read it. A similar percentage to the flip chart found the action guide to be useful – none found it to be useless.

There was little feedback about the value of the FloodSmart brochure and poster other than they helped to brand the program and highlight key messages. There was no comment about the usefulness of FloodSmart information posted on the VICSES website.

The meter box stickers also appear to be reasonably effective as an engagement tool, especially when coupled with face-to-face distribution by SES and other community volunteers. The Benalla steering committee developed this particular type of sticker to suit local needs and to improve on stickers used elsewhere – as such, it should be seen as a good example of local community participation in designing education activities. As reported by Haley (2007) about the stickers, 'a model which reflected the concerns that inundation was not the only issue during flooding was adopted. This model conveyed the message that residents need to be aware of inundation or isolation. As a result, three risk categories relating to the Benalla Gauge were developed. These highlighted to the resident that at given height they should be prepared for flood activity – inundation or isolation.'

It appears that the community perceived the stickers to be a useful tool. From the December 2007 survey, of those that had received a sticker, 79 percent had affixed it to their meter box and more than half (54 percent) thought that the meter box sticker would be very useful in helping their household prepare for floods. None thought the meter box sticker would be useless.

In terms of the engagement tools, this evaluation concurs with the conclusion of VICSES (2008) in the Benalla FloodSmart report. 'Ultimately, it was found that the simple tools, which provided short sharp information, were the most successful, such as the fridge flip chart or the short check sheets within the action guide.'

## **b) Community events**

The focus group and interviewees viewed the FloodSmart Launch as being an effective start to the program in Benalla. The Launch used the Benalla Farmers Market as a venue and included outdoor displays, children's activities and official speeches by the Federal Member of Parliament, Mayor and VICSES CEO. The Launch was especially useful in commencing community discourse about flood preparedness as a prelude to the education campaign.

The community street barbeques appear to be the most effective of the community events, although attendance at them varied from six to 38 persons. About half (48

percent) of those surveyed in December 2007 had attended a FloodSmart barbeque. Those that attended were extremely positive about the value of them. Seventy five percent believed the barbeques were very helpful with 25 percent saying they were 'of some help'. None felt the barbeques were useless. There were also some very positive comments about the barbeques from respondents including:

- 'Great to meet and talk with the SES volunteers to get some flood advice for our area.'
- 'Could do with more of them. It would be good to organise a (FloodSmart) street barbeque annually.'

As noted in the discussion above, the community doorknock to distribute the meter box stickers appears to be reasonably successful. VICSES (2008) reports that 'Initially VICSES estimated, based on anecdotal evidence, that a 50 percent uptake of the sticker would be considered successful. By the end of the phase, however, VICSES had achieved a success rate surpassing 99 percent'. This uptake rate is not totally supported by the December 2007 survey where 79 percent of those that received a sticker had affixed it to their meter box. As VICSES (2008) notes, 'a significant number of residents were not present during the doorknock. As such, there is a reliance on residents to self-install the provided sticker.'

The community stalls and displays were generally viewed as an effective event by the focus group and interviewees. There was general concurrence by them with VICSES (2008) reporting - 'formative evaluations demonstrate the community stall strategy to be highly successful, with significant numbers of people seeking the stalls the review the program.'

The school presentations were viewed as partly successful by the focus groups and interviewees. Although the presentations were seen as an appropriate activity, generally the school groups were too large for the presentations and volunteers were not trained in this specialist area. Also, only a few of the Benalla schools received presentations.

A few comments were also made about the amount of time that the local unit spent in working with the local media. It was difficult in this study to ascertain the efficiency of this activity.

#### 4.1.5 Improvements

There was a strong view from the focus group and interviewees that FloodSmart in Benalla (or in other communities) should not be a short term 'campaign'. The focus group especially stressed the need to continue flood education in Benalla to further raise awareness of the flood risks and help prepare the community. Although a Stage 2 of the program is planned, the focus group believed it should be extended through the use of a local flood education plan that is driven by a community/agency reference group. This is further discussed in Section 5.

The focus group also noted that in some communities such as Shepparton there is a need for ongoing community flood education due to the high turnover in population. In this context, they suggested that real estate agents should be part of the flood education process.

When asked in the December 2007 survey about improvements to the FloodSmart program, several respondents expressed the need for it to be an ongoing program. A typical comment was 'great program – keep it going!'

Respondents to the December 2007 survey also expressed a desire to participate in future flood education planning and implementation. Forty four percent said they would be interested in helping with FloodSmart planning and implementation actions in the future, whilst 35 percent said they are 'possibly interested'. Of the 21 percent that were not interested, many cited their age or family commitments as a reason.

Further effort is required in Benalla education to highlight the '132 500' emergency number. Only 26 percent of respondents in the December 2007 survey knew this number. Also there is a need to further help people identify the flood zone that they live in (48 percent of respondents did not know).

Although the business community was engaged through groups such as the Benalla Business Network, Lions and Rotary, the FloodSmart program could be improved with specific education activities designed for the business community. These activities could include flood emergency planning as part of business continuity planning, business breakfasts to launch the program and mentoring by volunteers to help build business resilience to flooding.

The focus group also identified other 'vulnerable' groups in the Benalla community that could be specifically targeted in the design of education activities. These groups include:

- Caravan parks
- Retirement villages and nursing homes
- Travellers
- Rural landholders

## 4.2 Success of the StormSmart pilot program

### 4.2.1 Awareness

Resident surveys were conducted in Wodonga before (January 2006), immediately after (October 2007) and two months after (December 2007) the StormSmart program was implemented. Comparisons in relation to several storm awareness indicators can be made between the January 2006 and October 2007 survey results. These comparisons are shown in Table 3.

**Table 3: Comparison of storm awareness indicators before and immediately after the Wodonga StormSmart program**

<b>Storm awareness indicator</b>	<b>Before StormSmart %</b>	<b>Immediately after StormSmart %</b>
<i>Live in a storm prone area</i>	61	72
<i>Accept medium to high risk of storms</i>	74	98
<i>Seen information about storms</i>	33	90
<i>Use the ABC or other local radio station for severe weather warnings</i>	31	65
<i>Contact VICSES for emergency help</i>	68	82



Regardless of their limitations (see Section 3.3), the results in Table 3 do indicate that the Wodonga StormSmart program had an immediate impact on some aspects of awareness related to storm risk and sources of information. Unlike in the FloodSmart results, note that the awareness of VICSES as the agency to contact for emergency help did increase as a result of the program.

Some interesting aspects of storm awareness from the January 2006 survey, conducted before the StormSmart program, that were not tested in subsequent surveys include:

- Twenty seven percent of respondents in Wodonga believed that storm was the biggest risk to their property compared with 38 percent thinking that theft was the biggest risk and 27 percent opting for fire. Only two percent thought that flood was the biggest risk.
- Eighty one percent of respondents had experienced severe storms in Wodonga. Most of these cited the storms in 2005 as examples.
- Seventy percent of respondents said they believed that larger storms than they have experienced are possible in Wodonga
- Thirty three percent thought it was the responsibility of local council to prepare residents for a storm, 29 percent thought it was their responsibility, 23 percent believed it was VICSES's responsibility and 14 percent thought it was the responsibility of the BOM.

#### 4.2.2 Preparedness

'Preparedness' in this report relates to the level of planning before a storm event and the intended response to an event. Some comparisons can be made in relation to preparedness indicators across the three surveys (see Table 4).

**Table 4: Comparison of storm preparedness indicators prior to, immediately after and two months after the Wodonga StormSmart program**

<i>Storm preparedness indicator</i>	<b>Level</b>	<b>Before StormSmart %</b>	<b>Immediately after StormSmart %</b>	<b>Two months after StormSmart %</b>
<i>Perceived level of preparedness</i>	Unprepared	17	11	6
	Slightly prepared	20	17	21
	Moderately well prepared	58	56	31
	Very well prepared	5	16	36
	Extremely well prepared	0	0	6
<i>Have a home emergency plan</i>	Yes	12	11	20
	No	88	89	80

Again considering the limitations outlined in Section 3.3, it appears from Table 4 that the Wodonga StormSmart program has improved levels of perceived flood preparedness. For instance, the levels of 'unprepared' respondents have declined from 17 percent



prior to the program to six percent in the survey conducted two months after the program finished. On the other hand, the level of 'very well' and 'extremely well' prepared have increased from five percent to 42 percent in the same timeframe.

The percentage of those that reported to have a home emergency plan also increased significantly from immediately after to two months after the StormSmart program when people had the chance to complete the home emergency plan section of the StormSmart action guide.

Of those respondents who said they did not have a home emergency plan in the two month after survey (December 2007), 76 percent would consider preparing a plan, 18 percent would possibly consider preparing one and only six percent would not prepare one.

The immediately after survey (October 2007) also focused on intended responses to a storm event<sup>1</sup>. Findings include:

- The most popular way to be warned about a storm was through radio (65 percent). Eighteen percent identified VICSES as a source of warning information, 24 percent identified the Internet and 24 percent would use television<sup>2</sup>.
- All respondents identified at least one action to prepare their property and ensure their safety when a storm was imminent. For example, 78 percent said they would stay inside and shelter well clear of windows, 55 percent said they would find emergency shelter if out doors and 50 percent said they would avoid using the telephone<sup>3</sup>.
- Eighty nine percent of respondents said they would warn someone else of an imminent storm. Neighbours were the most popular people to warn (69 percent) and family members next popular at 56 percent.
- Seventy one percent of respondents stated that they would not drive or walk through flash floodwaters, whereas 29 percent felt they would drive or walk through floodwaters.

Although these are generally very favourable levels of intended responses, it is difficult to gauge the impact of the Wodonga StormSmart program on them as there was no pre-program testing.

### 4.2.3 Appropriateness

All VICSES staff and volunteers interviewed believed that the StormSmart program was an appropriate activity for VICSES. Reasons for this response included:

- Raises VICSES local profile as the lead emergency agency for storms
- Increases individual's understanding of safe behaviours in storms and flash floods
- Should be part of VICSES core business
- Improves capabilities of VICSES in community education and helps position it as a 'champion' in this field.

Some VICSES interviewees noted that the program was not 'embraced' by the local Wodonga unit in the same way that the Benalla unit supported FloodSmart. It appeared that this was due to the unit leadership not viewing StormSmart as a high priority in their activities and not engaging the support of their volunteers.

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<sup>1</sup> 'Intended responses' were not tested in the two other surveys.

<sup>2</sup> Multiple answers were permitted in this question.

<sup>3</sup> Multiple answers were permitted in this question.

Wodonga residents surveyed believed that VICSES should play a lead role in informing them about storms. In the January 2006 survey, 49 percent of respondents expected to receive storm information from VICSES, with 25 percent opting for the local council and 25 percent for the BOM.

#### 4.2.4 Effectiveness

Apart from the trends related to Wodonga StormSmart's impact on awareness and preparedness outlined in Sections 4.1.1 and 4.1.2, there are several other indicators of the effectiveness of the pilot program.

The Wodonga StormSmart program appears to have been easily accessed and understood by the community. Ninety two percent of people surveyed in December 2007 were aware of the StormSmart program. Sixty one percent of people surveyed in October 2007 found the StormSmart information very easy to understand and 34 percent found the information easy to understand. No one found the information very difficult to understand.

There was a positive community response to the information received through the Wodonga StormSmart program. In the survey immediately after the program (October 2007), 56 percent of respondents were extremely satisfied with the flood information they received. Seventeen percent were satisfied with the information, 27 percent unsure and no one dissatisfied with the information.

##### a) Engagement tools

Most of the engagement tools used in the StormSmart program were viewed as being effective in increasing storm awareness and preparedness levels in the community. The community specific action guide was seen as being effective as an engagement tool. According to Haley (2007), like the FloodSmart action guide, 'The action guide included localised historical information, prevention, response and recovery information, check sheets and local contact information.' The guide also provided a template to develop a home emergency plan.

The VICSES interviewees believed that the action guide was especially useful as a tool to support face-to-face engagement with residents at community events such as barbecues and stalls. Eighty nine percent of the December 2007 survey respondents had received the action guide. There was also a high level of readership of the action guide with 86 percent of the December 2007 survey respondents stating that they had read it.

There was little feedback about the value of the StormSmart brochure and poster other than they helped to brand the program and highlight key messages. There was no comment about the usefulness of StormSmart information posted on the VICSES website.

The meter box stickers also appear to be reasonably ineffective as an engagement tool in Wodonga as the local unit did not have the capacity to hand deliver the stickers. Furthermore, the sticker was probably inappropriate as, unlike the FloodSmart stickers, they did not help people identify a zone and duplicated much of the content in the StormSmart action guide. When asked where they had kept the action guide and stickers, only a small percentage (six percent) of respondents to the December 2007 survey said that they had affixed the sticker to their meter box.

Respondents to the December 2007 survey felt that generally the StormSmart engagement tools would help them in preparing their household for storms. Fifty four percent believed that the tools will be very helpful in preparing them for storms and 46 percent thought they would be of some help. None believed the tools to be 'useless'.

## b) Community events

The community street barbeques appear to be the most effective of the community events used in the Wodonga StormSmart program. The attendance at the barbeques was generally better than in the Benalla FloodSmart pilot with numbers averaging 40-50 persons. About half (45 percent) of those surveyed in December 2007 had attended a StormSmart barbeque. Those that attended were extremely positive about the value of them. Eighty six percent believed the barbeques were very helpful with 14 percent saying they were 'of some help'. None felt the barbeques were useless. There were also some very positive comments from respondents about the barbeques including:

- 'Good to hear SES volunteers talk about house maintenance'
- 'Great to hear and see SES at work in the community'
- 'Very knowledgeable talker who presented. Nice to have the chance to meet the volunteers. More barbeques needed, often'.

As noted in the discussion above, the community doorknock to distribute the meter box stickers appears to be reasonably unsuccessful. The community stalls and displays were also generally viewed as not effective due to lack of support from the local unit.

## 4.2.5 Improvements

As already alluded to, a major improvement to the Wodonga StormSmart as it moves into Stage 2 is to address any issues to fully engage the local VICSES unit in the program.

When asked in the December 2007 survey about improvements to the StormSmart program, several respondents expressed the need for it to be an ongoing program. Respondents to the December 2007 survey also expressed a desire to participate in future flood education planning and implementation. Fifty five percent said they would be interested in helping with StormSmart planning and implementation actions in the future, while 25 percent said they would be 'possibly interested'. Of the 20 percent that were not interested, many cited their age or family commitments as a reason.

Further effort is required in Wodonga to highlight the 132 500 emergency number. Only four percent of respondents in the December 2007 survey knew this number – 34 percent would call '000' in a storm emergency and 22 percent would call '132 000'.

Several respondents noted some areas that they would like to learn more about through the StormSmart program. These included:

- When is storm season in Wodonga
- Precautions for flash flooding
- Insurances for storm damage
- How the best prepare the house for a storm.

Some improvements to the Wodonga StormSmart program suggested by respondents include:

- Reminder of when storm season is approaching to prepare
- More visible presence by SES to help them learn about storms, safety and preparation
- Signage around Wodonga to inform people that it is an area subject to severe storms
- Greater advertising about StormSmart
- Clarification of the local council's role in storm preparedness and response.

Further improvements to StormSmart are discussed in Section 4.3.

## 4.3 Pilot programs related to best practice

### 4.3.1 Best practice in flood and storm education

According to Dufty (2008), flood education is ‘any learning process or activity that builds community resilience to flooding’. Likewise, storm education is learning that builds community resilience to storms.

According to Paton (2006), resilience ‘is a measure of how well people and societies can adapt to a changed reality and capitalise on new possibilities offered’. In terms of flooding and storms, resilience involves the ability of a community to not only resist and recover from an event but also to adapt to the changed realities that it may cause. It therefore includes the ability of a community to learn from a flood or storm event and to improve its systems and capabilities for the next event.

In 2007, Molino Stewart conducted a comprehensive study of best practices in community flood education for VICSES. As a result of the study, the following ten leading practices for flood education were identified.

1. Flood education programs should be delivered through community groups where communities are empowered to research, plan, implement and evaluate their own activities.
2. Community flood education plans should be developed to help communities maintain and improve their flood education activities.
3. Emergency agencies such as VICSES should act as consultants to communities (e.g. facilitators, resource providers, change agents, coordinators) rather than directing the change process in a top down manner.
4. Flood education programs should address the psychological aspects of preparedness, response and recovery, including their psychological barriers.
5. The emphasis of flood education programs should be on developing preparedness plans (e.g. through personal or organisational preparedness plans) and building community resilience (e.g. capacity building) rather than just awareness-raising.
6. Opportunities for cross-hazard (and cross-agency) programs should be identified and implemented where possible.
7. Flood education planning should be part of floodplain and emergency planning processes (a recommendation from the companion Molino Stewart interim report).
8. Flood education programs should be evaluated as they proceed to ensure continual improvement.
9. Social research should be used in the planning, implementation and evaluation of flood education programs.
10. Flood education programs should be strongly linked into the total warning systems e.g. warnings should trigger appropriate response behaviours and this relationship should be clearly communicated through education programs.

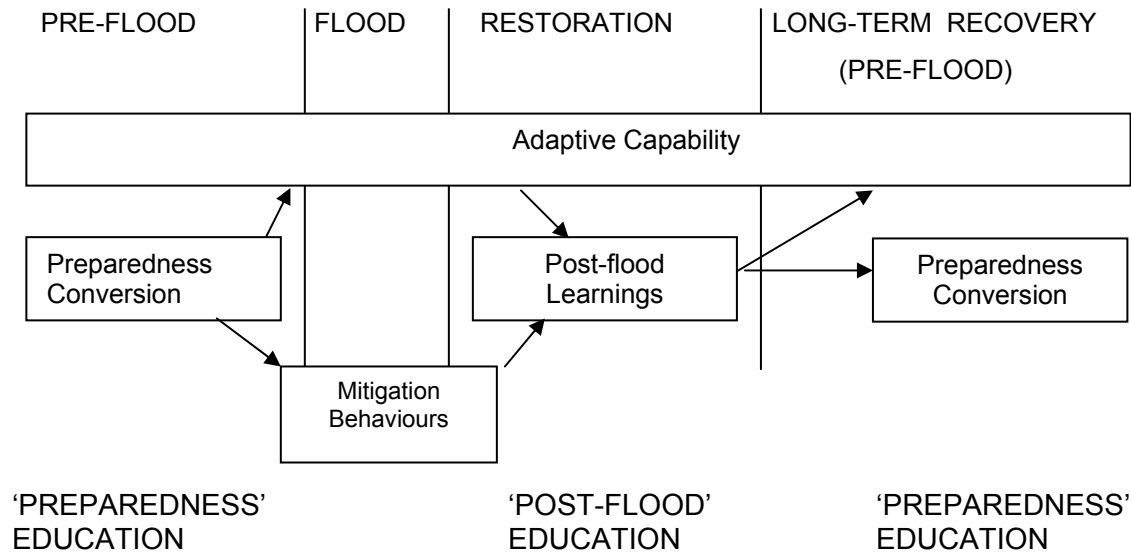
Most of these best practices could also be applied to community storm education.

Dufty (2008) has also identified the following four functions for flood education in building flood resilient communities. The functions are also applicable to storm education.

1. Preparedness conversion. Helping people, organisations and communities commence and maintain preparations for flooding

2. Mitigation behaviours. Learning what to do before, during and after a flood
3. Adaptive capability. Learning how to change and maintain social systems and build community competencies to minimise the impacts of flooding
4. Post-flood learnings. Learning how to improve preparedness levels, mitigation behaviours and adaptive capability after a flood event

These functions are related as education interventions to the 'flood cycle' in Figure 1.



**Figure 1: Functions of flood education related to the flood cycle**

As shown in Figure 1, pre-flood or 'preparedness' education should aim to help people, organisations (e.g. businesses) and their communities commence and maintain preparations for flooding and to build competencies and systems to adapt to flood events. 'Preparedness conversion' is a prerequisite - especially in communities where preparedness levels are low - for individuals, organisations and communities to commence preparedness planning and then to learn appropriate mitigation behaviours and how to improve their competencies and systems ('adaptive capability') to resist and recover from flooding.

After a flood, education has another important role in helping individuals, organisations and communities learn from their flood experiences (e.g. the effectiveness of mitigation behaviours and adaptive capability) and use these learnings for improvements in future flood events.

Another phase of education then commences as long-term recovery becomes the pre-flood part of the new cycle.

### 4.3.2 Assessment of FloodSmart and StormSmart

The Benalla FloodSmart pilot program was assessed (Molino Stewart, 2007) during its development in August 2007 against the ten best practices listed in Section 4.3.1. This assessment is outlined in the middle column of Table 5.

A new assessment of the Benalla FloodSafe program is also provided in Table 5. This assessment relates to the completed Stage 1 of the program and is therefore a part of its summative evaluation.

**Table 5: Assessment of the FloodSmart pilot program against best practices**

<b>Best practices</b>	<b>Benalla FloodSmart program assessment by Molino Stewart in August 2007</b>	<b>Summative assessment of the Benalla FloodSmart program in February 2008</b>	<b>February 2008 Assessment</b>
<i>1. Delivery through community groups</i>	Use of community working group to plan and prepare activities	Use of community working group to plan and prepare activities. Strong participation from community groups and agencies in delivering the program	Strongly addressed
<i>2. Community flood education plans</i>	No formal plan developed	No formal plan developed. Some interest shown by VICSES in preparing a plan.	Not addressed
<i>3. VICSES act as consultants to communities</i>	VICSES part of community working group and assists in making decisions	VICSES part of community working group and assists in making decisions. VICSES facilitates and supports implementation of program through community networks	Strongly addressed
<i>4. Preparedness and barriers</i>	Evidence of Benalla pilot looking at preparedness and barriers in decisions related to education method	Evidence of Benalla pilot looking at preparedness and barriers in decisions related to education method. Adaptive management displayed to overcome unforeseen barriers during program implementation.	Strongly addressed
<i>5. Personal preparedness plans</i>	Benalla FloodSmart Action Guide helps people plan for a flood. No plan for businesses or other sectors e.g. caravan parks	Benalla FloodSmart Action Guide helps residents plan for a flood. No plan for businesses or other sectors e.g. caravan parks	Reasonably well addressed
<i>6. Cross-hazard programs and links</i>	No evidence	Linkages with CFA in program design and implementation. Use of cross-hazards 'home emergency plan' in flip chart and action guide.	Reasonably well addressed
<i>7. Part of floodplain and emergency planning</i>	No evidence	No evidence	Not addressed
<i>8. Program evaluation</i>	No evidence	Formative evaluation using VICSES and resident feedback, meetings etc. This report and Haley (2008) constitutes summative evaluation	Strongly addressed



<i>Best practices</i>	<b>Benalla FloodSmart program assessment by Molino Stewart in August 2007</b>	<b>Summative assessment of the Benalla FloodSmart program in February 2008</b>	<b>February 2008 Assessment</b>
<i>9. Use of social research in planning and evaluation</i>	No evidence	Social research mainly in form resident surveys form basis of Section 4.1 of this report. Social research needs to be better linked to inform education planning and program design.	Reasonably well addressed
<i>10. Linked with total warning systems</i>	Well-linked in Benalla Pilot through classification into three risk zones and activities (e.g. stickers) to communicate this	Well-linked in Benalla Pilot through classification into three risk zones and activities (e.g. stickers) to communicate this	Strongly addressed

Table 5 shows that since August 2007 the Benalla FloodSmart program has strengthened against the flood education best practices. In August 2007 it addressed five of the ten best practices; at the end of Stage 1 it addressed eight of the ten best practices. The main improvements to the program have occurred in:

- Program evaluation
- Use of social research
- Cross-hazards education
- Community participation

It should be noted that only two other programs – the NSW SES FloodSafe Program and the CFA’s Community Fireguard Program – were found to strongly address at least five of the ten best practices in an assessment of hazard education programs, worldwide (Molino Stewart, 2007).

Based on the assessment in Table 5, improvements in FloodSmart need to be made in:

- Linking FloodSmart into floodplain management (e.g. local council sub-plans) and emergency planning e.g. better integrating community education and media into the Australasian Inter-Service Incident Management System (AIIMS structure as recommended by Molino Stewart, 2008).
- Developing and implementing a Benalla flood education plan to ensure long term community flood education outcomes
- Broadening the program across all sectors of the community (e.g. businesses, caravan parks) based on social research and vulnerability studies.

A storm education program should also aim to address the ten best practices outlined in Section 4.3.1. Note that some of the relationships in the best practices are slightly different than for a riverine flooding scenario (as in the Benalla pilot). For example, in its relation with total warning systems, storm education should relate to severe weather or storm warnings and not flood warnings. Nevertheless, an assessment can still be made of the Wodonga StormSmart program against the best practices (see Table 6).

**Table 6: Assessment of the StormSmart program against best practices**

<b>Best practices</b>	<b>Summative assessment of the Wodonga StormSmart program</b>	<b>February 2008 Assessment</b>
<i>1. Delivery through community groups</i>	Some evidence of assistance by SES volunteers and other groups, mainly through community barbeques. No evidence of a community group guiding the design, implementation and evaluation of the program.	Not addressed
<i>2. Community storm education plans</i>	No evidence of a local storm/flash flooding education plan	Not addressed
<i>3. VICSES act as consultants to communities</i>	VICSES using 'top down' approach with lack of engagement from local SES unit and the community in acceptance and design of the program.	Not addressed
<i>4. Preparedness and barriers</i>	Evidence of Wodonga pilot looking at preparedness and barriers in decisions related to education method	Reasonably well addressed
<i>5. Personal preparedness plans</i>	Wodonga StormSmart Action Guide helps people plan for a storm, especially through its Family Home Emergency Plan template. No plan for businesses or other sectors e.g. caravan parks	Reasonably well addressed
<i>6. Cross-hazard programs and links</i>	Linkages with CFA in program facilitation. Use of cross-hazards 'home emergency plan' in action guide.	Reasonably well addressed
<i>7. Part of floodplain and emergency planning</i>	No evidence	Not addressed
<i>8. Program evaluation</i>	Formative evaluation using VICSES and resident feedback, meetings etc. This report constitutes summative evaluation.	Strongly addressed
<i>9. Use of social research in planning and evaluation</i>	Social research mainly in form resident surveys form basis of Section 4.1 of this report. Social research needs to be better linked to inform education planning and program design.	Reasonably well addressed
<i>10. Linked with total warning systems</i>	Use of storm intelligence in information and storm warnings stressed as a trigger for actions in the action guide.	Reasonably well addressed

From the assessment in Table 6, the Wodonga StormSmart addresses six of the ten best practices but only one practice (program evaluation) is deemed to be 'strongly addressed'. Apart from strengthening in five of the best practices assessed as 'reasonably well addressed', improvements need to be made especially in the following practices:



- Design and delivery of the program through participation of community groups
- Development of a community storm/flash flood education plan
- VICSES to act more as a consultant to communities and not in a 'top down' manner
- Link the StormSmart program into local emergency and disaster planning

In relation to the four functions of flood education outlined in Section 4.3.1, according to Dufty (2008), 'most attempts at flood education to date only focus on preparedness conversion and improving mitigation behaviours, with little done on building adaptive capability and community learning after floods'. This comment is also accurate for FloodSmart and StormSmart, where there has been little education activity, apart from providing home emergency plan templates, aimed at building adaptive capability and no education planning for learning after a flood event.

Improvements could still be made for preparedness conversion by better designing FloodSmart and StormSmart based on psychological research (e.g. Paton, 2006) and for mitigation behaviours by using practical learnings (e.g. Molino Stewart, 2008) related to the impact of response behaviours in flood events.

In this context, there is a design flaw in the FloodSmart and Stormsmart pilot programs that needs to be rectified. Both programs are designed partly to raise 'awareness'. Based on extensive research it appears that 'awareness' is only one part of preparedness conversion (Dufty, 2008). According to Paton et al. (2003), "It is frequently assumed that providing the public with information on hazards and their mitigation will encourage preparation. This assumption is unfounded." Several researchers, such as Boura (1998), have demonstrated that there is not a strong and causal link between awareness raising and acting appropriately for hazards.

It is therefore important to redesign FloodSmart and StormSmart related to the four functions identified above. In this redesign, 'awareness-raising' becomes part of a nest of education processes (see Dufty, 2008) related to preparedness conversion.

Specific improvement opportunities in building adaptive capability (systems and competencies) in communities include:

- Training SES volunteers in community education. This enables volunteers to help educate their local communities both in formal (e.g. events) and informal settings. It could also mean that there are educators on the ground to help communities immediately before, during and after a flood event – this was found to be especially useful in the Gippsland November 2007 Flood (Molino Stewart, 2008).
- Identifying and training community leaders in flood education so that they can help educate others in their networks.
- Developing and maintaining ongoing community discourse about flooding and coping with different local flooding scenarios
- Community and agency reviews of preventative (e.g. floodplain planning) and coping systems (e.g. total warning systems, recovery systems). This could be achieved through public meetings, working groups, focus groups. Community emergency plans are another method of encapsulating many of these systems.
- Providing vulnerable community sectors (e.g. businesses), organisations (e.g. caravan parks) and groups e.g. Non-English Speaking Background (NESB) people, aged, with specifically tailored education activities to develop their competencies to cope with a flood event.

Specific improvement opportunities in post-flood learnings include:

- Social research (e.g. surveys, focus groups) to find out how effectiveness of warning systems, evacuation, recovery support, flood education etc. and how they can be improved.
- Agency disaster de-briefs (these are generally in place) the learnings from which improve systems and agency competencies.
- Oral histories. These allow people to recount their stories about the flood event and to identify learnings to better prepare and cope with future floods.
- Community de-brief meetings to identify problems in preparation, response and recovery and possible improvements.

## **5 TRANSFERABILITY TO THE URBAN ENVIRONMENT**

### **5.1 Urban flooding scenarios**

As noted in Section 2.3, in the case of Melbourne, flooding in urban environments consists mainly of riverine flooding and overland flows (flash flooding). As most of the world's major cities are located close to the ocean, tidal flooding and storm surge may also impact on coastal suburbs.

The appropriate community mitigation behaviours for each type of urban flooding can be quite different. 'Riverine flooding is relatively predictable in terms of geography and timing. It can be known many hours or even days in advance when and where a river or creek is likely to overflow its banks, so advance warnings and preparations can be made accordingly' (Melbourne Water, 2008). Residents and organisations can therefore prepare for flooding, and evacuate if required, based on a series of triggers from warning systems that occur over an extended period.

Flash floods 'usually occur with little or no warning following intense rainfall often associated with short duration thunderstorm activity. They can be localised or widespread depending on the path or extent of storm activity' (Melbourne Water, 2008). Due to the short period of notice (can be less than 30 minutes), the most appropriate safety behaviour is to 'shelter in place' and to 'vertically evacuate', if possible i.e. move to a higher floor. There may be only time to carry out some quick actions to protect equipment e.g. raise equipment onto furnishings. Buildings may have to be evacuated after a flash flood for damage or hygiene reasons.

The behaviours related to storm surge and tidal flooding can be similar to riverine flooding, although there may not be precise warning triggers such as those linked to river gauges. Note that responses to tsunamis require again a different set of behaviours e.g. inland evacuation.

The challenge for the flood educator in an urban environment is to understand the nature and extent of flooding in the area of focus. This can be gleaned by flood intelligence such as inundation mapping and local knowledge.

It should be noted that some focus areas (e.g. municipalities) can experience several different types of flooding. A flood education program or plan should address all flood scenarios in these areas.

### **5.2 Urban communities**

An understanding of communities is also critical to the design of a flood education plan or program (Molino Stewart, 2008). In isolated rural communities (e.g. Newry) and discrete regional centres (e.g. Benalla) this is relatively easy, although there still should be effort in understanding multi-faceted nature of these communities such as their networks, capacities, different sectors and vulnerable groups.

In large cities such as Melbourne, these aspects of communities are more 'blurred'. For instance, a 'community' may not be defined solely as a suburb but may extend its networks across several suburbs. Also some groups or sectors may not be confined within these communities.

Two other factors impact on how a community is defined:

1. 'Communities' can be more strongly based on social networks than places of residence. For example, there could be NESB groups that have stronger ties to others in their group to their suburb.

2. There is large number of people moving across the city, including commuters, shoppers, school students and transient workers e.g. couriers. One can therefore live in a certain community and work in a very different community.

For the flood educator, this means that an understanding of the complexities of communities within an urban centre, such as Melbourne, is paramount to designing effective flood education programs and plans. For example, it may mean that a local government area is not the best focus area to educate the most vulnerable or other specific groups or sectors – this may be better done across a social network spanning several suburbs.

### 5.3 Examples of urban flood education programs

Apart from education activities conducted to date by Melbourne Water (see Section 2.3), Melbourne City Council has implemented some flood education activities. Council has developed an education resource for businesses called 'Mind Your Own Business: An Emergency Management Planning Guide for Businesses in the City of Melbourne.' This guide essentially provides a step-by-step guide to developing an emergency management plan, and ultimately implementing that plan. However, it also provides information on impacts on businesses from emergencies, such as flood and fire, which hopefully acts as an effective awareness tool thus potentially prompting businesses to develop an emergency management plan.

Melbourne City Council has also prepared an education resource for residents called 'Be Aware and Be Prepared'. It begins with a checklist, so residents can self assess their emergency preparedness, for both single story dwelling and multi-story dwellings. There is then a five step plan to develop a personal emergency management plan. There is also emergency contact information, and steps to take to recover after an emergency.

Elsewhere in Australia, Brisbane City Council has developed and is implementing a flood education program titled 'FloodWise'. The program stems from a key action from the Lord Mayor's Taskforce on Suburban Flooding relating to 'external education programs to improve the community's understanding of flooding' (Brisbane City Council, 2006). One of the sub-actions is 'assist flash flood affected communities with education material regarding flash floods'. Although there are few details on the Brisbane City Council website about the education planning and program design for these actions, two FloodWise guidebooks have been produced – one for residents, the other for businesses.

Education programs have been also developed specifically for flash flood scenarios. For example, the 'Flash Flood Alley' is a program that focuses on the New Braunfels community in Texas, USA. The program consists of a DVD showing footage of flash floods and case studies of people that have experienced flash flooding in the area. It also includes school materials and a poster. The program can be accessed at [http://www.floodsafety.com/media/ffa/contents\\_index.htm](http://www.floodsafety.com/media/ffa/contents_index.htm).

Molino Stewart (2007) found that these and most other flood education programs worldwide do not comply well with the ten best practices listed in Section 4.3.1. The only examples of urban flooding education that address most of the ten best practices are from Sydney.

Pittwater Council, on the northern beaches of Sydney, has developed and implemented parts of a local flood education plan, designed to improve the preparedness of flood prone residents and businesses in the Newport Beach catchment. This small beachfront catchment experiences flash flooding that can inundate up to 200 properties (residences and businesses) after heavy rain in less than 30 minutes.

Stormwater drains and pipes modify the overland flow of water in the catchment. Flooding can occur in the catchment when the stormwater system does not cope with the rain deluge. 'Ponding' can happen in the lower part of the catchment in these events

due to drainage difficulties to the sea and if seawater also enters the catchment through storm surges.

Parts of the Newport Beach catchment have been flooded on numerous occasions in the past, including in 1977, 1984, 1988 and 1998, with average annual damages estimated to be about \$900,000 (2005 values). Most of the commercial and residential properties in the flood-affected area of the catchment are prone to extensive flood damage within their buildings. There is also high risk to personal safety during and after a flood in the area. Furthermore, there are the intangible costs to the community related to the disruption of flooding.

Funding for the project was obtained by Pittwater Council through a National Disaster Mitigation Program (NDMP) grant. Council engaged Molino Stewart to help develop and commence the implementation of the Newport Beach flood education plan.

Pittwater Council initially sought expressions of interest from residents and business representatives to be part of a community reference committee that would develop and implement the plan. Also on the committee were representatives from Council, NSW SES and the then NSW Department of Natural Resources (DNR).

As a guide to developing the plan and designing its education activities, Council commissioned Molino Stewart to conduct social research into the Newport Beach community's awareness of flood risk and preparedness levels. The main findings of this social research were:

#### RESIDENTS

- Just over half of the residents surveyed did not think their land could flood, whilst about 80 per cent did not think that their home could flood.
- The large majority residents did not know their property could flood when they moved there.
- Residents felt that blocked drains were a major cause of flooding. The majority of residents believed that Council was responsible for reducing the damages caused by floods.
- About 10 per cent of residents thought that they have insurance that would cover any flood damages.
- Most residents were not doing anything to prepare for a flood. About half did not have any idea of what to do to prepare for a flood.
- About 65 per cent of residents had received information about flooding.
- Almost all residents identified Council as the organisation to contact to access flood information. They would normally obtain this information personally from Council (telephone call or visit to the Council offices).
- Twenty per cent of residents said they would use the Council web site to obtain flood information.

#### BUSINESSES

- About 40 per cent of businesses believed their property would not flood.
- 'Flood' was viewed by the businesses surveyed as a low risk hazard ('Fire' was the highest risk hazard to them).
- The large majority of businesses did not know their property could flood when they moved there.
- About 60 per cent of businesses thought (probably incorrectly) that they have insurance that would cover any flood damages.
- Most businesses were not doing anything to prepare for a flood. About half did not have any idea of what to do to prepare for a flood.

- Only 20 per cent of businesses had received flood information.
- Almost all businesses identified Council as the organisation to contact to access flood information. They would normally obtain this information personally from Council (telephone call or visit to the Council offices).
- Fifty per cent of businesses said they would use the Council web site to obtain flood information.

Molino Stewart also carried out a review of Council's internal communications regarding flooding and flood information provided on its website.

Based on this research and its local knowledge of flooding, the community reference group developed its flood education plan. The rationale for the plan was as follows:

'Flash (short notice and short duration) flooding is the primary flood risk in the catchment and there will be little opportunity for warning before, or assistance during a flood. As a result, both residents and businesses would only be able to receive some assistance after flooding occurs. There is, therefore, considerable flood risk to people, their animals and property in the catchment.

'The Newport Beach Floodplain Risk Management Study and Plan, completed by SMEC and adopted by Council in 2004, recommended both structural measures and community education to manage flood risk in the community. This education and communications plan attempts to satisfy the community education recommendation.

'Presently, Pittwater Council manages the flood risk through statutory means in the form of planning controls with associated explanatory material provided to at-risk residents and businesses. Council has recognised, however, that it must broaden the scope of flood hazard education in the Newport community. This plan outlines mechanisms to achieve this goal'.

The vision of the Newport Beach plan was:

*A Newport Beach catchment community that prepares for, responds to and recovers from floods.*

The plan was designed to achieve three outcomes.

1. Council has effective internal communications that help deliver works and practices that are sensitive to flood affected areas;
2. Council has well-coordinated responses to all flood-related enquiries; and
3. Council, in partnership with the community and other organisations, provides regular guidance and support to help residents and businesses in the Newport Beach catchment plan for flooding and its aftermath.

A series of education activities related to each of the outcomes were identified by the community reference committee. Several of these activities were implemented immediately after the release of the plan including:

- Centralising all community flood information into the one locality on Council's website.  
[http://www.pittwater.nsw.gov.au/environment/natural\\_hazards/flood\\_risk](http://www.pittwater.nsw.gov.au/environment/natural_hazards/flood_risk)
- Developing, with NSW SES, a Newport Beach FloodSafe.  
[http://www.ses.nsw.gov.au/multiattachments/3630/DocumentName/Newport\\_Floodsafe\\_guide.pdf](http://www.ses.nsw.gov.au/multiattachments/3630/DocumentName/Newport_Floodsafe_guide.pdf)
- Conducting a doorknock by SES volunteers and Council staff to distribute the FloodSafe Guide and talk to residents about preparing for flooding.
- Developing, with NSW SES, a flash flooding version of the SES's Business FloodSafe Toolkit.

- Conducting a Business Breakfast, in partnership with the Newport Beach Chamber of Commerce, to highlight the risk of flash flooding and help business representatives prepare a flood emergency plan using the Business Toolkit.
- Carrying out further distribution of the Toolkit with local business through a doorknock by SES volunteers.

Other activities planned include an annual ‘meet-the-street’ event to encourage residents to update their flood emergency plans and improved internal communications in Council to answer community enquiries about flooding. Systemic change was also a focus of the Plan’s activities e.g. improved Council procedures to assess works impacted by flooding.

An evaluation plan was built into the Newport Beach Flood Education Plan. A summary of the evaluation plan is provided in Table 7.

**Table 7: Summary of the evaluation plan in the Newport Beach Flood Education Plan**

<b>Evaluation focus</b>	<b>Indicator</b>	<b>Method</b>
<i>1. Achievement of the Flood Education Plan outputs</i>	<ul style="list-style-type: none"> <li>- Maps and a guide produced for Part V Assessment</li> <li>- Staff trained in floodplain management</li> <li>- Number of complaints about Council’s response to flood-related enquiries</li> <li>-One-stop-shop for flood information on Council’s website</li> <li>-FloodSafe Guide produced and used in community engagement</li> <li>-FloodSafe plan kits distributed to all flood-affected residents and businesses</li> </ul>	Observation by Council, community reference committee and social research (e.g. feedback sheets)
<i>2. Community flood awareness and preparedness</i>	<ul style="list-style-type: none"> <li>- Percentage of flood-affected residents and businesses in the Newport Beach catchment that have completed FloodSafe plans</li> <li>- Levels of flood awareness and self-reported preparedness</li> </ul>	Verification of completed plans by Council  Social research (comparison with Molino Stewart baseline survey)
<i>3. Appropriate behaviours immediately before, during and after a flood event</i>	<ul style="list-style-type: none"> <li>- Damage to property compared with previous floods</li> <li>- Injuries to people and loss of life compared with previous floods</li> <li>- Injuries and loss of life to animals</li> <li>-Reported appropriate behaviours by community</li> </ul>	Feedback and statistics from SES and Ambulance Service  Community de-brief meeting



The overall cost of the development and initial implementation (over six months) of the Newport Beach flood education plan was approximately \$45,000. This did not include agency in-kind and community time inputs.

The City of Rockdale, located about 12 kilometres south of the Sydney CBD on the shores of Botany Bay, has also developed a flood education plan. The implementation of some of the plan's education activities have been stalled as NSW SES finalises its flood plan for the area (note the Rockdale City FloodSafe Guide has to be prepared based on the endorsed SES flood plan).

Rockdale LGA is predominantly a residential area but also has substantial industrial areas, parklands/reserves and some commercial areas. A considerable proportion of the residential area is high density housing. The current population of the LGA is approximately 95,000 people, living in about 45,000 properties.

Rockdale LGA is a multicultural area with approximately 40 percent of the population born overseas. Around 55 percent of the residents come from a non-English speaking background. Languages spoken in the community include Arabic, Chinese, Greek, Italian, Macedonian and Spanish.

Rockdale City Council has carried out several flood studies in recent years. From these studies, Council has found that about 30 percent of the City could be affected by flooding. It is estimated that about 15,000 residential properties and 550 businesses are located within these flood prone areas. The most common type of flooding is flash flooding.

Council, through a successful grant application, engaged Molino Stewart to assist with the development and part of the implementation of the Rockdale City Flood Education Plan. As its reference committee, Council used its pre-existing Rockdale Floodplain Management Advisory Committee to develop the flood education plan.

The Committee was established to provide advice to Council on its floodplain management studies, plans and on-ground activities. The Committee consists of local residents and representatives from Council, the SES, the former DNR and Sydney Water.

Similar to the Newport Beach example above, Council engaged Molino Stewart to conduct social research before the Committee commenced the development of its flood education plan. The social research found very low levels of flood awareness and preparedness, especially in flash flooding areas. Surprisingly, there was a strong commitment (61 percent of residents surveyed) to develop a flood emergency plan.

Using the results of the social research, flood studies and its local knowledge, the Committee drafted the flood education plan. The plan also includes an evaluation plan to gauge the success of the education plan and improve it, and its activities, over time. To date, a few activities have been implemented, including the drafting of the FloodSafe Guide, conducting a Business Breakfast in partnership with local chambers of commerce and preparing flood information for Council's website. It is planned to translate information into different community languages. A post-survey is also planned to compare awareness and preparedness levels with the baseline social research and to gauge the usefulness of the education activities and engagement tools.

The overall cost for the development of the local flood education plan, social research and the implementation of the education activities discussed above is about \$60,000. This does not include in-kind support from Council and other agency staff and community time.

## 5.4 Best education practices for urban flooding

Based on the discussion above, best education practices for urban environment flooding include:



1. Education design based on an understanding of urban flooding scenarios in the focus area as discussed in Section 5.1.
2. Education design based on an understanding of urban communities, sectors of communities and vulnerable groups as discussed in Section 5.2.
3. Concentration on all of the four functions of flood education as outlined in Section 4.3.1.
4. Adherence to the ten best practices for flood education outlined in Section 4.3.1.

Following the approach used by Pittwater Council and Rockdale City Council, described in Section 5.3, the following steps are recommended to develop, implement and evaluate a community flood education program.

1. Link flood education planning in with local flood management plans e.g. Council sub-plans and with cross-hazard education programs if appropriate
2. Establish or use an existing community reference committee to guide local flood education plan
3. Collect flood intelligence e.g. flood studies, knowledge from past floods
4. Build an understanding of community adaptive systems and competencies
5. Conduct social research to establish baseline e.g. awareness of risk, risk anxiety, preparedness levels, barriers
6. Using 3, 4 & 5 develop rationale, vision and outcomes for the local flood education plan
7. Design education activities related to the outcomes, using engagement tools and community events where appropriate
8. Develop an evaluation plan as part of the local flood education plan
9. Implement education activities and use formative evaluation as per the evaluation plan to improve during the life (e.g. three years) of the flood education plan
10. Conduct summative evaluation at end of plan's life to review success. Note this should include social research to compare with baseline research as part of the evaluation plan. Note that social research may be appropriate immediately after a flood event to gauge the effectiveness of parts of the plan.
11. Using the summative evaluation, commence the new local flood education plan with step 1 above.

## 5.5 Transfer of FloodSmart and StormSmart

As discussed in Section 4, FloodSmart and StormSmart appear generally to be appropriate and potentially effective programs in raising community awareness and preparedness for flooding. Apart from the improvements discussed in Section 4 for the two programs prior to their use elsewhere, it should be again stressed that they be extended from a 'campaign' to a longer term education program.

Webber and Dufty (2008) describe some research findings from NSW that show that where there is ongoing community education, there have been significant improvements in preparedness levels and flood response e.g. evacuation levels. Micromex (2007) has also shown increases in awareness and preparedness levels at Maitland NSW, both after the implementation of a local flood education plan and a recent flood (June/July 2007) in the area.

Conversely, there is a large body of research that shows that a relatively short-term education program, especially when it is delivered in a top-down fashion, has limited effectiveness in changing and maintaining appropriate behaviours, competencies and social systems in the long term. Therefore, apart from the improvements to the two pilot

programs advocated, there is a critical requirement to build the engagement tools and community events into a long term education planning framework such as a local flood education plan. Community participation is especially important in this process to enable the long term education implementation to be 'self-generating', with the role of VICSES as a facilitator and education expert.

In the Melbourne Water region, there is an excellent opportunity to link local flood education plans into local flood management planning under Action 5.1 and 5.2 of the 'Port Phillip and Westernport Region Flood Management and Drainage Strategy'.

It is also important to note that the design of new FloodSmart and StormSmart education programs may be quite different than for the pilots in the two regional centres. Note that VICSES has already designed FloodSmart tools and events for the Alpine municipality that recognise the smaller isolated communities in that LGA. A separate action guide is being developed for each of the communities to highlight their different flood scenarios.

In the Melbourne Water region, there are opportunities based on an understanding of its communities (see Section 5.2), to design education activities (and flood education plans) not just relevant to LGAs but also to other entities such as catchments, community sectors (e.g. business sector, local councils, residents, schools), vulnerable groups and organisations (e.g. retirement villages, caravan parks).

Based on the findings in Section 4, the FloodSmart magnetised flip chart has particular transferability to the Melbourne Water region. Already VICSES has prepared a flash flood flip chart that links flash flooding information in with StormSmart information. This appears to be an appropriate fusion as flash flooding is usually a result of severe storms.

The use of a flash flood flip chart as an engagement tool in the urban environment is supported by research in NSW. NSW SES developed and piloted a Home FloodSafe flash flood flip chart in the urban environments of Wollongong and Coffs Harbour. Feedback about the usefulness of the flip chart in helping homes plan for flooding was extremely positive.

The action guide also appears to be a useful engagement tool that could be easily transferred to urban flood prone communities. This model has been used by NSW SES in the production of several action guides (called FloodSafe Guides) in urban communities such as Blacktown, Coffs Harbour, Georges River and Newport Beach. General feedback about these guides has been very positive.

The meter box stickers are probably best used in riverine flood scenarios in urban areas such as along the Maribyrnong and Yarra Rivers, as the StormSmart sticker appeared to be inappropriate and ineffective in Wodonga. Meter box stickers have been used with reasonable effectiveness in Sydney along the Woronora River where flood warning systems are in place (Molino Stewart, 2005).

As Duffy (2008) emphasises, websites should not be viewed as major engagement tools but do have a supportive role as a repository of FloodSmart and StormSmart information enabling access by all with a computer. VICSES, as 'champion' of flood education in the State should house this information on its website with appropriate links to the education section of the Melbourne Water website. As recommended by Molino Stewart (2007), it is particularly important for the Melbourne Water region important to have translations into the main community languages available for this information.

The FloodSmart and StormSmart brochures and posters are also supportive tools that can be transferred for the urban flood scenarios and communities. It should be noted that inundation maps and historic flood photographs are useful graphics for these tools. An issue that may arise with maps is the concern about publically identifying properties as flood prone. With historic photographs, some anecdotal feedback has shown that people do not engage well with old, black-and-white images. Photographs showing current landmarks in flood appear to have strong effectiveness in internalising risk.

Based on the findings in Section 4, the community barbeques appear to be effective as a community event and could be easily transferred to the Melbourne Water region. Community networks (e.g. Neighbourhood Watch, Lions, Rotary) as used in FloodSmart could also be accessed for presentations, stalls and other events. Doorknocking is especially useful in small communities or groups (e.g. in the Newport Beach catchment) where local units and others have the capacity to effectively carry out this labour intensive activity.

As a last note regarding transferability to the Melbourne Water region, it is important to reiterate the need to design the FloodSmart and StormSmart programs to help build community flood resilience - rather than just raising awareness and preparedness levels. It is more appropriate to design the programs in line with the four functions of flood education, described in Section 4.3.2, that better align with learning for community resilience. This is especially important in the Melbourne Water region where some communities have 'intolerable flood risk' due to their lack of protection from flood mitigation structures and planning. Resilience in these communities therefore is particularly critical, especially in the uncertain future of accelerated climate change.

## 6 CONCLUSION AND RECOMMENDATIONS

The FloodSmart and StormSmart pilot programs both appear to have raised awareness and preparedness levels in Benalla and Wodonga respectively. Both programs were viewed as an appropriate activity for VICSES to lead and involve its volunteers in. The Benalla program appeared to have more impact across the community than Wodonga StormSmart as it had greater support from the local SES unit and support from community groups.

The suite of engagement tools and community events used in the pilot programs generally appear to have been effective in helping to prepare communities for floods and storms. The most effective tools appear to be the flipcharts, action guides and the meter box stickers (only for FloodSmart). The community barbeques and stalls (for FloodSmart) appear to be the most effective types of community events.

Prior to their transference to other settings, FloodSmart and StormSmart need to be redesigned so that they relate better to building community resilience to flooding. Instead of just aiming to raise awareness and preparedness levels, they should address the functions of flood education – learning and associated activities related to improving preparedness conversion, mitigation behaviours, adaptive capability and post-flood learnings.

In addition to this redesign, the following main improvements to the two programs are recommended:

- Extending the programs from education campaigns into ongoing programs. It is recommended that this is achieved through local flood education plans linked to local flood management plans e.g. council sub-plans
- Encouraging more community participation in the design, implementation and evaluation of the programs.
- Using social research, through longitudinal studies, to guide the planning and ongoing evaluation of the programs.
- Ensuring that VICSES staff supports the programs at all levels and that SES volunteers are adequately trained in community education to help implement the programs.
- Ensuring that VICSES is better profiled in the programs as the lead emergency agency and that the 132 500 number is better highlighted.

After making these improvements, the two programs are very transferable to urban environments such as Melbourne. It is critical that the adapted programs are designed based on a detailed understanding of urban flooding scenarios and urban communities and social systems. The linkage of flash flood education programs with StormSmart appears to be appropriate and potentially effective.

In the Melbourne Water region it is important to link the planning of the education programs in with planning around the Port Phillip and Westernport Region Flood Management and Drainage Strategy. Adequate funding is required to ensure that local flood education plans are developed, implemented and evaluated through community participation around the FloodSmart and StormSmart brands.

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**Appendix A**  
**January 2006 Surveys**

## BENALLA SURVEY

### 1. Please indicate your age group-

- |  |  |
|--|--|
| <input type="checkbox"/> 12 – 19 years | <input type="checkbox"/> 40 - 49 years |
| <input type="checkbox"/> 20 – 29 years | <input type="checkbox"/> 50 – 59 years |
| <input type="checkbox"/> 30 - 39 years | <input type="checkbox"/> 60+ years     |

### 2. Is your house of principal residence in the Benalla area?

- YES  
 NO

### 3. How long have you lived in your current home?

- |  |  |
|--|--|
| <input type="checkbox"/> 0 – 4 years   | <input type="checkbox"/> 15 – 19 years |
| <input type="checkbox"/> 5 – 9 years   | <input type="checkbox"/> 20+ years     |
| <input type="checkbox"/> 10 - 14 years |  |

### 4. How long have you lived in Benalla?

- |  |  |
|--|--|
| <input type="checkbox"/> 0 – 4 years   | <input type="checkbox"/> 15 – 19 years |
| <input type="checkbox"/> 5 – 9 years   | <input type="checkbox"/> 20+ years     |
| <input type="checkbox"/> 10 - 14 years |  |

### 5. What do you believe is the biggest threat to your property? (Tick only one box)

- |                                |                                |
|--------------------------------|--------------------------------|
| <input type="checkbox"/> Theft | <input type="checkbox"/> Flood |
| <input type="checkbox"/> Fires | <input type="checkbox"/> Storm |

### 6. Do you live in a flood prone area?

- Yes  
 No  
 Don't know

### 7. How significant is the risk of flood?

- |                                       |   |
|---------------------------------------|---|
| <input type="checkbox"/> Extreme risk | <input type="checkbox"/> Some risk          |
| <input type="checkbox"/> High risk    | <input type="checkbox"/> Low risk           |
| <input type="checkbox"/> Medium Risk  | <input type="checkbox"/> Insignificant risk |

### 8. Have you experienced flooding in Benalla?

- Yes  
 No  
 Don't know

### 8 b). If yes, do you recall when this flood occurred?

---

### 8 c). Do you believe that larger floods than you have previously experienced are possible in Benalla?

- Yes  
 No  
 Don't know

### 9. Have you seen any information about flooding in Benalla?

- Yes  
 No  
 Don't know
-

**9 b). If yes, what type of information have you seen?**

- Newspaper advertising
- Public meetings
- Brochures
- Flood icons/signs
- Other; please specify \_\_\_\_\_

**10. Have you noticed signs relating to flooding in Benalla?**

- Yes
- No

**10b). If yes, where have you noticed flood signs?**

- Along major road ways
- Throughout residential areas
- Beside bridges
- Outside of town
- other; please specify \_\_\_\_\_

**11. How would you expect to be notified if a flood was to occur?**

- Hear from Neighbours
- Hear on the radio
- Hear on television
- Door knock
- Emergency telephone service
- Bureau of Meteorology website
- Other; please specify \_\_\_\_\_

**12. After being warned of an imminent flood, where is the first place you would expect to gain additional information? (Tick only one box)**

- Don't know
- Telephone State Emergency Service
- Telephone local council
- Telephone Bureau of Meteorology
- Internet
- Tune to local radio station
- Tune to ABC radio
- Read flood brochure
- Local residents/neighbours
- Other; please specify \_\_\_\_\_

**13. Do you have an emergency kit for floods?**

- Yes
- No

**14. Do you think that being prepared for a flood can reduce property losses?**

- Yes
- No
- Don't know

**15. Do you think being prepared for a flood can improve your personal safety?**

- Yes
- No
- Don't know



**16. How would you rate the your level of preparation for a flood?**

- Extremely well prepared
- Well Prepared
- Prepared
- Poor level of preparation
- Unprepared

**17. How would you like to receive information about flooding and flood risk? (Tick only one box)**

- Community meetings / Forums / Workshops
- Local Road / street meetings
- Local Newspaper
- On the internet
- Letter drop
- I don't need to receive any information about flooding
- Other (Please specify) \_\_\_\_\_

**18. Who would you expect to receive flood information from?**

- Local Council
- State Emergency Service
- Bureau of Meteorology
- Other (please specify) \_\_\_\_\_

**19. Who has the main responsibility to prepare residents for a flood event? (Tick one box only)**

- Local Council
- State Emergency Service
- Bureau of Meteorology
- Residents
- Other (please specify) \_\_\_\_\_

**20. Do you have insurance against flood?**

- Yes
  - No
  - Don't know
-

## WODONGA SURVEY

### 1. Please indicate your age group-

- |  |  |
|--|--|
| <input type="checkbox"/> 12 – 19 years | <input type="checkbox"/> 40 - 49 years |
| <input type="checkbox"/> 20 – 29 years | <input type="checkbox"/> 50 – 59 years |
| <input type="checkbox"/> 30 - 39 years | <input type="checkbox"/> 60+ years     |

### 2. Is your house of principal residence in the Wodonga area?

- YES  
 NO

### 2. How long have you lived in your current home?

- |  |  |
|--|--|
| <input type="checkbox"/> 0 – 4 years   | <input type="checkbox"/> 15 – 19 years |
| <input type="checkbox"/> 5 – 9 years   | <input type="checkbox"/> 20+ years     |
| <input type="checkbox"/> 10 - 14 years |  |

### 3. How long have you lived in Wodonga?

- |  |  |
|--|--|
| <input type="checkbox"/> 0 – 4 years   | <input type="checkbox"/> 15 – 19 years |
| <input type="checkbox"/> 5 – 9 years   | <input type="checkbox"/> 20+ years     |
| <input type="checkbox"/> 10 - 14 years |  |

### 4. What do you believe is the biggest threat to your property? (Tick only one box)

- |                                |                                |
|--------------------------------|--------------------------------|
| <input type="checkbox"/> Theft | <input type="checkbox"/> Storm |
| <input type="checkbox"/> Fires | <input type="checkbox"/> Flood |

### 5. Is Wodonga a storm prone area?

- Yes  
 No  
 Don't know

### 6. How significant is the risk of storm?

- |                                       |   |
|---------------------------------------|---|
| <input type="checkbox"/> Extreme risk |   |
| <input type="checkbox"/> High risk    | <input type="checkbox"/> Low risk           |
| <input type="checkbox"/> Medium Risk  | <input type="checkbox"/> Insignificant risk |

### 7. Have you experienced severe storms in Wodonga?

- Yes  
 No  
 Don't know

### 7 b). If yes, do you recall when this Storm occurred?

---

### 7 c). Do you believe that larger storms than you have previously experienced are possible in Wodonga?

- Yes  
 No  
 Don't know

### 8. Have you seen any information about storm safety in Wodonga?

- Yes  
 No  
 Don't know

**8 b). If yes, what type of information have you seen?**

- News Media
- Public meetings
- Brochures
- Website information
- Other; please specify \_\_\_\_\_

**9. After being warned of an imminent significant storm, where is the first place you would expect to gain additional information? (Tick only one box)**

- Don't know
- Telephone State Emergency Service
- Telephone local council
- Telephone Bureau of Meteorology
- Internet
- Tune to local radio station
- Tune to ABC radio
- Read Storm brochure
- Local residents/neighbours
- Other; please specify \_\_\_\_\_

**10. Do you have an emergency kit for storms?**

- Yes
- No

**11. Do you think that being prepared for a storm can reduce property losses?**

- Yes
- No
- Don't know

**12. Do you think being prepared for a storm can improve your personal safety?**

- Yes
- No
- Don't know

**13. How would you like to receive information about Storms and Storm risk? (Tick only one box)**

- Community meetings / Forums / Workshops
- Local Road / street meetings
- Local Newspaper
- On the internet
- Letter drop
- I don't need to receive any information about Storms
- Other (please specify) \_\_\_\_\_

**14. Who would you expect to receive Storm information from?**

- Local Council
- State Emergency Service
- Bureau of Meteorology
- Other (please specify) \_\_\_\_\_

**15. Your property is significantly damaged during a storm, you notice that several properties within the immediate vicinity are damaged. A volume of water is entering the roof cavity and causing internal damage. Who do you immediately call? (TICK ONE BOX ONLY)**

- 000 (triple zero)
-

- Police
- Fire Brigade
- Ambulance
- State Emergency Service
- Council
- Other? \_\_\_\_\_

**15 a. How long would you expect to wait until help arrived?**

---

- Less than 15 minutes
- 15 minutes to under an hour
- Between 1 and 3 hours
- Between 3 and 10 hours
- Between 10 and 24 hours
- Greater than 24 hours

**16. Who has the main responsibility to prepare residents for a storm event? (tick one box only)**

- Local Council
- State Emergency Service
- Bureau of Meteorology
- Residents
- Other (please specify) \_\_\_\_\_

**17. What are the main types of risk that you associate with significant storms? (you may tick several boxes)**

- I don't associate storms with significant risk
  - Water damage
  - Roof Damage
  - Personal Safety
  - Road Safety
  - Loss of essential services
  - Food damage
  - Hail damage
  - Other (please specify)
-



**Appendix B**  
**October 2007 Surveys**

# FloodSmart Evaluation Survey

Date: \_\_\_\_\_

Location: \_\_\_\_\_

FloodSmart Zone –      Red      Orange      Yellow      Unknown      (please circle)

---

**1. What do you think the chance of your property being flooded would be? (only one answer permitted)**

- a. No Chance .....
- b. Some Chance .....
- c. Even Chance .....
- d. High Chance .....
- e. Inevitable .....

**2. How well do you think you are prepared for flooding if it were to occur today? (only one answer permitted)**

- A. Not at all .....
- B. Slightly .....
- C. Moderately well .....
- D. Very well .....
- E. Extremely well .....

**3. Do you currently have a flood emergency plan for your premises?**

- A. Yes .....
- B. No .....

**4. What is the first way you would expect to be notified of an impending flood? (only one answer permitted)**

- A. Radio Broadcasts involving Bureau of Meteorology forecasters .....
  - B. Other Radio broadcasts .....
  - C. Television .....
  - D. Bureau of Meteorology website .....
  - E. Other websites .....
  - F. Friend/Neighbour/ Relative .....
  - G. Door knock by SES or others .....
  - H. Heavy Rain .....
  - I. Flood waters .....
  - J. Other .....
-

**5. After being warned of an imminent flood, would you expect further information updates?**

A. Yes .....

**Where would you expect the information to come from?**

i. Radio .....

ii. Television .....

iii. Friend/neighbour/relative .....

iv. Internet .....

v. SES .....

vi. Flood Information Line .....

vii. Other (specify) .....

B. No .....

**6. If your property were to flood do you believe that this could threaten your personal safety?**

A. Yes .....

**How much?**

i. Minor threat .....

ii. Moderate threat .....

iii. Significant threat .....

iv. Life threatening .....

B. No .....

**7. If your property were to flood do you believe that this could threaten your property or possessions?**

A. Yes .....

**How much?**

i. Minor threat .....

ii. Moderate threat .....

iii. Significant threat .....

iv. Severe threat .....

B. No .....

**8. If flooding were imminent how would you monitor the event? (more than one answer permitted)**

A. Radio .....

B. Television .....

C. Bureau of Meteorology website .....

D. Other websites .....

E. Looked at the floodwaters on or near my property .....

**If Radio or TV selected, please specify what station(s)?**

Specify .....

**9. If your property were about to be flooded what actions would you take? (Do not read the answers, tick off as the person lists)**



- A. Place valuables in waterproof containers or bags .....
- B. Lift contents to higher levels .....
- C. Lift carpets .....
- D. Remove valuables from the premises .....
- E. Block points at which water could enter the building .....
- F. Other actions (specify) .....

**10. Would you warn other people about the flood?**

- A. Yes .....   
**Who?** (More than one answer permitted)
  - i. Family .....
  - ii. Friends .....
  - iii. Neighbours .....
  - iv. Others (specify) .....
- B. No .....

**11. Would you evacuate from your home during an impending flood? (Do not read the answers, tick off as the person lists)**

- A. Yes .....   
**Why?** (More than one answer permitted)
  - i. Firmly believe the building would flood .....
  - ii. Threat to personal safety .....
  - iii. Cautious person – better to be safe than sorry .....
  - iv. Have to look after others (partner/dependents/pets) .....
  - v. I might be persuaded to leave by others .....
  - vi. Other (specify) .....
- B. No .....   
**Why Not?** (More than one answer permitted)
  - i. Do not believe building would flood .....
  - ii. Not a great enough threat to personal safety .....
  - iii. Knew how to manage .....
  - iv. Stay to help emergency service work .....
  - v. Stay to look after other people .....
  - vi. Stay to protect property or possessions from floodwaters .....
  - vii. Stay to protect property or possessions from looters .....
  - viii. It may be more dangerous outside .....
  - ix. Do not have transport .....
  - x. Do not know where to go .....
  - xi. Other (specify) .....

**12. If your property were 'surrounded' by flood waters would you walk or drive through the floodwaters?**

- a. Yes .....
- b. No .....

**If yes, why?**

.....

.....

.....

.....

**13. If you have pets, what would you do with your pets during the flood?**

- A. Bring them with me when I evacuate .....
- B. Leave them at home .....
- C. I don't have pets .....

End of Engagement Questions

**14. How satisfied are you with the flood information you have received?**

- A. Extremely dissatisfied .....
- B. Dissatisfied .....
- C. Not sure .....
- D. Satisfied .....
- E. Extremely satisfied .....

**15. How easy has the FloodSmart information been to understand?**

- A. Very difficult .....
- B. Difficult .....
- C. Appropriate .....
- D. Easy .....
- E. Very easy .....

**16. How could the FloodSmart information have been improved? (written response)**

.....

.....

.....

.....

**17. Please indicate your preferred means of receiving FloodSmart information. (more than one answer permitted)**

- A. Radio .....
- B. Television .....
- C. Internet .....
- D. Brochures & guidebooks .....
- E. Email .....
- F. Face to face contact .....
- G. FloodSmart Community Events .....

**18. Have you experienced a flood before?**

- A. Yes .....   
    **When** .....
- B. No .....

**19. Could you please indicate which of the following age groups includes your age? (Read out options below. Only ONE answer permitted)**

- A. Teens .....
  - B. Twenties .....
  - C. Thirties .....
  - D. Forties .....
  - E. Fifties .....
  - F. Sixties .....
  - G. Seventy or over .....
-

**20. What is your gender?**

- A. MALE.....
- B. FEMALE.....

**21. How long have you lived in Benalla?**

- A. 0 – 4 years.....
- B. 5 – 9 years .....
- C. 10 – 14 years.....
- D. 15 – 19 years.....
- E. 20+ years.....

**22. Do you live in a flood prone area?**

- A. Yes.....
- B. No.....
- C. Don't know.....

**23. Have you noticed signs relating to flooding in Benalla?**

- A. Yes.....
- B. No.....



---

Thank you for taking the time to complete this survey.

Victoria State Emergency Service will be conducting a follow up survey. If you would like to be a part of this follow up please complete your details below:

Name (Full): .....

Contact Phone: .....

Best time to contact:                      business hours/ after hours/ anytime (please circle)

Signature: .....

# StormSmart Evaluation Survey

DATE \_\_\_\_\_

LOCATION \_\_\_\_\_

## 1. What do you think the chance of your property being affected Severe Weather would be?

Only one answer permitted

- a. No Chance .....
- b. Some Chance .....
- c. Even Chance .....
- d. High Chance .....
- e. Inevitable .....

## 2. How well do you think you are prepared for Severe Weather/ Storms if it were to occur today?

Only one answer permitted

- 1. Not at all .....
- 2. Slightly .....
- 3. Moderately well .....
- 4. Very well .....
- 5. Extremely well .....

## 24. Do you currently have a storm emergency plan for your premises?

- a. Yes .....
- b. No .....

## 25. What is the first way you would expect to be notified of an impending storm?

Only one answer permitted.

- a. Radio Broadcasts involving Bureau of Meteorology forecasters .....
  - b. Other Radio broadcasts .....
  - c. Television .....
  - d. Bureau of Meteorology website .....
  - e. other websites .....
  - f. Friend/Neighbour/ Relative .....
  - g. Door knock by SES or others .....
  - h. Heavy Rain .....
  - i. Other .....
-

**26. After being warned of an imminent storm, where would expect to gain additional information? ?**

- viii. Radio.....
- ix. Television.....
- x. Friend/neighbour/relative.....
- xi. Internet.....
- xii. SES.....
- xiii. Other (Note who).....

c. I would not expect additional information.....

**27. If your property were to be hit by storm or flood waters associated with that storm, to you believe that this could threaten your personal safety?**

a. Yes.....

**How much?**

- v. Minor threat.....
- vi. Moderate threat.....
- vii. Significant threat.....
- viii. Life threatening.....

b. No.....

**28. If your property were to be affected by storms to you believe that this could threaten your property or possessions?**

a. Yes.....

**How much?**

- v. Minor threat.....
- vi. Moderate threat.....
- vii. Significant threat.....
- viii. Severe threat.....

b. No.....

**29. If a storm or severe weather were imminent how would you monitor the event?**

more than one answer permitted

- a. Radio.....
- b. Television.....
- c. Bureau of Meteorology website.....
- d. Other websites.....
- e. looked at the floodwaters on or near my property.....

If "Radio or TV", were used for monitoring

**What station(s)?**

Specify .....



**30. If a storm strikes, would you do any of the following actions?**

**DO NOT LIST – Tick off as people highlight these**

- a. Stay inside and shelter well clear of windows.....
- b. If necessary cover yourself with a mattress, blanket or tarpaulin.....
- c. If outdoors find emergency shelter.....
- d. If driving, stop clear of trees, power lines or streams.....
- e. Avoid using the telephone.....
- f. Other actions (specify).....

**31. Would you warn other people about the storm?**

- a. Yes .....
- b. No .....

**If yes, who?**

**If More than one answer permitted.**

- v. Family.....
- vi. Friends.....
- vii. Neighbours.....
- viii. Others (specify) .....

**32. If your property were 'surrounded' by flash flood waters would you walk or drive through the floodwaters?**

- a. Yes .....
- b. No .....

**If yes, why?**

**Write responses below.**

**33. What would you do with your pets (if any) during the storm?**

- a. Bring them with me when I evacuate .....
- b. Leave them at home .....
- c. I don't have pets.....

**End of Engagement Questions**

---

**34. How satisfied are you with the storm information you have received?**

Rate satisfaction on scale of 1 to 5

- 1. Extremely dissatisfied.....
- 2. ....
- 3. ....
- 4. ....
- 5. Extremely satisfied .....

**35. How easy has the StormSmart information been to understand?**

Rate satisfaction on scale of 1 to 5

- 1. Very difficult.....
- 2. ....
- 3. ....
- 4. ....
- 5. Very easy .....

**36. How could the StormSmart information have been improved?**

Write responses below.

**37. Please indicate your preferred means of receiving StormSmart information**

more than one answer permitted

- a. Radio.....
- b. Television.....
- c. Internet.....
- d. Brochures & guidebooks.....
- e. Email.....
- f. Face to face contact.....
- g. FloodSmart Community Events.....

“to wrap up, some questions about you”.

**38. Have you experienced a storm before?**

- a. Yes.....
- b. No.....

If yes where and when?.....

**39. Could you please indicate which of the following age groups includes your age?**

Read out options below. Tick  the option as it is confirmed (only ONE answer)

- a. Teens.....
- b. Twenties.....
- c. Thirties.....
- d. Forties.....
- e. Fifties.....
- f. Sixties.....
- g. Seventy or over.....

What is your Gender?

- a. MALE.....
- b. FEMALE.....

**40. How long have you lived in the Wodonga region?**

- a. 0 - 4 years.....
- b. 5 - 9 years .....
- c. 10 - 14 years .....
- d. 15 - 19 years.....
- e. 20+ years.....

**41. Do you live in a storm prone area?**

- a. Yes.....
- b. No.....
- c. Don't know.....

**42. Have you noticed signs relating to storms in Wodonga?**

- a. Yes.....
  - b. No.....
-

---

Thank you for taking the time to complete this survey.

Victoria State Emergency Service will be conducting a follow up survey. If you would like to be a part of this follow up please complete your details below:

Name (Full): .....

Contact Phone: .....

Best time to contact:            business hours/ after hours/ anytime (please circle)

Signature: .....



**Appendix C**  
**December 2007 Surveys**



## FloodSmart Evaluation Phone Survey

INTERVIEW NUMBER \_\_\_\_\_

INTERVIEWER \_\_\_\_\_

DATE \_\_\_\_\_

Use the following to introduce yourself.  
 “Good morning/afternoon. My name is ..... and I am a SES volunteer. Do you have 10 minutes to answer some questions about flooding in Benalla?”

If they say “NO”, thank them and hang up.

If they say “YES”, continue with the survey.

**43. Are you aware of a recent education program to help people better prepare for flooding in the Benalla area?**

Only one answer permitted

- f. Yes.....
- g. No.....

If they answer NO go to Question 4. If they answer YES continue

**44. How did you find out about this flood education program?**

Do not prompt. Write down responses using the list below. More than one answer permitted

- a. Newspaper article.....
- b. Community BBQs.....
- h. SES Volunteers.....
- i. Meter Box Stickers.....
- j. Brochures.....
- k. Internet.....
- l. Action Guide.....
- m. Radio.....
- n. Magnetised Action Guide Flipchart.....
- o. Word-of-mouth.....
- p. Other (please note).....

**45. Are you aware that this education program is called ‘FloodSmart’?**

Only one answer permitted

- a. Yes.....
- b. No.....

**46. Have you seen any FloodSmart signs around Benalla?**



Only one answer permitted

- a. Yes.....
- b. No.....

**47. Did you receive a flood sticker for your meter box?**

Only one answer permitted

- a. Yes.....
- b. No.....

If they answer NO go to Question 8. If they answer YES continue

**48. Has the flood sticker been stuck onto your meter box?**

Only one answer permitted

- a. Yes.....
- b. No.....

**49. How useful do you think the meter box stickers will be in helping your household prepare for floods?**

Only one answer permitted. Record any reasons for answers under comments

- a. Useless.....
- b. Of some help.....
- c. Very helpful.....

**Comments:**

**50. Did you receive the FloodSmart information such as the Benalla action guide, magnetised flipchart and brochure?**

Only one answer permitted

- a. Yes.....
- b. No.....

If they answer NO go to Question 12. If they answer YES continue

**51. Have you placed the magnetised flipchart on the fridge?**

Only one answer permitted

- a. Yes.....
- b. No.....

**52. Have you read the FloodSmart documents?**

Only one answer permitted

- a. Yes.....
- b. No.....

**53. How useful do you think the FloodSmart action guide, magnetised flipchart and brochures will be in helping your household prepare for floods ?**

Only one answer permitted. Record any reasons for answers under comments

- a. Useless.....
- b. Of some help.....
- c. Very helpful.....

**Comments:**

**54. Did you attend one of the community barbeques about flooding?**

Only one answer permitted

- a. Yes.....
- b. No.....

If they answer NO go to Question 14. If they answer YES continue

**55. How useful was the barbeque in helping you become aware of and prepare for floods?**

Only one answer permitted. Record any reasons for answers under comments

- a. Useless.....
- b. Of some help.....
- c. Very helpful.....

**Comments:**

**56. What is the flood and storm emergency number for the State Emergency Service (SES)?**

Record answer below

**57. What FloodSmart colour zone do you live in?**

Only one answer permitted

- a. Don't know.....
- b. Red.....
- c. Orange.....
- d. Yellow.....

If they answer DON'T KNOW go to Question 18. If they answer with one of the colours continue

**58. What does this coloured zone tell you about your property in a flood?**

List answer below

**59. How well do you think you are prepared for flooding if it were to occur today?**

Only one answer permitted

- a. Not at all .....
- b. Slightly .....
- c. Moderately well .....
- d. Very well .....
- e. Extremely well .....

**60. Do you currently have a family home emergency plan for your premises?**

Only one answer permitted.

- c. Yes .....
- d. No .....

If they answer YES go to Question 20. If they answer NO continue

**61. Would you consider preparing a family home emergency plan for your premises?**

Only one answer permitted

- a. Yes .....
- b. No .....
- c. Possibly .....

**62. What do you need to learn more about so that you are better prepared for floods?**

List ideas below

**63. What improvements would you suggest for the FloodSmart education program to help people better prepare for flooding in the Benalla area?**

List improvements below

**64. Would you be interested in helping with planning and implementing FloodSmart education actions in future?**

Only one answer permitted

- a. Yes .....
- c. No .....
- c. Possibly .....

If they answer YES or POSSIBLY ask if you could record their details

'Thankyou for your time'

## StormSmart Evaluation Phone Survey

INTERVIEW NUMBER \_\_\_\_\_

INTERVIEWER \_\_\_\_\_

DATE \_\_\_\_\_

Use the following to introduce yourself.  
 “Good morning/afternoon/evening. My name is ..... and I am a SES volunteer. Do you have 10 minutes to answer some questions about preparing for storms in Wodonga?”

If they say “NO”, thank them and hang up.

If they say “YES”, continue with the survey.

**65. Are you aware of a recent education program to help people better prepare for storms in the Wodonga area?**

Only one answer permitted

- q. Yes.....
- r. No.....

If they answer NO go to Question 4. If they answer YES continue

**66. How did you find out about this storm education program?**

Do not prompt. Write down responses using the list below. More than one answer permitted

- a. Newspaper article.....
- b. Community BBQs.....
- s. SES Volunteers.....
- t. Stickers.....
- u. Brochures.....
- v. Internet.....
- w. Action Guide.....
- x. Radio.....
- y. Word-of-mouth.....
- z. Other (please note).....

**67. Are you aware that this education program is called ‘StormSmart’?**

Only one answer permitted

- a. Yes.....
- b. No.....

**68. Did you receive information such as the Wodonga StormSmart action guide, sticker and poster?**

Only one answer permitted

- a. Yes.....
- b. No.....

If they answer NO go to Question 8. If they answer YES continue

**69. Have you read these StormSmart documents?**

Only one answer permitted

- a. Yes.....
- b. No.....

**70. Where will you keep these StormSmart documents?**

Record answers below

**71. How useful do you think the StormSmart action guide, stickers and posters will be in helping your household prepare for storms ?**

Only one answer permitted. Record any reasons for answers under comments

- a. Useless.....
- b. Of some help.....
- c. Very helpful.....

**Comments:**

**72. Did you attend one of the community barbeques about storms?**

Only one answer permitted

- a. Yes.....
- b. No.....

If they answer NO go to Question 10. If they answer YES continue

**73. How useful was the barbeque in helping you become aware of and prepare for storms?**

Only one answer permitted. Record any reasons for answers under comments

- a. Useless.....
- b. Of some help.....
- c. Very helpful.....

**Comments:**

**74. What is the storm emergency phone number for the State Emergency Service (SES)?**

Record answer below

**75. How well do you think you are prepared for a storm if it were to occur today?**

Only one answer permitted

- a. Not at all.....
- b. Slightly.....

- c. Moderately well .....
- d. Very well .....
- e. Extremely well .....

**76. Do you currently have a family home emergency plan for your premises?**

Only one answer permitted.

- e. Yes .....
- f. No .....

If they answer YES go to Question 14. If they answer NO continue

**77. Would you consider preparing a family home emergency plan for your premises?**

Only one answer permitted

- a. Yes .....
- d. No .....
- c. Possibly .....

**78. What do you need to learn more about so that you are better prepared for storms?**

List ideas below

**79. What improvements would you suggest for the StormSmart education program to help people better prepare for storms in the Wodonga area?**

List improvements below

**80. Would you be interested in helping with planning and implementing StormSmart education actions in future?**

Only one answer permitted

- a. Yes .....
- e. No .....
- c. Possibly .....

If they answer YES or POSSIBLY ask if you could record their details

'Thankyou for your time'



## **Appendix D**

### **Interview and focus group questions**





## FLOODSMART/STORMSMART EVALUATION INTERNAL INTERVIEW QUESTIONS

PERSON INTERVIEWED \_\_\_\_\_

POSITION \_\_\_\_\_

DATE \_\_\_\_\_

**1. What has been your involvement in the FloodSmart or StormSmart program?**

Icebreaker/General background question. Probe for both personal involvement and that SES section's role in program

**2. What are the aims of the FloodSmart/StormSmart program?**

Record responses. No prompting

**3. Do you think education programs such as FloodSmart/StormSmart are an appropriate activity for VICSES? YES/NO**

Probe for reasons for response

**4. Do you think the FloodSmart/StormSmart program to date was a valid use of SES volunteers and resources in Benalla/Wodonga? YES/NO**

Probe for reasons for response

**5. From your experience, how would you rate the success of the FloodSmart/StormSmart program to date in Benalla/Wodonga?**

Probe for reasons for response

**6. What were most effective aspects of the FloodSmart/StormSmart program?**

Probe for reasons for response

**7. What were the least effective aspects of the FloodSmart/StormSmart program?**

Probe for reasons for response

**8. How effective were the education tools (e.g. brochures, stickers, posters, flip charts) used in the FloodSmart/StormSmart program?**

Probe for reasons for response

**9. How effective were the events (e.g. barbeques, community stalls) used in the FloodSmart/StormSmart program?**

Probe for reasons for response

**10. What resources would help you to run the program easier?**

Record responses

**11. Do you think education activities should be continued in Benalla/ Wodonga after the initial FloodSmart/StormSmart campaign? YES/NO If so, how could this be done?**

Record responses. Prompt the idea of a flood education plan if answer is YES

**12. What improvements would you recommend for future FloodSmart/StormSmart programs in other areas?**

Record responses

Thank you for your time

