MOLINO STEWART

ENVIRONMENT & NATURAL HAZARDS

Fairfield City Council

Community flood education and awareness in Fairfield City

Project Report & Action Plan

Community flood education and awareness in Fairfield City

PROJECT REPORT & ACTION PLAN

for

Fairfield City Council

by

Molino Stewart Pty Ltd
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Context

Fairfield City, located in south-western Sydney, straddles parts of the Georges River and Hawkesbury-Nepean River catchments, and is home to approximately 190,000 people. Parts of the City are extremely prone to flooding.

Fairfield City Council proactively manages flood risks in accordance with the NSW Government's 2005 Floodplain Development Manual. Council's floodplain risk management activities are overseen by the Fairfield Floodplain Management Committee. During the last six years alone, the Committee has supervised nearly $10 million worth of investment made in floodplain management.

Although there has been this considerable investment in floodplain management, the Fairfield City communities will never be totally protected from the impacts of flooding nor can emergency authorities such as the NSW State Emergency Service (SES) ensure the safety of all residents in all floods. Therefore, it is critical that through community education the flood-affected communities across the City are aware of the flood risk, are prepared for floods, know how to respond appropriately and are able to recover as quickly as possible.

With this in mind, Council received funding to engage a suitably qualified consultant to undertake Council's Flood Education and Awareness project for the City. Molino Stewart Pty Ltd was engaged in April 2012 to carry out the project with the main output being a community flood education plan for the City.

Methodology and findings

Molino Stewart collected a range of data to gauge the current level of flood awareness and preparedness of residents within the City. A survey that sampled flood-affected residences and a community forum on flooding run by Straight Talk Pty Ltd were the primary means of assessing flood awareness and preparedness.

The social research showed that there are generally low levels of flood awareness and preparedness across the City. This is most probably largely due to lack of flood experience as the last major flood event to occur in the City was in 1988.

Other challenges for community flood education in the City include a large culturally and linguistically diverse (CALD) population and the fact there is a relatively low level of internet usage within the City's population.

Molino Stewart also conducted research into current best practice in community flood education to help inform the development of this plan. Research showed the need to adopt a disaster resilience learning approach with communities and this is the direction that Molino Stewart has taken in developing the plan.

Action plan

A number of education options were identified for use in the community flood education action plan. A set of key assessment criteria was applied to the possible options to help identify a manageable number of the most appropriate and potentially effective options. The selected options are:

1. Regularly write to all flood-affected residents to reinforce that they live in a flood-prone area and encourage preparedness activities e.g. development of emergency plans. (High priority)

2. Hold 'meet-the-street' events in high-risk areas to engage residents around the danger of flooding in their local area and encourage the development of street-based support networks (High)

3. Problem-solve flood scenarios with community groups. (High)

4. Conduct emergency drills and exercises involving communities and emergency agencies. (High)

5. Brief councillors about floodplain and emergency planning and provide them with information to speak to communities and answer enquiries. (High)

6. Use print media, radio and social media to run flood stories to raise flood awareness. Use interpreters and translated written material in a range of community languages relevant to the areas being targeted (High)

7. Hold post-flood community de-brief meetings. (High)

8. Engage with youth and multicultural networks about flood-related initiatives (e.g. flood studies, floodplain risk management studies and plans) using Council's reference groups. (Medium)

9. Train and support local community leaders to help their communities prepare, respond and recover. (Medium)

10. Prepare a FloodSafe Guide for Fairfield City. (Medium)

11. Use and/or hold community events (e.g. Council Open Day, centenary of the 1988 flood) to engage with communities about floodplain and emergency management. (Medium)

12. Prepare curriculum-based school teaching units for Primary and Secondary students related to aspects of flooding. (Medium)

13. Encourage and support businesses to complete the Business FloodSafe emergency plans. (Medium)

14. Erect signage in strategic locations to help raise awareness of flooding in the City (Low)

15. Maintain and update local flood information links on Council's website. (Low)

The above list of options is included in the action plan, which has been developed as part of this project. The action plan includes stakeholder responsibilities, implementation timeframe and budget requirements. An evaluation plan has also been prepared in order to assess the effectiveness of the action plan.

1 INTRODUCTION

1.1 BACKGROUND

Fairfield City, located in south-western Sydney, straddles parts of the Prospect Creek, Georges River and Hawkesbury-Nepean River catchments, and is home to approximately 190,000 people.

With over 80 km of waterways crossing the City, the heavily-urbanised Fairfield Local Government Area (LGA) is extremely prone to flooding.

Fairfield City Council proactively manages flood risks in accordance with the NSW Government's 2005 Floodplain Development Manual. Council's floodplain risk management activities are supervised by the Fairfield Floodplain Management Committee. During the last six years, the Committee has overseen nearly $10 million worth of investment made in floodplain management.

Although Council has made considerable investment in floodplain management, the Fairfield City communities will never be completely protected from the impacts of flooding. Therefore, it is critical that the flood-affected communities across the City are actively aware of the potential flood risks, are prepared, respond appropriately and are able to recover and return to normal functioning.

There are some specific challenges in Fairfield City in educating communities to achieve these goals. These include:

1. Fairfield City has a large culturally and linguistically diverse (CALD) population.

2. The last two major flood events in the City occurred more than 20 years ago and there are many residents who have moved into the area during this period. Furthermore, there is no living memory of local flood events greater than the 20 year ARI[1].

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[1] Average Recurrence Interval (ARI) – the long-term average of years between the occurrence of a flood as big as (or larger than) the selected event e.g. floods with a discharge as great as (or greater than) the 20 year ARI design flood will occur on average once every 20 years.

3. The City is highly vulnerable based on social and economic indicators. For example, parts of the City have unemployment rates of over 10% (compared with the current Australian unemployment rate of 5.1%). The City has a relatively old population with 31% over the age of 50 years (Australian Bureau of Statistics, 2012).

4. According to Council and the NSW State Emergency Service (NSW SES), it appears that community awareness of overland or flash flooding is less than that of mainstream flooding due to the difficulty in understanding the overland flood paths.

Although Council and the NSW SES have already undertaken community flood education, they along with the NSW Office of Environment and Heritage (OEH) believe that the current education methods could be greatly improved upon. With this in mind, Council applied for and received two-thirds funding from OEH to engage a suitably qualified consultant to undertake a flood education and awareness project for the City.

Molino Stewart Pty Ltd was engaged by Council in April 2012 to carry out the Flood Education and Awareness project. It was intended that Molino Stewart work in close collaboration with Council staff, officers from local, regional and NSW SES headquarters, the OEH and with the members of the Fairfield Floodplain Management Committee.

1.2 FLOODING AND FLOODPLAIN MANAGEMENT IN FAIRFIELD CITY

1.2.1 Flood behaviour and flood risk

There are five main flood behaviour scenarios in Fairfield City:

1. Mainstream flooding from the Georges River

2. Mainstream flooding from major tributaries such as Prospect and Cabramatta Creeks

3. Mainstream flooding from smaller creeks such as Orphan School Creek, Green Valley Creek and Clear Paddock Creek

4. Flooding from overland flow

5. Flooding from dam/detention basin failure.

Floods emanating from the Georges River, Prospect Creek and Cabramatta Creek are exacerbated if there is a coinciding high tide.

Flood studies show that as at September 2012 5,314 properties are at risk from mainstream flooding in a 100 year ARI flood event and 15,655 (25% of registered land parcels in the LGA) are at risk during a probable maximum flood (PMF).

Additionally, as at September 2012 it is estimated that 9,753 properties are affected by overland flooding during the 100 year ARI event, with up to 18,937 at risk in the PMF. Note that these numbers include properties at risk of both mainstream and overland flooding.

There is a high risk of a large flood occurring in the future. The last 100 year ARI flood recorded at Lansdowne Bridge on Prospect Creek occurred over 120 years ago in 1889. There is a 1% chance in any year of such a flood occurring again. Even larger floods can occur.

The significance of large floods greater than the 100 year ARI flood can be demonstrated within the lower Prospect Creek floodplain where there is up to a 4.2 metre difference between the 100 year ARI flood level and the PMF level.

1.2.2 Flood history

Twenty-one mainstream floods have been recorded in Fairfield City since 1809. Recent floods on the Georges River have included those of 1946, February 1956, March 1958, November 1961, June 1964 and March 1983. Some minor flooding also occurred in 1975, 1978, 1986, 1988 and 1991.

The highest recorded floods in Prospect Creek occurred in 1946, 1975, 1978, 1986 and 1988.

The last flood occurred in the City in 2001, but it was 'minor' and localised flooding. A 100

year ARI flood (7m AHD) has not been experienced since 1889.

As the last two major flood events in the City occurred over 20 years ago, there are many residents who have moved to the area during this period with no flood experience. Furthermore, there is no living memory of local flood events greater than the 20 year ARI.

1.2.3 Floodplain management planning

The NSW Floodplain Development Manual 2005 is the guiding document for floodplain management in NSW. It supports the NSW Government's Flood Prone Land Policy in providing guidance for local councils for the development of sustainable strategies for managing human occupation in floodplains using risk management processes.

The Manual provides direction to councils to:

1. Collect data

2. Conduct flood studies

3. Conduct floodplain risk management studies

4. Develop floodplain risk management plans

5. Implement the plans.

Fairfield City Council's role in floodplain management started nearly half a century ago with the Cabramatta Creek Flood Investigation of 1960. Since then, Council has either commissioned or been involved in over 27 major studies on flooding and floodplain management within the LGA. These include flood studies, floodplain management studies, floodplain management plans, and regular reviews of studies and plans. These studies encompass both mainstream flooding of the creeks as well as overland stormwater flooding from the urbanised catchments draining to the creeks.

Some of the floodplain risk management activities originating from Council's plans include:

• Voluntary purchase scheme

• Voluntary house raising scheme

- Construction of detention basins
- Selective stream clearing measures
- Flood education (see Section 2.2)
- Chanel widening and floodway improvement works
- Road-raising scheme.

1.2.4 Emergency management

The Fairfield City Local Flood Plan has been prepared by the NSW SES and adopted by the Local Emergency Management Committee (LEMC). It is a sub-plan of the Local Disaster Plan (DISPLAN). The Local Flood Plan covers preparedness measures, the conduct of response operations and the coordination of immediate recovery measures from flooding within Fairfield City Council. The Plan outlines the roles of agencies and Council in local flood emergency management. It covers operations for all levels of flooding within the City, as well as mainstream and overland flooding.

1.2.5 Climate change projections

Climate change is expected to impact on many parts of the world by the year 2050 (Intergovernmental Panel on Climate Change, 2007). According to research by the NSW Department of Environment, Climate Change and Water (2010), the Sydney Region including Fairfield City will be likely to experience significant climate change impacts on its natural hazard profiles, particularly fire, flood and heatwaves.

There are three main types of flooding in the Sydney Region:

1. Overland flooding
2. Mainstream flooding
3. Flooding from ocean inundation including storm surges and king tides.

Overland flooding results from storms of relatively short duration and high intensity, with water both rising and flowing quickly. According to the research, the risk of overland flooding is expected to increase with changing community profiles in urban areas (e.g. as new residents move into new development

particularly in heavily urbanised areas), and in some cases, due to rising sea levels as a result of climate change (Smith et al, 2008).

Vulnerability and exposure to mainstream flooding varies significantly with location. Climate change is expected to increase flood-producing storm events and increased development can increase exposure to flooding.

The increased risk of flooding as a result of climate change will mean that there is increased residual risk transferred to communities in those areas of the City that are not covered by mitigation measures designed up to the PMF. This further raises the importance of community flood education as a mitigation measure to cope with the increased residual risk across the City.

1.3 THE NEED FOR COMMUNITY FLOOD EDUCATION

1.3.1 Definition of community flood education

There is a plethora of terms that are used for learning related to flood and other hazards. These include:

- Consultation
- Education
- Engagement
- Public information
- Communications
- Awareness
- Public safety.

The above terms all contribute to flood learning and will be subsumed into the term 'community flood education' for the purposes of this report, unless if specificity is warranted. Apart from the obvious confusion in using a range of terms, the main reason for the use of 'education' as the umbrella term is that it originates from the Latin *educare* which loosely means 'fosters learning'.

For this report community flood education is defined as 'any learning process or activity that builds community resilience to flooding' (Webber and Dufty, 2008).

Although there are numerous definitions of community resilience, it is defined for the purposes of this report as "the ability of a community to not only resist and recover from a natural hazard event but also to adapt to the changes that the event may cause' (Paton, 2006).

The term 'community' is used in the definition above in its broadest sense and includes all spheres of government, business and industry and the general public. The 'community' is sometimes divided into 'sectors' for education programs as they each may involve different learning mechanisms.

'Flood-affected residents' is defined in this report as all residents who live within the limit of the PMF.

1.3.2 Community flood education

The NSW SES has legislated responsibility for community flood education under the *State Emergency Service Act 1989* in relation to flood, storms and tsunamis to 'carry out emergency management functions relating to the prevention of, preparation for, response to and recovery from emergencies in accordance with the *State Emergency and Rescue Management Act 1989'*.

Also the *State Emergency and Rescue Management Act 1989* requires the State Emergency Management Committee 'to produce and disseminate education material on established emergency management policies and procedures'.

NSW Floodplain Development Manual

There are several references to community education, awareness and consultation in the NSW Floodplain Development Manual. There are three main types of floodplain risk management measures that should be considered in the development of plans:

1. Flood modification measures
2. Property modification measures

3. Response modification measures

'Community awareness' and 'community preparedness' are listed in the Manual as response modification measures.

In Section 3.1.6 of the Manual there is specific reference to 'public education'. The Manual states that councils should promote flood readiness in their communities.

State, regional and local flood plans

The NSW State Flood Sub Plan is a sub-plan of the NSW Disaster Plan (DISPLAN). Part 4.9 of the State Flood Sub Plan discusses the role that community education has in creating preparedness. The need for public flood warning communication is outlined in Part 5 of the Plan. Part 8 of the Plan describes the need to provide information to flood-impacted communities to assist in their recovery.

There are several references to public education in the Fairfield City Local Flood Plan which is based on the regional and State Flood Plans.

SES Corporate Plan

Goal 1 in the Service Delivery in the NSW SES Corporate Plan 2011-15 is to develop a 'resilient community' by 'changing the way people and their belongings are kept safe by increasing their access to prevention and preparedness services'. A key way to achieve this goal is through education, communications and engagement delivered by the NSW SES.

1.3.3 Benefits of community flood education

Recent studies have been conducted to attempt to quantify the impacts of community flood education in minimising flood damages and assisting in emergency management. Manoloche (2007) cites US data that indicates that high quality delivery of community education has resulted in a 70% reduction in insured damages over a ten-year study of commercial premises.

Ronan (2009) estimated that, based on the abovementioned US study, Victoria could achieve and sustain from a reduction of about 25% in actual damages from delivering high quality community flood education i.e. about

one-third of the commercial result achieved in the USA. Ronan notes that this assumes a gradual increase in benefit over ten years as the warning and education programs are developed and rolled out across the State.

Also in Victoria, Somek (2010) estimated that a coordinated flood risk strategy (including community flood education plans) could potentially reduce future flood risk in 50 years under a business-as-usual approach from $745.5 million to $410.6 million, or approximately $334.9 million. 'This represents a 45 per cent reduction in future flood risk, and a real decrease in current flood risk.' Community flood education obtained the best benefit-cost ratio of all initiatives in the flood risk strategy including emergency planning and warning systems (Somek pers. comm.).

Gissing (2003) found similar potential benefits of education and emergency response planning related to businesses in Kempsey, NSW. He found that if comprehensive flood action plans had been developed and implemented before the flooding of Kempsey in 2001, damage could have been reduced by an estimated 80%. A study by Wright (2001) of businesses in suburban Adelaide found lower, but still significant, economic benefits from preparedness measures using education. The study found that nearly 60% of the total direct flood loss exposure could be reduced by preventative measures and a further 16% by improved preparedness measures using education.

Community education can also have a significant impact on the effectiveness of flood response. Observations from NSW SES (David Webber pers. comm.) show that in NSW communities where there has been little or no community flood education there were low evacuation rates (in the order of 10-20%) during floods, whilst there have been much higher rates (e.g. 75%) in communities such as Maitland and Lismore where there was ongoing community education. It should be acknowledged that these latter areas have a higher risk of flooding than many other flood-prone regions of NSW.

Molino Stewart (2008) investigated the responses to Gippsland Floods of June 2007 and November 2007. As a result of community education initiatives conducted by VICSES

after the June 2007 flood, almost all residents in the Tinamba and Newry communities had home emergency plans and this was seen to play an important part in preparedness and response during the November 2007 flood.

Some researchers in emergency and floodplain management believe that improvement in community education is 'the single most important action that could be taken to improve flood warning and associated response in Australia' (Elliott et.al, 2003).

1.4 PROJECT SCOPE

1.4.1 Project objectives

There were three objectives of the Flood Education and Awareness project:

1. Develop a clear understanding of the current state of, and factors that contribute to, the Fairfield community's awareness of the different types of flooding that occur across the City for the full range of floods up to the PMF.

2. Identify, assess and recommend options for Council, the NSW SES and others to pursue in order to effectively raise the community's flood awareness and preparedness.

3. Provide information on community flood awareness to the NSW SES to be incorporated into the next update of the Fairfield Local Flood Plan, as well as the NSW SES FloodSafe program (note: this was supplied as a separate document)

1.4.2 Methodology

Based on the project objectives, the following overall methodology was adopted by Council:

- Data collection and review. Molino Stewart was to compile and review all existing data required to undertake the project including flood plans, NSW SES FloodSafe program, demographic data, best practice in community flood education and examples of similar projects undertaken by other local councils.

- Assessment of the current state of community flood awareness. Based on the review of the data, Molino Stewart was to assess the current state of community flood awareness in the City. This process could include considering previous flood history, flood behaviour, attitudes and beliefs, awareness levels across suburbs, community sectors etc. and the impacts of previous flood education programs on awareness.

- Identification of options to raise community flood awareness. Based on the understanding of community flood awareness, Molino Stewart was to identify options by which community awareness can be raised. These options needed to be based on current best practice in community flood education.

- Information for updating the Fairfield Local Flood Plan and FloodSafe Program. Molino Stewart was required to provide information developed for the project to the NSW SES so that it can be incorporated into the future update of the Fairfield Local Flood Plan and also be suitable to update the local FloodSafe program.

- Stakeholder and community engagement. It was expected that Molino Stewart liaises closely with staff from Council, the NSW SES and the OEH. The consultant was also required to be present at meetings of the Fairfield Floodplain Management Committee and to actively seek feedback from Committee members. It was expected that communities will be consulted and that Straight Talk Pty Ltd would assist in this task.

1.4.3 This report

In line with the adopted methodology (Section 1.4.2), the report is structured as follows:

- Section 2 - An overview of current community flood education and awareness activities in Fairfield City.

- Section 3 – An assessment of the current levels of flood awareness and preparedness in Fairfield City obtained through community consultation and social research.

- Section 4 – An overview of current best practice in community flood education.

- Section 5 – Identification and selection of community flood education options for inclusion in the Action Plan.

- Section 6 – Action Plan Summary

- Section 7 – References

- Appendix A – Community workshop outcomes summary (Straight Talk Pty Ltd)

- Appendix B – Fairfield LGA Residential Flood Survey.

1.4.4 Limitations

There are some limitations in this methodology that should be noted:

1. Although efforts were made through consultation (e.g. Straight Talk forum, discussions with Council staff), the specific needs of vulnerable members of the community (e.g. elderly, disabled) could not be directly ascertained in this broad City-wide research. However, several of the community survey respondents appeared to be in vulnerable cohorts e.g. 10% of respondents were over 75 years of age.

2. Only a relatively small proportion of the community were surveyed or consulted in comparison to the total number of flood-affected residences and therefore these results should only be viewed as indicative for the purposes of designing this Plan.

3. Not all sectors of the community were directly researched including the business sector and schools due to the focus on residents and budgetary constraints. However, an insight into these sectors was gleaned through anecdotal evidence and from existing flood studies.

4. This plan does not address the specifics of how to respond in a flood emergency - this is covered in the Local Flood Plan. But this report will inform the update to the Local Flood Plan.

2 CURRENT FLOOD EDUCATION AND AWARENESS ACTIVITIES

2.1 ROLES AND RESPONSIBILITIES

The roles and responsibilities of agencies and local councils in aspects of floodplain and emergency management including community flood education are set out in the NSW Floodplain Development Manual and the NSW State Flood Sub Plan (see Section 1.3.2 of this report).

According to the NSW Floodplain Development Manual, local councils have the responsibility to plan and manage flood prone land in accordance with its flood exposure. The preparation of flood studies and the preparation and implementation of floodplain risk management plans are important steps in this process. Council therefore has responsibility for carrying out the community consultation processes outlined in Section 2.1 of this report.

Section 3.1.6 of the Manual states that 'councils should promote flood readiness in their community' using flood education. 'Councils should focus on issues relating to land use, supplying data and advice to property owners, residents, visitors, potential purchasers and investors, whereas the SES focuses on the issues of public safety and property protection when flooding occurs'.

According to the Manual, the establishment of a floodplain risk management committee (including local community representatives) chaired by council is 'the first formal step in the floodplain risk management process. The committee is advisory in nature, as responsibility for planning matters (including community flood education) lies with council as a whole'.

The OEH is the State agency responsible for providing specialist technical advice and information on flooding to councils and their floodplain risk management committees. The OEH also administers financial assistance to local councils under the NSW Government's Floodplain Management Program for the preparation of studies, management plans and the implementation of works.

According to the Manual (Section 3.7), flood-affected individuals 'should inform themselves of flooding matters in their area and keep up to date with appropriate actions in the event of a flood'.

During a flood, according to the State Flood Sub Plan, the NSW SES is the lead combat agency with responsibility to provide flood bulletins to further communicate the potential impacts of flood predictions (e.g. Flood Watches, Flood Warnings) issued by the Bureau of Meteorology.

In the recovery phase, according to the Sub Plan, 'the SES will provide information to flood-affected people on safety matters and the restoration of belongings which have been in contact with flood waters'.

2.2 COMMUNITY ENGAGEMENT THROUGH FLOODPLAIN MANAGEMENT

Community consultation (a form of community engagement) is an integral part of the floodplain risk management process outlined in the NSW Floodplain Development Manual. The aims of the community consultation are to raise awareness of flood risks and enable members of the community to be part of floodplain management decision-making.

In relation to the formation and implementation of floodplain risk management plans, the Manual states that 'broad community involvement in the plan preparation, from the beginning, should produce the best prospect for community acceptance of, and commitment to, the resulting management plan'. More specifically, the Manual promotes the use of 'effective community consultation' for preparation of the Floodplain Risk Management Study and Floodplain Risk Management Plan that 'requires consideration of the following aspects:

- Informing the community of the management study and its purpose

- Assessing the community's level of knowledge, understanding and concern in relation to flood issues and flood readiness

- Obtaining any information members of the community may have in relation to flood issues, flood readiness, historic flood levels, behaviour and responses

- Assessing community aspirations in relation to flood problems

- Providing the community with information on alternative management measures and the inherent advantages and disadvantages of these

- Providing a mechanism for the community to have input into selection of appropriate management options.'

Community involvement is also required in the review of the draft risk management plan and its implementation. The Manual states that "it is necessary that (local) councils actively involve representatives of the community, particularly owners of flood prone land, in the preparation of the management plan and the review of its effectiveness".

Fairfield City Council uses its Floodplain Management Committee - consisting of representatives from the local community, Council, OEH and the NSW SES - to help guide these consultative roles related to its flood studies, floodplain risk management studies and floodplain risk management plans (Section 1.2).

Fairfield City Council has conducted several community consultations related to the development of its flood studies, floodplain risk management studies and floodplain risk management plans. For example in 2004 extensive community consultation was conducted for the development of the Georges River Floodplain Risk Management Study and Plan (Bewsher Consulting, 2004). Consultation included:

- Regular meetings of the Georges River Floodplain Management Committee

- Development of a study web site for the project

- Preparation of an SES FloodSafe brochure for the Georges River

- Preparation and distribution of a notification pack for all residents potentially affected by flooding

- Distribution of a short questionnaire to all residents, followed up with a more detailed questionnaire

- Organisation of ten public workshops

- Liaison with government agencies Interest Groups

- Public exhibition of the recommended floodplain risk management study and plan, prior to formal consideration by each Council.

Other community flood consultations conducted by Council have included:

- Canley Corridor Overland Flood Study

- Flood mitigation at Vincent Crescent, Canley Vale

- Voluntary house-raising and house-purchasing schemes.

There was also a public consultation in 1980 when the Public Works flood maps were released by the NSW Government. There was considerable community concern as a result of this information being made public, with the establishment of the South West Flood Action Group, a community flood lobby group.

2.3 COMMUNITY FLOOD AWARENESS PROJECTS AND ACTIVITIES

In addition to raising community awareness of flooding through the floodplain risk management consultation process (Section 2.1), Council has undertaken several stand-alone community flood education projects. This has included:

- Installation of flood signage at Konemann's Bridge over Prospect Creek as well as an artistic flood icon at Fairfield Park.

- A short documentary produced on DVD with interviews of local residents, NSW SES staff and Council officers discussing the impacts of the 1986 and 1988 floods

- One-off media releases issued to local newspapers on the anniversaries of the 1986 and 1988 floods.

Other flood education measures initiated by Fairfield City Council include proposals to install flood depth markers around the City and advisory notices to residents involved in Council's voluntary house raising scheme to ensure undercroft areas are kept clear to allow floodwaters to flow through and circulate. Council also issues Section 149 certificates to advise homeowners of the flood risk.

The NSW SES, which has a legislative responsibility for flood education, also actively engages the wider Fairfield community (Section 1.3.2). The NSW SES produces a range of community education resources including pamphlets and emergency plan guides under its FloodSafe Program which aims to raise flood awareness, build community resilience and promote adoption of appropriate behaviours.

Local NSW SES volunteers annually hand out brochures and other educational pamphlets on flooding at various community events as well as conducting annual letterbox drops in the suburbs of Lansvale and Carramar.

3 GENERAL LEVEL OF FLOOD AWARENESS AND PREPAREDNESS IN FAIRFIELD CITY

3.1 OVERVIEW

As noted in Section 1.4.2, Molino Stewart conducted social research to obtain an understanding of Fairfield City communities and their attitudes towards flooding to help identify appropriate community flood education options (Section 5).

Australian Bureau of Statistics (ABS) census data and other demographic data was analysed to develop a basic community profile (Section 3.2) for Fairfield City.

Anecdotal and other evidence relating to the attitudes and beliefs of communities towards flooding was collected and analysed along with data to gauge the levels of community awareness and preparedness in flood-affected Fairfield City communities. The results of this social research are provided in Section 3.3.

The following methodology was used for the social research:

- Molino Stewart facilitated a meeting of the Fairfield Floodplain Management Committee on 17 May 2012 to elicit its views on aspects of flooding and community flood education. The Committee consists of local residents, Council staff, staff from neighbouring councils, and representatives from the NSW SES and OEH.

- Fairfield City Council engaged stakeholder engagement experts Straight Talk Pty Ltd to conduct a forum with selected flood-affected residents. The four forum objectives were:

  1. Flooding (what's important to them)

  2. Attitudes: How does flooding make you feel? before, during and after

  3. How motivated are you to activate the learning process about flooding in your area? What are the barriers to being flood prepared?

  4. How would you like to become / stay more involved with learning about flooding in your area?

  Molino Stewart staff reviewed the design of the forum program and observed participant responses at the forum which was held on 21 June 2012. The Straight Talk forum report is provided in Appendix A.

- In consultation with Council, Molino Stewart designed and distributed community flood surveys to 1,000 flood-affected residents from flood 'hot spots' across the City. A total of 204 responses (response rate of 20%) were received. A map showing the location of the residences that provided responses to the survey is provided as Figure 1. A map showing the location of residences that did not respond to the survey is provided in Figure 2. Molino Stewart analysed the response and provided Council with the survey results in a brief report (see Appendix B).

Molino Stewart staff participated in two other meetings relating to the project as follows:

- Teleconference with Amanda Bray, Manager Strategic Planning and Policy at Fairfield City Council, to discuss Council's community engagement strategy and obtain advice on the community flood survey.

- Face-to-face meeting with Council staff regarding improving community consultation strategies for Council flood studies and floodplain risk management plans.

Molino Stewart also compared the findings of the above research where possible with a previous community flood survey conducted in Fairfield City (Bewsher Consulting, 2004).
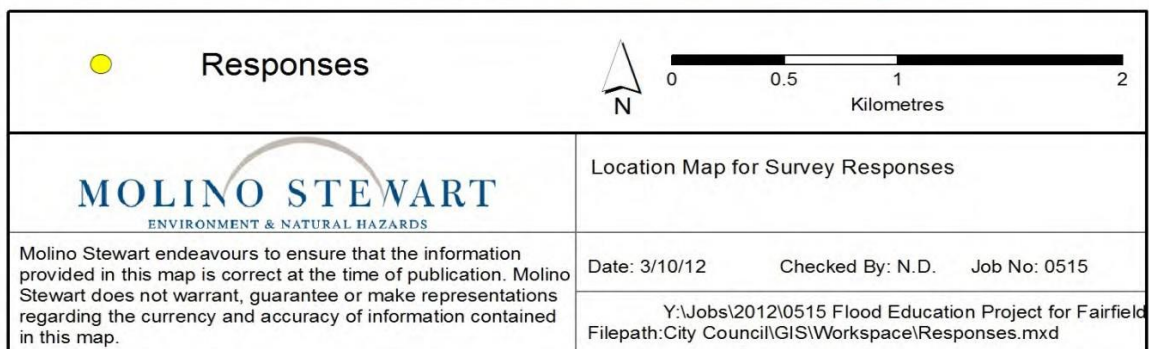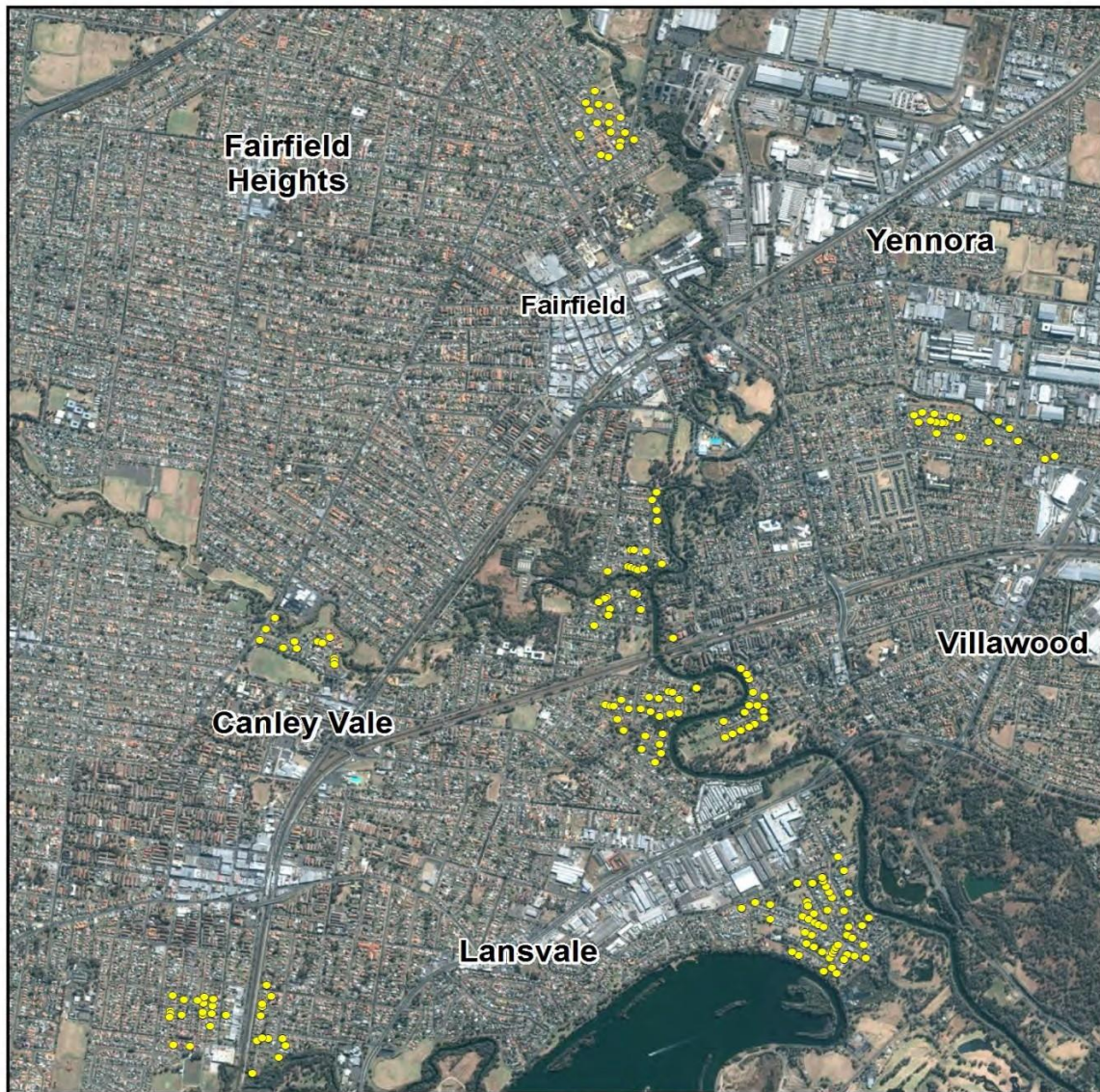
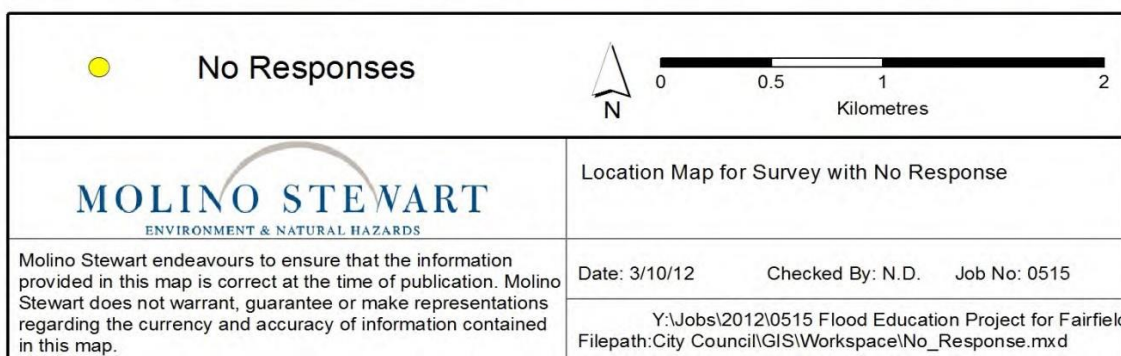*Figure 1: Map showing location of residences that provided responses to the residential survey*

Figure 2: Map showing location of residences that received the residential survey but did not respond to it

3.2 COMMUNITY PROFILE

According to the Australian Bureau of Statistics (2011), Fairfield City is home to 187,766 people, an increase of about 10,000 people since the last census held in 2006.

The census data shows that:

- 49.3% of the population are female and 50.7% male (2011 census).

- It is a relatively ageing population compared with the rest of Sydney. Forty-two per cent of the population are under 30 years of age, 27% between the ages of 30 and 50, and 31% over 50 (2011 census)

- It is a culturally diverse area, 87% of people have one or both parents born overseas (2011 census)

- The top five countries of birth are:

  Australia – 42%

  Vietnam – 14.6%

  Iraq – 7.7%

  Cambodia – 3.7%

  Italy – 2.2% (2011 census)

- 75% of households speak two or more languages at home. Twenty-six per cent speak only English at home, 19% speak Vietnamese, 7.3% speak Arabic, 5.6 % speak Assyrian Neo-Arabic and 5% speak Cantonese (2006 census).

Other data supplied by Fairfield City Council shows that:

- Fairfield City is one of the most disadvantaged areas in Sydney based on socio-economic indicators.

- There are a few dominant languages apart from English: Vietnamese, Khmer, Arabic and Chinese.

- Unemployment rates are much higher in the eastern part of the LGA (10.4%) compared with the western part (5.2%).

- There is a relatively low level of internet use with 60% of respondents to a Council survey saying they have no internet access. Only 14% of the community surveys were completed online.

- Residents of Fairfield City are car-reliant with 72% using private vehicles.

3.3 RESULTS OF SOCIAL RESEARCH

3.3.1 Attitudes and beliefs

Many residents of Fairfield City come from overseas communities where flooding is commonplace and where flood emergency response is not coordinated as it is in Australia. Their attitudes and beliefs towards flooding can be markedly different than those assumed in Australian floodplain and emergency management. For example, in some Asian communities flooding is seen as a regular event related to monsoons with little need for precautions.

Fairfield City residents tend to be relatively complacent about potential future flooding and do not see it as one of the main future management functions of Council. In a recent community survey conducted by Council only two percent of respondents believed flood management is one of the top five areas Council needs to focus on as part of Fairfield City's Vision for 2020 (Fairfield City Council, 2010). The lack of a recent major flood would most likely be a factor in these attitudes.

However, when participants in the Straight Talk forum were asked how they might feel if confronted by a flood, they demonstrated heightened concern with most comments relating to perceived anxiousness, panic and shock prior to, during and after a flood. Much of the concern was about protection of family and friends and the devastation to their property after a flood. Further details can be found in Appendix A.

3.3.2 Awareness

As outlined in Section 3.1, Molino Stewart in consultation with Council conducted a survey of people living in flood-prone areas of the City to gauge levels of flood awareness and preparedness. Detailed findings of the survey are provided in Appendix B.

The survey found that 24% of respondents that lived in flood-prone areas of the City were not aware of the fact. This finding is consistent with earlier social research (Bewsher

Consulting, 2004) which found that 37% of respondents living up to the PMF in the Georges River catchment were not aware that their property could flood.

Respondents' perception of their house flooding was significantly lower than for their property flooding (see Figure 3).

Respondents that had their house raised through Council's voluntary house raising scheme were aware that their property could flood.

A few flood-impacted participants at the Straight Talk forum confirmed that they were not aware that their house could flood.

Members of the Floodplain Management Committee generally thought that floods were not a high priority in the community as there have been no recent large floods in the Sydney basin.
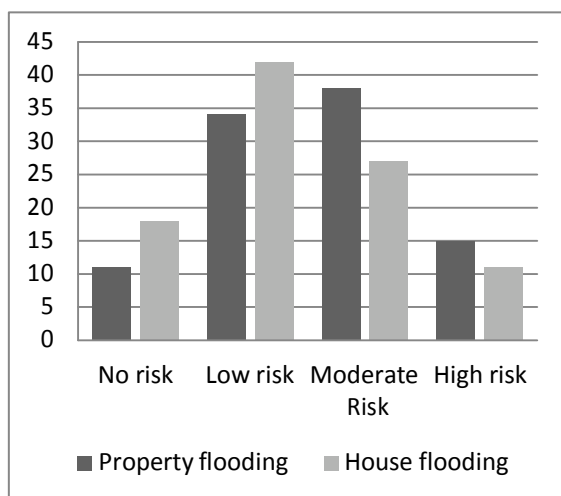

Figure 3: Survey respondents' view of risk to their house and property from flooding (%)

3.3.3 Preparedness

Members of the Floodplain Management Committee postulated that those that had experienced a flood were better prepared (e.g. had emergency plan) than those that had not. This was confirmed by the results of the social research.

An important factor in preparedness is previous flood experience (Grothmann & Reusswig, 2006). There is a relatively low level

of flood experience in the City with the most recent major floods occurring in the late 1980s. Social research conducted in 2004 (Bewsher Consulting, 2004) found that only 34% of respondents had experienced flooding on their property. Only 21% of survey respondents for this report said they had previously experienced a flood. This trend is consistent with the expectation that flood experience would decrease over the years after a major flood.

There is also a relatively low level of flood preparedness in the City which would be partly attributable to lack of flood experience. The Straight Talk forum participants were asked to rate their flood preparedness level on a continuum between 10 (very prepared) and 1 (unprepared). Ninety four percent of participants rated their preparedness at 5 or lower.

An indicator of preparedness is the percentage of people with emergency plans. The community survey found that only 24% of respondents reported that they have some form (written or unwritten) of emergency plan. This figure rose to 38% for people that had experienced a flood compared with only 15% who had not experienced a flood. Those living in raised houses were more likely to have emergency plans than those living in unraised houses.

3.3.4 Response

From both the Straight Talk forum and the community survey, about half the residents said they would self-evacuate if there was a chance of a flood. However, from the community survey 81% would evacuate if told to do so by the NSW SES or the Police. 'Family and friends' is the preferred location to go to when evacuating. Those with raised houses were less likely to evacuate if not told to do so than those living in unraised houses.

Although the willingness to evacuate if told to do so is commendable, it may demonstrate a high level of dependence on the emergency agencies for response and a lack of confidence in coping with the flood event.

Some Committee members were particularly concerned about whether people knew where

to evacuate and the plans to care for people at evacuation centres.

Neighbours and television were the two main sources of information for respondents to learn about a flood event in their area. This finding is similar to the 2004 social research (Bewsher Consulting, 2004) which found that 'neighbours or friends' and 'their own experiences' were the main sources of flood information during a flood.

Members of the Floodplain Management Committee thought that there was little connectedness in the community (e.g. with neighbours). This may impact on people helping others in the neighbourhood during a flood. However, they felt the CALD communities tend to be closer knit and would help each other.

It was noted by some members of the Committee that some people would not evacuate during a flood including those that had prior flood experience. This was because they had a high degree of confidence (possible overconfidence) based on previous flood experience in coping with the flood event themselves.

3.3.5 Recovery

The majority of community survey respondents thought they would need to help to repair their home if it was flooded. The NSW SES, tradespeople, insurance and family were the main sources of recovery help identified by the respondents.

3.3.6 Preparedness of Council and emergency agencies

Both Council and the local NSW SES appear to be reasonably well prepared for floods. As noted in Sections 1.2.3 and 1.2.4, Fairfield City Council has conducted extensive floodplain management initiatives and is part of emergency management activities in accordance with the Local Flood Plan.

In terms of emergency management preparedness, it has a designated Local Emergency Management Officer (LEMO) with

deputy LEMOs to assist. The LEMO role is guided by the local disaster plan.

Council has also run a community de-brief meeting to enable learning about the recent April 2012 flood in the City actions following this de-brief are being followed through.

The NSW SES is guided by the Local Flood Plan and has a unit of 40 volunteers available for operations (which can be augmented from other units if required).

However, the Emergency Operations Centre for the City is located in an area that can flood or be isolated from flooding.

3.3.7 Comparison with other LGAs

There has been very little social research conducted in neighbouring LGAs. This is probably partly because there have been no major floods in Sydney for at least 20 years (thus no post-event social research), and also because of the significant cost of conducting social research during non-flood times. However, the following three studies were located and compared with the findings from the social research for this report.

1. Newport Beach (Pittwater LGA).Molino Stewart (2006) surveyed a sample of flood-affected residents and businesses in the Newport Beach catchment to ascertain their levels of flood awareness and preparedness.

2. Rockdale LGA. To help develop the Rockdale City Flood Education Plan, Molino Stewart (2011) surveyed local residents about aspects of flooding.

3. Penrith and Hawkesbury LGAs. Surveys were conducted by GNS Science (2006; 2008) in flood-prone parts of Penrith, McGraths Hill, Windsor and Richmond. The last major flood impacting on these communities was in 1990.

As was found in Fairfield City, there were low levels of flood risk awareness in all three areas surveyed.

In Newport Beach, just over half of the residents surveyed that lived in flood-prone areas 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. About 40 per cent of businesses in flood-prone areas of Newport believed their property would not flood.

In Rockdale LGA, only 37% of people surveyed living in flood-prone areas believed that some part of their property was at risk of flooding. However, this is an increase from 2006, possibly due to the development and distribution of a FloodSafe Guide for the City. Only 40% of respondents believed that there is a chance of their property flooding within the next 10 years.

In Penrith and Hawkesbury LGAs, respondents from flood-prone areas were asked if flooding was likely to affect their communities in the next five years. In 2008, about 27% of respondents in Penrith said 'yes', 57% in McGraths Hill, 44% in Windsor, and 54% in Richmond.

As for Fairfield City, there were also low levels of flood preparedness in the other LGAs. In Newport Beach, even though 65% of residents had received information about flooding (mainly from Pittwater Council), most of the Newport residents were not doing anything to prepare for a flood. About half said they did not have any idea of what to do to prepare for a flood. Most businesses were also not doing anything to prepare for a flood.

In Rockdale LGA, most respondents (79%) said they have done nothing to prepare for a flood but 54% said that they would consider having an emergency plan.

A higher level of respondents in Rockdale LGA would self-evacuate in a flood (83%) than in Fairfield City (56%). However, like Fairfield City almost all would only do so if they were told to by NSW SES or Police.

Note

Comparison of social research results across different areas at different times should be done with caution due to differences in factors such as flood behaviour scenarios, demographics, flood mitigation activities and previous flood experience.

However, as with Fairfield City, these other communities demonstrate low levels of flood risk perception and flood preparedness. There also appears to be a similar willingness to evacuate if told to do so by authorities.

Although 80% say they would evacuate if told to by emergency services, this may mean that 20% would not. This equates to about 1,000 homes or approximately 3,000 people in a 100 year ARI event.

3.4 EFFECTIVENESS OF CURRENT EDUCATION ACTIVITIES

It is difficult to gauge the appropriateness and effectiveness of the previous and current Fairfield City community flood education activities as there has been no specific formal evaluation of the appropriateness and effectiveness of each activity.

However, from the results of the residential survey which show low community risk perception and preparedness levels it appears that they have not been greatly effective. This is supported from comments at the Straight Talk forum, the Floodplain Management Committee meeting and through anecdotal talks with the NSW SES and Fairfield City Council.

Moreover, there is about one-quarter of Fairfield City residents living in flood-prone areas that are not even aware that their property could flood. These people do not even appear to be aware of their Section 149 certificate flood notification (note - most respondents were property owners).

3.5 IMPLICATIONS

The social research (survey, Straight Talk forum, Floodplain Management Committee meetings) conducted for this report showed that there are low flood risk awareness and preparedness levels in the City. This appears to be comparable to other Sydney LGAs that have not experienced a major flood since a similar time to Fairfield City. The Action Plan

(Section 6) should aim to raise both these levels.

It should be noted that there is a poor conversion rate between flood awareness and preparedness thus questioning this linkage (see Section 4.3.1 in this report). About 76% of survey respondents said they knew their property could flood whilst only 24% said they had some form of emergency plan (note - it is Molino Stewart's experience that this self-reported figure for having emergency plans is inflated in comparison with validated plans).

The implication for the Action Plan is that it cannot be assumed that a concentration on awareness-raising education options will necessarily increase preparedness levels; there needs to be a focus on both.

As noted previously in this section, flood experience is a major determinant of flood preparedness. This is supported by 38% of respondents that had experienced a flood having an emergency plan, compared with 15% that had not experienced a flood.

However, the social research for this report indicates logically that with increased time the number of people with flood experience declines. The implication for the Action Plan is the need to provide experiential learning options to provide 'real-life' situations, especially for the increasing number of people that have no flood experience.

As discussed above the high dependence on emergency agencies for evacuation orders can show a lack of confidence in coping with floods and self-evacuating particularly in areas where there is no flood warning system. The implication for the Action Plan is to use education activity options that build self-confidence in coping with floods and using community networks (e.g. neighbours) as emergency agencies may not be able to help all or communicate warnings.

The specific challenges of community flood education based on the demographics of Fairfield City should also be addressed in the Action Plan. These include catering for the large CALD communities (education options should provide information where possible in main non-English languages, community networks and leaders should be used to accommodate different cultural perspectives

on flooding), low internet use (emphasis should be placed on communication methods other than websites) and significant older populations ('traditional' communication means such as newspapers and radio should be used in flood education).

4 CURRENT BEST PRACTICES IN COMMUNITY FLOOD EDUCATION

4.1 OVERVIEW

Community flood education is a quickly-evolving field as researchers and practitioners combine the fields of disaster risk reduction (floodplain risk management) and emergency management, with relevant theory, research and practice from the community development-related fields of psychology, sociology and education. This conceptual relationship for examining and designing community flood education is shown in Figure 4.

Some aspects of current best practice in community flood education based on this relationship are outlined below. These are canvassed here to help develop the options in Section 5 that are used in the Action Plan (Section 6).

4.2 KEY CONCEPTS

Based on learnings from recent disasters such as 9/11 and Hurricane Katrina, the focus of community disaster education has now turned to building community resilience through learning, rather than only concentrating on raising awareness and preparedness levels (Dufty, 2012).

The concept of resilience has been in the disaster management literature since the 1980s (Wildavsky, 1988) but has come into vogue as an overriding goal in the past ten years. This has been mainly due to its importance as a factor in achieving sustainability (Dovers, 2004), its role as a strategy in climate change adaptation (Gero, Méheux and Dominey-Howes, 2010), and as a perceived future requirement for communities based on learnings from disasters such as 9/11 and Hurricane Katrina (Boin, Comfort and Demchak, 2010).

Like the term 'sustainability', there are a multitude of definitions of 'disaster resilience'.

The original notion of resilience, from the Latin word *resilio*, means to 'jump back' or 'bounce back'. According to de Bruijne, Boin and van Eeten (2010), 'In the past decades, research on resilience has been conducted at various levels of analysis – the individual level, the group level, and the organizational or community level – in a wide variety of disciplines including psychology, ecology, organization and management sciences, group/team literature and safety management'.

Several researchers (e.g. Longstaff, 2005) have made an interdisciplinary effort to further refine the concept of resilience in relation to disaster management. However, a dilemma for researchers and planners has been whether disaster resilience should involve the ability of a community to 'bounce back' (i.e. resume its normal functioning) as per the original notion, or to 'bounce forward' after a disaster (Manyena et al, 2011). Some researchers such as Paton (2006) opt for the latter notion arguing that the 'bounce back' idea neither captures the changed reality after a disaster, nor encapsulates the new possibilities wrought by a disaster.

Another and allied concept is that of 'shared responsibility'. According to the findings of the Victorian Bushfires Royal Commission Final Report 2010, shared responsibility means 'increased responsibility for all'. The Commission's Report 'recommends that state agencies and municipal councils adopt increased or improved protective, emergency management and advisory roles. In turn, communities, individuals and households need to take greater responsibility for their own safety and to act on advice and other cues given to them before and on the day of a bushfire.'

'Shared responsibility does not mean equal responsibility ... there are some areas in which the state should assume greater responsibility than the community. For example, in most instances state fire authorities will be more capable than individuals when it comes to identifying the risks associated with bushfire; the state should therefore assume greater responsibility for working to minimise those risks.'

Figure 4: The three main interlinking fields that form a basis for designing community flood education

Other major reviews such as the Victorian Flood Review have also advocated the need for shared responsibility between agencies, councils and communities.

4.3 CURRENT MODELS

4.3.1 Information and awareness

The 'traditional' model of community flood education involved the assumption that information will raise people's awareness which will increase preparedness and then people will act appropriately in response to a flood event. However, this linear process has been found to be faulty by both psychological and education research (e.g. Paton, McClure & Burgelt, 2006; Rhodes, 2011) across hazards.

Rhodes (2011) summarises this research finding by saying it does 'challenge several of the key assumptions that underpin the common approach to community education with its reliance on information dissemination as the primary means of triggering change in

attitudes and behaviour. Awareness and recognition that they are at risk does not necessarily motivate people to take action. Nor does having access to information about the risk or how to deal with it automatically lead them to implement measures to prepare, or to plan for the event of a fire. Nor do people necessarily interpret information or use it as intended by authorities'.

A more participatory and engaging approach to community flood education is promoted by several researchers as an alternative. Elsworth et al (2009) as a result of a review of community hazard education programs throughout Australia state that programs 'would be greatly improved if they involved active community participation during their development and implementation. Levels of community participation of this kind that move towards wide consultation, collaborative development of activities and programs and democratic forms of policy-related decision-making require conscious design, considerable effort in implementation and on-going evaluation'.

4.3.2 Preparedness

As noted above, awareness does not necessarily transfer into flood preparedness (i.e. taking flood precautions and knowing what to do in a flood). There are several psychological models (e.g. Paton, McClure & Burgelt, 2006; Grothmann and Reusswig, 2006) that identify multiple factors that determine a person's willingness to prepare for a flood. These factors include previous flood experience, self-efficacy (confidence to deal with a flood), risk perception, coping ability and reliance on flood mitigation structures (e.g. levees).

Using this research, Dufty et al (2012) identified three main flood psychological profiles in the community:

1. 'Customers'- these people have an understanding of the flood risk and believe they can cope with a flood and are motivated to prepare. These people are receptive to flood education but require further assistance in understanding how to prepare and respond appropriately.

2. 'Visitors' – these people like to avoid the flood problem and transfer it to someone else e.g. Council, the NSW SES. They tend to be unresponsive to community flood education programs and thus require specific programs that raise their flood anxiety and provide them with competencies before helping them with preparedness and response activities.

3. 'Experts' – these people usually have prior flood experience and believe they can cope with the floods themselves and thus may discount advice (e.g. evacuation) from authorities. A collaborative approach is suggested to involve these people in flood education programs.

4.3.3 Connected communities

Several sociologists (e.g. Aldrich, 2010; Chamlee-Wright, 2010) believe that the formation of 'social capital' is a critical factor in the ability of a community to quickly recover and 'bounce forward' after a disaster.

Social capital has been defined as the "networks, norms, and social trust that facilitate coordination and cooperation for mutual benefit" (Putnam, 1995). It is generally agreed that there are three distinct forms of social capital: bonding, bridging and linking. Bonding social capital grows from organisations and activities connecting similar individuals who often live in close proximity to each other. Bridging activities and organisations, in contrast, bring together individuals from different neighbourhoods, ethnicities and races. According to Szreter and Woolcock (2004) linking social capital is composed of 'norms of respect and networks of trusting relationships between people who are interacting across explicit, formal or institutionalized power or authority gradients in society'. Where bridging social capital connects individuals of approximate equal social status, linking social capital connects those of unequal status, providing them with access to power.

Research into the recovery after the 2004 Indian Ocean tsunami (e.g. Aldrich, 2011a) and Hurricane Katrina (e.g. Boettke et al, 2007) has shown the benefits of social capital in providing resources for a faster and more efficient recovery. However, there were some minor negative effects found. For example, in villages in Southeast India impacted by the 2004 tsunami, although high levels of social capital reduced barriers to collective action for members of the *uur panchayats* (hamlet councils) and parish councils speeding up their recovery and connecting them to aid organisations, at the same time social capital reinforced obstacles to recovery for those outside of these organisations such as women, Dalits, migrants, and Muslims (Aldrich, 2011a).

Aldrich (2011b) states, 'Rather than imagining that disaster mitigation and recovery are functions of characteristics external to the community – such as aid provided by the government or nongovernmental organizations, the amount of damage from the crisis, or the competency of local and national political leaders – scholars should recognize that the level of connectedness and cohesion within the neighbourhood is critical to

recovery'. Like two individuals exposed to the same disease, recovery may have more to do with the quality of the host than the nature of the disease (Aldrich, 2008).

As part of community flood education programs there is value in communities learning how to form social capital as part of their flood preparedness.

4.3.4 How people learn

Research shows that people learn about flooding in two main ways: cognitive (thinking) and affective (emotions) (Terpstra, 2011). As Terpstra stresses, 'the great challenge for flood risk management is the accommodation of both cognitive and affective mechanisms in risk communications, especially when most people lack an emotional basis stemming from previous flood hazard events.'

As suggested above, learning by experience (experiential learning) appears to be an effective approach. Those without direct flood experience can learn through 'substitutes' such as simulations, emergency drills, imagining flood scenarios and problem solving.

As a flood can happen at any time, it is important that community flood education is varied (to keep the learner's interest) and ongoing. Campaign-style education programs do not work as they only have short retention of learning.

4.3.5 Other research findings

Other relevant research findings include:

- Community flood education programs and activities should be based on the learner's needs and thus an understanding of the learning community is important in their design (Elsworth et al, 2009; Molino Stewart, 2007). This can be achieved through processes such as community profiling, social research and social network analysis.

- Learning should be aligned with structural and other non-structural methods used in floodplain risk management, and with emergency management measures such as operations and planning (Molino Stewart, 2007).

- Learning should be designed for before, during and after a flood event and be ongoing in delivery as a disaster can occur at any time (Dufty, 2008).

- Community flood education requires a all-hazard and cross-agency approach to learning (Dufty, 2008).

- Program evaluation is a critical requirement of all community hazard education activities (Elsworth et al, 2009). Excellent examples of this for bush fire have been conducted by the Bushfire CRC.

- The use of social media should be an important component of community flood education, as well as the more 'traditional' activities (e.g. events, media, websites, meetings).

- Post-disaster learning is important to help stimulate the 'bounce forward' effect (Molino Stewart, 2007; Dufty, 2008). This learning can be derived from community flood education activities such as de-brief community meetings, community resilience webinars (used extensively after the 2011 Queensland floods) and social media discussions.

4.4 STRATEGIES AND POLICIES

The focus on building community disaster resilience is reinforced by national strategies. In December 2009, the Council of Australian Governments (COAG) agreed to adopt a whole-of-nation, resilience-based approach to disaster management, which recognises that a national, coordinated and cooperative effort is needed to enhance Australia's capacity to prepare for, withstand and recover from disasters. The National Emergency Management Committee subsequently developed the National Strategy for Disaster Resilience which was adopted by COAG on 13 February 2011.

The purpose of the Strategy is to 'provide high-level guidance on disaster management to federal, state, territory and local governments, business and community leaders and the not-for-profit sector. While the Strategy focuses on priority areas to build disaster resilient communities across Australia, it also recognises that disaster resilience is a shared

responsibility for individuals, households, businesses and communities, as well as for governments. The Strategy is the first step in a long-term, evolving process to deliver sustained behavioural change and enduring partnerships'.

The Strategy (COAG, 2011) identifies seven groups of actions to build community disaster resilience in Australia.

1. Leading change and coordinating effort

2. Understanding risks

3. Communicating with and educating people about risks

4. Partnering with those who effect change

5. Empowering individuals and communities to exercise choice and take responsibility

6. Reducing risks in the built environment

7. Supporting capabilities for disaster resilience.

Community education is identified in the Strategy as an important mechanism in carrying out these actions to build community disaster resilience.

Organisations such as Emergency Management Australia (EMA) and the NSW SES are developing and implementing initiatives including through education that support the Strategy. For example, as noted in Section 1.3.2, a goal of the NSW SES is to develop a 'resilient community' by 'changing the way people and their belongings are kept safe by increasing their access to prevention and preparedness services'. A key way to achieve this goal is through education, communications and engagement delivered by the NSW SES.

The Australian Emergency Management Institute (AEMI) primarily uses education 'to focus on improving knowledge and development in the emergency management sector. It supports broader national security capability development efforts to build community resilience to disaster'.

4.5 COMMUNITY FLOOD EDUCATION IN OTHER JURISDICTIONS

As the lead combat agency for flood in NSW, the NSW SES has a lead role in community flood education in the State. The NSW SES uses a range of education and engagement tools to raise flood risk awareness, encourage preparedness, and provide advice on how to respond and recover. The education and engagement delivery is through the FloodSafe program. The education and engagement tools used include:

• FloodSafe Guides and other information products

• SES website

• Business and Home FloodSafe online toolkit

• Stalls at events

• Business breakfasts

• Door knocks

• Shopping centre displays

A few local councils around NSW have developed and are implementing flood education plans and activities. For example, Lismore City Council has a flood education committee and plan being implemented. Some councils such as Rockdale City and Warringah have developed and distributed FloodSafe Guides in liaison with the NSW SES. However, most of the flood education from local councils comes through the community consultation process required by the NSW Floodplain Development Manual (Section 2.1).

Due to its legacy of the 1955 flood, the Hunter-Central Rivers Catchment Management Authority (CMA) maintains a role in community flood education. The CMA, in partnership with the NSW SES and the community of Maitland, developed a Community Flood Education Strategy for Maitland and the Hunter Valley.

The Strategy, which was developed with an Advisory Committee of representatives from residential, rural and business sectors of Maitland, contains a number of initiatives to improve community flood awareness and preparedness within the local community.

Activities implemented from the Strategy include:

- 'Memories keep coming back' DVD (oral histories of the 1955 flood)
- 'Are you FloodSafe?' DVD
- Book titled 'Maitland, City on the Hunter - Fighting floods or living with them?'
- Flood fact sheets
- Web pages on preparing for floods
- Shopping centre displays
- Signage explaining Maitland flood mitigation scheme
- Flood tours
- 1955 and 2007 flood anniversary events.

There are several other organisations that have developed flood education websites including:

- Harden up (Green Cross Australia) – this will be extended from Queensland to other States
- Publications available at the EMA website
- Details of flood insurance at the Insurance Council of Australia website

The NSW SES and the Hunter-Central Rivers CMA have delivered the greatest quantity of community flood education. However, caution must be taken in identifying either as a benchmark or 'best practice' as both have tailored activities for their communities and organisational capacities.

Furthermore, neither has conducted detailed formal evaluations specifically of their education and engagement programs and processes to gauge appropriateness and effectiveness. Evaluation is difficult as there is a large amount of 'noise' (i.e. several causal factors) in determining whether an education intervention caused a rise in awareness, preparedness and response behaviours (e.g. evacuation). For example, the Hunter-Central Rivers CMA conducted social research soon after the 2007 Maitland flood which coincided with several community education program activities. It was difficult to gauge whether increases in reported awareness and

preparedness levels were due to the flood or the education activities, or both.

4.6 APPLICABILITY TO FAIRFIELD CITY

From Section 4, the following findings are applicable to the development of the Action Plan in Section 5:

- Community education should help build community flood resilience and encourage shared responsibility.
- Information-providing by itself (e.g. through fact sheets, websites) should be a lower priority in the Plan.
- Community flood education and engagement should be planned, implemented and evaluated through community participation e.g. resident and business members of the Fairfield Floodplain Management Committee, feedback from community groups and leaders, use of the Fairfield City Council community reference groups.
- Community flood education should target awareness, preparedness, appropriate response and recovery separately i.e. there should be activities for each in the Action Plan.
- Programs should be ongoing and activities varied for the learner.
- Community profiling should identify whether residents are 'customers', 'visitors' or 'experts', and then tailor activities to these profile groups. From the research in Section 3 it appears that almost all residents in flood-prone parts of the City are 'visitors' and thus require specific and tailored engagement to raise their flood risk awareness and help them learn how to prepare, respond and recover.
- Learning should build community networks that can help in response and flood recovery.
- Learning should relate to other flood mitigation options.
- Post-event learning for communities should be included in the Plan.
- The Plan should include evaluation to test progress, appropriateness and effectiveness.

- There is no benchmark for flood education in NSW, although activities of the NSW SES and Hunter-Central Rivers CMA should be considered in the Action Plan (see Section 5.2.1).

5 OBJECTIVES AND OPTIONS FOR COMMUNITY FLOOD EDUCATION

5.1 OBJECTIVES

The following objectives for the Fairfield City Community Flood Education Action Plan have been developed particularly in relation to the requirements of the NSW Floodplain Development Manual (Section 1.3.2), the NSW State Flood Sub Plan (Section 1.3.2) and the guidance in the National Strategy for Disaster Resilience (Section 4.4). They are supported by the Fairfield City Floodplain Management Committee.

There are four objectives for the Action Plan:

1. Increased community awareness of the risk of flooding.

2. Increased level of community preparedness including the ability to carry out appropriate actions before, during and after a flood event.

3. Improved community capabilities (e.g. leadership, networks) to adapt to floods.

4. Learning after a flood to improve 1, 2 and 3 above.

5.2 IDENTIFICATION OF AVAILABLE OPTIONS

There is a plethora of community flood education options that could be considered for inclusion in the Action Plan. Not only are there those education and engagement activities noted in Sections 2.2 and 4.5, others ideas were identified during this project.

It should be noted that the aim of the analysis in this section is not necessarily to delete education options from a long list of possibilities; rather it is to design a suite of appropriate and potentially effective education activities taking into account:

1. The flood behaviour and risk in Fairfield City (Section 1.2.1)

2. History of flooding in the City (Section 1.2.2)

3. Floodplain management in the City (Section 1.2.3)

4. Emergency management in the City (Section 1.2.4)

5. Learnings from the social research for this report (Section 3.5)

6. Learnings from current best practice in community flood education (Section 4.6).

5.2.1 Options from previous/current activities and other jurisdictions

As identified in Section 2.2, Council has undertaken several stand-alone community flood education projects. This has included:

- Flood signage

- An artistic flood icon

- A short documentary produced on DVD

- One-off media releases issued to local newspapers on the anniversaries of the 1986 and 1988 floods

- Proposals to install flood depth markers around the City

- Advisory notices to residents involved in Council's voluntary house raising scheme

- Issuing of Section 149 certificates to advise homeowners of the flood risk.

The local NSW SES has also:

- Regularly handed out brochures and other educational pamphlets on flooding at various community events

- Conducted annual letterbox drops in the suburbs of Lansvale and Carramar.

- Stalls at events

- Door knocks

- Shopping centre displays

From Section 4.5, some of the options used by other jurisdictions include:

- FloodSafe Guides

- Web pages

- Business FloodSafe online toolkit
- Stalls at events
- Business breakfasts
- Door knocks
- Shopping centre displays
- DVDs
- Books
- Flood fact sheets
- Signage
- Flood tours
- Flood anniversary events.

5.2.2 Council's existing community engagement options

Fairfield City Council has developed and is implementing several community engagement initiatives which have educative value and could be utilised in the Fairfield City Community Flood Education Action Plan.

Council's Community Engagement Strategy 2012 outlines the principles, guidelines and actions Council will undertake in order to ensure that the community is engaged in the development, of the Fairfield City Plan - Community Strategic Plan. The Strategic Plan includes the following methods to ensure that people receive information, are heard and have an opportunity to help make decisions.

- Information posters and City Life newsletters
- Media and Communications Plan including use of social media (Facebook)
- On-line survey
- Focus groups
- Meetings and forums
- Bilingual Community Educators
- Community feedback register

In relation to the above, community advisory committees (including youth and multicultural) are used as conduits to Fairfield City communities. Council also has a community development team that builds community capacity including networks and leadership.

As these options are regularly used by Council for engagement, it is sensible that they are considered as options in the Plan.

5.2.3 Ideas for community flood education options

Options that could be included in the Action Plan were identified from several other sources during the project. At the Straight Talk forum participants offered the following options for consideration:

- Signage in risk areas
- Information from Council e.g. about evacuation routes
- Bus tour
- Learning from history
- Public flood maps
- Stalls
- Reminder about flood risks with rate notices
- Images of previous floods
- Fridge magnets about home emergency kits
- Home emergency plan
- Newspaper articles about flooding.

Ideas for community flood education options from the Floodplain Management Committee included:

- Utilise the resilience of some CALD communities
- Don't rely on information with 120 languages in Fairfield City
- Encourage all to have an emergency plan
- Drills for flood emergency including evacuation
- Work through community networks
- Target local school children
- Use ethnic and community radio
- Information should tell people what to do before, during and after a flood.

5.2.4 Categorisation of options

Dufty (2010) has grouped all options into four community flood education categories:

1. Public communications, information products and services e.g. publications, Internet sites, displays, promotional products, media liaison, advertising/marketing.

2. Training, development and industry-specific programs e.g. skills development courses, leadership training, mentoring, emergency drilling and exercising.

3. Community engagement programs e.g. public participation programs, forums, discussion groups, events, developing networks.

4. Comprehensive personal education programs e.g. school curriculum, university curriculum, personal development courses, action research programs, community education courses.

Although most of the options identified in Sections 5.2.1, 5.2.2 and 5.2.3 could fit neatly into one of these categories, some such as social media use could fit into more than one.

From Sections 3.5 and 4.6, there would be a greater preference for the community engagement programs than the other three, and particularly the first category.

5.3 ASSESSMENT CRITERIA

5.3.1 Guidance from social research and best practice

Based on the objectives of the Fairfield City Community Flood Education Action Plan (Section 5.1), options should be chosen (including from Sections 5.2.1, 5.2.2 and 5.2.3) that cover:

- Flood risk awareness
- Flood preparedness
- Increasing flood resilience capabilities
- Post-flood learning

Furthermore, based on the implications of the social research (Section 3.5) and from current best practice (Section 4.6), the following should also be considered in choosing education options for the Fairfield City Community Flood Education Plan:

- Activities need to be tailored to the attitudes and beliefs of the main the culturally and linguistically diverse (CALD) communities.

- Activities should be translated if possible into the main languages in the communities.

- Education should be delivered largely through face-to-face engagement, community networks and events.

- Social media and web sites should still be considered as education mediums, particularly for youth.

- Regular contact should be made with flood-affected residents in the City to ensure they all are aware that their property could flood.

- Experiential learning experiences are required as a substitute to flood experience e.g. simulation, role-playing, scenario problem solving, emergency drilling.

- Residents and businesses should be encouraged to develop flood emergency plans.

- Residents and businesses should understand how to respond appropriately including when and where to evacuate.

- Residents and business should know how to recovery from a flood including where to get help.

- Community education should help build community flood resilience and encourage shared responsibility.

- Activities that solely provide information (e.g. through fact sheets, websites, signage) should be a lower priority in the Plan.

- Community flood education and engagement should be planned, implemented and evaluated through community participation.

- Community flood education should independently target awareness, preparedness, appropriate response and recovery.

- Programs should be ongoing and activities varied for the learner.

- It should be assumed that residents are 'visitors' at this stage.

- Learning should build community networks that can help in response and flood recovery.

- Learning should relate to other flood mitigation options.

- The Plan should include evaluation to test progress, appropriateness and effectiveness.

5.3.2 Key assessment criteria

Based on Section 5.3.1, the key assessment criteria for the selection of education options for the Fairfield City Community Flood Education Action Plan should include:

1. Relevance to the objectives of the Fairfield City Community Flood Education Plan

2. Suitability to the Fairfield City community

3. Adherence to current best practice in community flood education

Other key assessment criteria are:

1. Capability of stakeholders (including Council, emergency agencies, communities) to implement the options. It is important that the education options are within the technical floodplain management, emergency management and education capabilities of stakeholders, and use existing structures and networks where possible.

2. Amount of resourcing required (e.g. cost, staff, time) to implement options. Cost efficiencies should be sought through the use of existing Council and NSW SES resources (e.g. maps, databases, photographs). Activities should not be too labour intensive and cognisant of other demands for Council personnel. It also should be noted that local NSW SES Unit staff are volunteers.

3. Community perception and political implications. Options selected should ensure that the reputation of Council and its elected representatives is maintained.

5.4 IDENTIFICATION AND ASSESSMENT OF OPTIONS FOR FAIRFIELD CITY

Using the key assessment criteria (Section 5.3.2) and the guidance from Section 5.3.1, the education options for the Fairfield City Community Flood Education Action Plan were selected from the options described in Section 5.2 and from the experience of Molino Stewart of what options that worked well in similar locations.

The options recommended are identified in Table 1 which also provides details of their attributes in relationship to the key assessment criteria. A brief explanation of why several of the options identified in Section 5.2 were discarded is provided in Section 5.7

It should be noted that implementing a large number of options (e.g. more than 20) is most likely impractical and unattainable based on experience of other jurisdictions with their community flood education plans.

The options selected should be varied across the duration of the Action Plan. This diversity increases the probability that people and groups will be engaged based on their learning needs. Options should therefore be sought across the categories of education options identified in Section 5.2.4, noting the preferences for categories outlined.

Table 1: Choice of recommended options for the Fairfield City Community Flood Education Action Plan using key assessment criteria

Key option	Relevance to Plan objectives	Suitability to Fairfield City	Adherence to current best practice	Capability of stakeholders	Resourcing required	Community perceptions & political implications
1. Regularly write to all flood-affected residents to reinforce that they live in a flood-prone area and encourage preparedness activities e.g. development of emergency plans	Flood risk awareness Flood preparedness/actions	Aims to raise and maintain awareness levels. Uses direct mail which has worked through previous engagement activities. Need to translate part of correspondence into main languages	Both used as an engagement tool and to provide information. Can be used to encourage participation in floodplain management processes (e.g. flood studies, FRMPs)	Uses Council database of flood-affected residences to locate properties for mail-out plus Council and NSW SES expertise	Small amount of Council in-kind, cost of letters	Could be reviewed positively e.g. regular liaison with communities, however there is some risk of initial community concern e.g. impact on property values
2. Hold 'meet-the-street' events in high-risk areas to engage residents around the danger of flooding in their local area and encourage the development of street-based support groups	Flood risk awareness Flood preparedness/actions Resilience capabilities	Direct engagement with at-risk parts of communities. Used as a meeting for people to develop support networks and encourage neighbourhood discourse regarding flooding	Encourages shared responsibility. Social capital formation (networking) helps build flood resilience. A participatory approach to increasing preparedness levels	Uses Council and NSW SES expertise. Also could involve community 'experts' including those involved in 1986 and 1988 floods	Council in-kind based on available time and personnel. Use existing resources e.g. maps.	Most likely positive and could enable Councillors to be involved. Needs to be appropriately managed to ensure that event is kept focused on flooding.
3. Problem-solve flood scenarios with community groups	Flood risk awareness Flood preparedness/actions Resilience capabilities	Designed to provide a substitute for flood experience and help people to learn how to cope with floods.	Community, Council and the NSW SES work through potential scenarios together. Assists in experiential learning	Uses Council resources e.g. maps, photos as learning stimuli for scenarios.	Council in-kind based on available time and personnel. Use existing resources e.g. maps, photos	Most likely positive and enables Councillors to be involved. Needs to be appropriately managed to ensure that event is kept focused on flooding.

Key option	Relevance to Plan objectives	Suitability to Fairfield City	Adherence to current best practice	Capability of stakeholders	Resourcing required	Community perceptions & political implications
4. Conduct emergency drills and exercises involving communities and emergency agencies	Flood risk awareness Flood preparedness/actions Resilience capabilities	Designed to help raise awareness, provide a substitute for flood experience and help people to learn how to cope with floods	This is being used on a large scale in New Zealand for earthquakes Activity is experiential, participatory, builds social capital	Normal practice for emergency agencies, should also be organised through Council's LEMO and with at-risk communities	Publicity of the drill event with communities required. Coordination with local emergency agencies and Council	Generally should be positive but will still need to be managed appropriately to ensure that the exercise is treated seriously and positively but without unduly raising concern.
5. Brief councillors about floodplain and emergency planning and provide them with information to speak to communities and answer enquiries	Flood risk awareness Flood preparedness/actions Resilience capabilities	Important to have councillors as key decision-makers educated and with capabilities to educate others to raise awareness and preparedness levels	Educating key decision-makers. Building human and social capital	Council staff with expertise to conduct training. Provide support resources e.g. maps, photos, reports	Council staff time to prepare training. Use existing Council materials e,g. maps, reports	Positive perception
6. Use print media, radio and social media to run flood stories to raise flood awareness. Use interpreters and translated written material in a range of community languages relevant to the areas being targeted	Flood risk awareness	Use of local media including ethnic media to help reach CALD communities. Aimed at raising flood awareness across the City including those indirectly impacted by flooding	Solely information-based but does supply robust base for raising awareness	All expertise in Council. Send releases through media unit	Use existing Council media releases and social media (e.g. Facebook)	As for any media release. Possible need for further discussion in social media

Key option	Relevance to Plan objectives	Suitability to Fairfield City	Adherence to current best practice	Capability of stakeholders	Resourcing required	Community perceptions & political implications
7. Hold post-flood community de-brief meetings	Flood risk awareness Flood preparedness/actions Resilience capabilities Post-event learning	Will help increase collective flood experience learning to help raise future awareness, preparedness and general resilience in the community	Participatory approach that will assist in the community 'bouncing forward' from the event	Council has already run one of these de-brief meetings. Need good facilitation skills	Organisation of meeting venue etc required.	Meetings need to be sensitively managed given there are likely to be intense emotions after floods. Risk will be highly dependent on community perception of emergency agencies' and Council's performance before, during and after the flood
8. Engage with youth and multicultural networks about flood-related initiatives (e.g. flood studies, FRMPs) using Council's reference groups	Flood risk awareness Flood preparedness/actions Resilience capabilities	Uses existing community networks including CALD communities to engage related to initiatives and to raise awareness and preparedness levels	Participatory process using existing linking social capital	Process is being trialled for Three Tributaries and Canley Corridors FRMPs consultation	Uses existing Council reference groups	Generally positive as per any other issues discussed in reference groups
9. Train and support local community leaders to help their communities prepare, respond and recover	Flood preparedness/actions Resilience capabilities	Uses local community leadership to work with their communities. CALD leaders understand cultural beliefs and attitudes of their communities	Participatory approach using social and human capital	NSW SES and Council have abilities to train leaders in floodplain and emergency management	Need small level of funds to establish training course which can be then rolled out	Generally low risk as it only involves leaders that can be selected by Council

Key option	Relevance to Plan objectives	Suitability to Fairfield City	Adherence to current best practice	Capability of stakeholders	Resourcing required	Community perceptions & political implications
10. Use and/or hold community events (e.g. Council Open Day, centenary of the 1988 flood) to engage with communities about floodplain and emergency management	Flood risk awareness Flood preparedness/actions Resilience capabilities	Aimed at raising both awareness and preparedness. Provides opportunities to discuss range of local flood-related matters with Council staff and NSW SES	Participatory approach that is based on the learner's needs	Uses Council and NSW SES expertise in floodplain management, emergency management and community engagement	Display items required such as maps, photographs. Also need Council and NSW SES staff to man displays	Likely a positive percetion
11. Prepare a FloodSafe Guide for Fairfield City	Flood risk awareness Flood preparedness/actions	FloodSafe Guide is tailored to the community and local flood scenarios	Provides guidance on appropriate actions related to prevention, preparedness, response and recovery	Can use online template established by the NSW SES	Relatively small cost for printing. Could be distributed with Council rates, and at events	Low risk as it is information provision and endorsed by both the NSW SES and Council
12. Prepare curriculum-based school teaching units for Primary and Secondary students related to aspects of flooding	Flood risk awareness Flood preparedness/actions	Tailored learning for Fairfield City schools that enriches required learning in specific parts of curriculums. Aimed to raise awareness and preparedness with youth	Teaching/learning activities related to specific curriculum learning outcomes	Requires technical education input for curriculum development with Council and NSW SES expertise	Needs to be outsourced to contractor and thus cost involved	Low risk as units are taught by school teachers and endorsed by Council and NSW SES

Key option	Relevance to Plan objectives	Suitability to Fairfield City	Adherence to current best practice	Capability of stakeholders	Resourcing required	Community perceptions & political implications
13. Encourage and support businesses to complete the Business FloodSafe emergency plans	Flood risk awareness Flood preparedness/actions Resilience capabilities	Use of existing local networks such as Chambers of Commerce to raise awareness and preparedness levels	Part of business continuity planning. Use of bridging social capital in learning	Use SES Business FloodSafe activities such as business breakfasts, doorknocks, follow ups	Use existing SES materials. Cost of hiring venue and staff time to organise and implement	Generally low risk
14. Erect signage in strategic locations to help raise awareness of flooding in the City	Flood risk awareness	Signage will help people locate flood-prone areas of the City and raise general awareness levels	Information-based but provides assistance in general awareness including of non-residents	Already some signs erected so should be able to duplicate in other locations	Use existing sign specifications and templates. Cost involved in producing and erecting signs	Low as there are already signs erected in the City. However, needs to be sensitive to proposed location of signs in proximity to private property given perceived impact on property prices.
15. Maintain and update local flood information links on Council's website	Flood risk awareness Flood preparedness/actions	Tailored information to local flood scenarios that could help raise awareness and preparedness although research shows relatively low internet use	Solely information-based and thus not best practice but does supply base for raising awareness and preparedness	All expertise in Council.	Staff time to update website	Low risk as for any part of Council's website

5.5 DESCRIPTION OF OPTIONS

Further details about the 15 options selected (Table 1) are provided below.

1. **Regularly write to all flood-affected residents to reinforce that they live in a flood-prone area and encourage preparedness activities e.g. development of emergency plans.** As discussed previously, this education activity is both designed for engagement (regular reinforcement of living in a floodplain) and the provision of information. It could be a two-page flood update newsletter that is sent by Council to all flood-affected residents on a regular basis (every six months). It should update residents about floodplain management initiatives (e.g. flood studies, FRMPs, house-raising), refer them to their Section 149 certificates and provide practical preparedness tips e.g. developing emergency plans, understanding evacuation routes. Translation services should be offered for the main non-English languages. As part of this activity it also may be useful provide specific information to landholders linking property floor levels to flood gauge heights as a way of making people aware of their risk of flooding and what they should do when flooding reaches certain gauge heights.

2. **Hold 'meet-the-street' events in high-risk areas to engage residents around the danger of flooding in their local area and encourage the development of street-based support networks.** This engagement activity involves Council and the NSW SES setting up a 'stall' at an appropriate and visible location (e.g. park) at a time that people will be at home (e.g. evening during summer, Saturday/Sunday morning). Priority for this activity should be those parts of the City that are particularly vulnerable e.g. areas well below 100 year ARI, nursing homes etc. The 'meet-the-street' should be advertised through a specific letter box drop to the targeted neighbourhood or vulnerable site e.g. nursing home. The stall could consist

banners, NSW SES materials (e.g. Fairfield City FloodSafe Guide when available) to hand out. The aim is to use these materials to engage with people and make them aware of flood risk, encourage preparedness behaviours (e.g. develop emergency plans) and help them understand what to do during and after a flood. It should also encourage property owners to develop self-help networks and particularly people checking on neighbours if a flood is imminent. Longer-term residents with flood experience ('experts' – see Section 4.3.2) could be used to help provide residents with an understanding of previous floods and how to prepare for future flooding. It is envisaged that four of the 'meet-the-streets' are held each year.

3. **Problem-solve flood scenarios with community groups.** This activity involves workshopping flood scenarios with community groups. These groups should be selected as best as possible from within flood-affected areas (i.e. areas up to the PMF) of the City. The benefit of working in a group is that it is already a formed network and thus can be a self-help network during and after a flood. The scenario could be presented using flood maps, photographs of the 1986 and 1988 floods, and waterRIDE. The aim of the activity is to place workshop participants in a flood situation and let them work through what they could do before, during and after a flood. It is also important to illicit their feelings throughout the exercise. It is envisaged that Council would run at least two of these workshops per year. The activity could be used in community consultation for flood studies and FRMS&Ps.

4. **Conduct emergency drills and exercises involving communities and emergency agencies.** This activity involves emergency exercising by emergency agencies and Council in a high flood risk part of the City. This activity is normal practice for emergency agencies but has not been conducted in Fairfield City for many years. It would be

useful to involve local residents and other interested members of the community to improve their experience of appropriate response actions including evacuation. Although there are low levels of risk awareness and preparedness, people are curious and would most probably be bystanders in this drill, so best to involve them. It is envisaged that the emergency drill/exercise would be conducted on an annual basis.

5. **Brief councillors about floodplain and emergency planning and provide them with information to speak to communities and answer enquiries** Council needs a solid foundation on which to go out and speak to and engage with the wider community and this cannot be done without support from the councillors. It is also important to arm the councillors with knowledge and tools so that they can respond to the community's enquiries around flooding.

This capacity-building activity involves holding a brief (e.g. two hour) workshop to inform councillors about Council's floodplain management initiatives and emergency management in Fairfield City. It could be useful for councillors to participate in the flood scenario problem-solving (Option 3 above) and this could be part of the workshop program. It is envisaged that the workshop would be held within the first year after the council elections, with annual updates and support materials (e.g. Fairfield City FloodSafe Guide – see option 10) provided.

Councillors should be encouraged to either chair or attend the Floodplain Management Committee meetings and the minutes of these meetings forwarded to all councillors to assist in their learning.

6. **Use print media, radio and social media to run flood stories to raise flood awareness. Use interpreters and translated written material in a range of community languages relevant to the areas being targeted.** This activity is predominantly providing information. However, its 'high' priority is gained by the need to provide a regular base of flood

of flood maps on boards, NSW SES information to those living within the PMF, and also those living outside the PMF that would be indirectly impacted in a flood. This activity was also promoted by the Floodplain Management Committee and the Straight Talk forum.

The flood stories should be distributed through local community media networks including ethnic and community radio. Written material should be translated into the main CALD community languages where possible.

The activity should be regularly conducted (e.g. four times) a year through the media section of Council. It should essentially be by Council media releases, although the use of social media through Council's Facebook page could mean there is a need for some ongoing discussion based on community interest.

7. **Hold post-flood community de-brief meetings.** This activity is critical to building community flood resilience as it provides learning to 'bounce forward' after a flood (Section 4.2). In this activity, Council or an independent facilitator would facilitate a de-brief workshop that would investigate what worked, what didn't, and how could floodplain and emergency management be improved in the future. A further focus should be on how the community could become more resilient to flooding. The de-brief meeting should be held within one month after the flood to allow attendees to remember specific details of the flood, and to demonstrate prompt action and interest by Council and emergency agencies.

8. **Engage with youth and multicultural networks about flood-related initiatives (e.g. flood studies, FRMS&Ps) using Council's reference groups.** As noted in Section 5.2.2, Council has existing community engagement networks and mechanisms including reference groups. In this activity, Council would update the multicultural, youth and other reference groups on floodplain management and emergency management aspects and encourage them to disseminate these through their networks and provide feedback to Council about improvement. It

once a year, unless it is used as part of the community consultation process for flood studies and FRMS&Ps.

9. **Train and support local community leaders to help their communities prepare, respond and recover.** It is important to use the human capital in the community and associated networks to raise flood awareness and preparedness levels. This activity involves identifying community leaders (e.g. residents on Council's Floodplain Management Committee, chairperson of chambers of commerce, multi-cultural group leaders, religious leaders) and then providing them training in how to prepare, respond and recover for floods. It is important that the cultural aspects are discussed during training so that leaders can best communicate through their networks. The NSW SES Community Education Training Resource Kit which is used for volunteer training could be used as a training template. Translated FloodSafe Guides and other materials could be used by the leaders. Ongoing support and encouragement should be provided by Council to the leaders after training.

10. **Use and/or hold community events (e.g. Council Open Day, centenary of the 1988 flood) to engage with communities about floodplain and emergency management.** This activity involves using existing events (e.g. annual Council Open Day) and/or holding a specific flood event (e.g. in 2013 holding 25 years centenary of the 1988 flood) to engage with Fairfield City residents regarding flooding. The former option involves Council and the NSW SES using a stall (e.g. that used in 'Meet-the-Street' event) and engaging as per the 'Meet-the-Street' activity keeping in mind that the stall visitors could be from outside the floodplain. The use of historical flood photographs should be used to enable more experiential learning. The latter option involves holding an event (e.g. bus tour, talks/oral histories by residents, stall) that would remind people of previous flooding, that there will be future floods,

and the need to prepare and respond appropriately.

11. **Prepare a FloodSafe Guide for Fairfield City.** The NSW SES FloodSafe Guides provide communities with an understanding of flood scenarios and what to do before, during and after a flood. The tailored local FloodSafe Guides can be handed out during engagement activities and are available on the NSW SES website. The NSW SES has developed an online FloodSafe Guide template that could be used in the preparation of the Fairfield City FloodSafe Guide.

12. **Prepare curriculum-based school teaching units for Primary and Secondary students related to aspects of flooding.** Youth are particularly vulnerable in a flood and require specific education which is best done in the school environment (Ronan and Johnston, 2005). This activity involves engaging a curriculum development contractor to write teaching units of work that fit into appropriate sections of the new National Curriculum. The units would be tailored to flooding in Fairfield City and would encourage personal preparedness and appropriate response behaviours. Dufty (2009) outlines the benefits of providing schools with curriculum-based, ready-to-teach units of work as opposed to 'extra-curricular' presentations by emergency agencies and local councils.

13. **Encourage and support businesses to complete the Business FloodSafe emergency plans.** This activity uses NSW SES business FloodSafe engagement mechanisms (e.g. breakfasts, doorknocks, follow ups) to encourage businesses to prepare emergency plans as part of their business continuity planning. It needs to include practical advice on 'how' to execute this for time-poor business owners who believe they are not in danger of being affected by flooding.

Businesses can use the online Business FloodSafe Toolkit to develop the emergency plans. Collaboration with

is envisaged that this would be carried out

chambers of commerce, particularly within flood-affected areas, is recommended e.g. to help organise. business breakfasts. It is envisaged that at least one business breakfast is held each year.

14. **Erect signage in strategic locations to help raise awareness of flooding in the City.** Some flood-related signs have been erected across the City (Section 2.2). Further signage was recommended by the Straight Talk forum and by some Council staff. However, as it is solely information and not tailored to the specific needs of those residents and businesses within the PMF, it should be a low priority in the Action Plan. The signage should use the template already used by Council to ensure consistency. The erection of twenty signs is recommended in strategic locations (e.g. creek crossings) across the City.

15. **Maintain and update local flood information links on Council's website.** With relatively low internet use in the community and web sites only providing information, this activity is given a low priority in the Action Plan.

This activity involves regularly updating of existing Council web pages based on new information and providing links e.g. to the SES website, particularly the FloodSafe pages.

5.6 GROUPING AND SEQUENCING OF OPTIONS

Most of the options described in Section 5.5 can be grouped and sequenced to enable cost/time efficiencies for Council and the NSW SES, and to increase learning effectiveness. As a result, the options selected should not be isolated activities but be intertwined.

Options 1, 2 and 4 involve the direct participation of specific flood-affected communities. This grouping should be sequenced in this order as Option 1 notifies residents that they live in a flood-affected area, Option 2 provides engagement and discussion opportunities for the residents regarding

the potential behaviour of those floods,

preparedness, and Option 3 allows residents to participate in emergency drilling and exercising conducted by the emergency agencies and Council.

Option 3 can be linked with Option 6 as the former option provides pre-event problem-solving, whilst the latter provides post-event problem-solving.

A community consultation for a FRMS&P could involve Option 1 initially, Options 3 and 8 for the review of management options, then back to Option 1 for feedback and advertising the public exhibition.

There are possible cost-efficiencies across the options chosen. For example, the stall used for Option 2 could also be used for Option 10. The flood scenarios used in Option 3 could also be used for Option 5 and even in the business breakfast for Option 13.

A Fairfield City FloodSafe Guide (Option 11) could be used in most other options and thus should be an initial step along with Option 1 in the Fairfield City Community Education Action Plan (Section 6.1).

5.7 REASONS FOR SOME OPTIONS BEING DISREGARDED

The education options were selected for the Fairfield City Community Flood Education Action Plan based on their strong adherence to the key assessment criteria (Section 5.3.2). However, there are probably over 100 flood education and engagement options that could have been considered within the four categories identified in Section 5.2.4, and including the options listed in Sections 5.2.1, 5.2.2 and 5.2.3.

An appreciation of the broad range of possible options can be obtained from generic guides such as:

- Engagement options – IAP2 Spectrum (International Association for Public Participation Australasia, 2011)

- Community education options – NSW Government Green Paper (Environmental Protection Authority, 1996) Page 7 (table 2)

- Options to build social capital

It is not possible in this report to explain why specific options in these and other lists were disregarded. But generally, these options were considered to be not cost effective or appropriate to Fairfield City. Also, as mentioned above, education design is more about creating education activities within parameters, rather than disregarding them.

Notwithstanding, very few of the options specifically identified in the consultation for the report (Section 5.2) were disregarded. The only options specifically disregarded were the educational DVD and fridge magnets.

An educational DVD has been produced previously for Fairfield City. However, social research particularly by the Hunter-Central Rivers CMA (Micromex, 2007) has shown the effectiveness of using a DVD for flood education to be relatively minimal. This research found that only about 10% of those that received the DVD actually viewed it.

Fridge magnets have some value in reminding residents of flood preparedness but are not normally useful by themselves. The NSW SES has produced fridge magnets as part of its community engagement products and could be used in some options, particularly options 2, 11 and 12.

All other options identified in the consultation have been included in some form.

6 ACTION PLAN

6.1 OVERVIEW

This section provides further details of how the options recommended in Section 5 can be implemented.

A summary action plan for the options is provided as Table 2. In Table 2, each of the options recommended are prioritised based on their strength of adherence to the assessment criteria (Section 5.3.2) and their urgency to raise flood awareness and preparedness levels. The responsibilities for each option (see Section 5.5) are also provided in Table 1, along with a timeframe for implementation (see Section 5.6) and an idea of budget (see Section 6.4). The overall timeframe for the action is three years (2012-15).

6.2 LINK WITH EXISTING PROGRAMS/ACTIVITIES

A few of the options listed in Table 2 could be included as part of the preparation and implementation of FRMS&Ps e.g. the current Three Tributaries and Canley Corridor projects. These options include Options 1, 3 and 6.

These options and the others listed in Table 2 should be prepared and implemented as part of Council's ongoing Flood Mitigation Program.

As shown in Figure 3, to implement this education action plan not only will Council's staff expertise in floodplain management and emergency management be required, but also expertise in community development (as per Figure 4). An internal working group across these three areas is thus suggested.

A few of the options link with existing NSW SES FloodSafe engagement programs. These options are particularly Options 9 and 11.

As noted in Section 4.6, it is critical that through whichever programs that community flood education and engagement is ongoing throughout the duration of the Fairfield City Community Education Action Plan.

6.3 FUNDING

There is a modest amount of new funding required - $31,000 over three years - to complete all options in the Table 2 action plan. Some sources of funding include the OEH and the Natural Disaster Resilience Program. The estimated number of hours (2012-15) for Council staff involvement in each option is:

1. Regularly write to all flood-affected residents to reinforce that they live in a flood-prone area and encourage preparedness activities e.g. development of emergency plans. **90 hours (30 hours per year)**

2. Hold 'meet-the-street' events in high-risk areas to engage residents around the danger of flooding in their local area and encourage the development of street-based support networks. **300 hours**

3. Problem-solve flood scenarios with community groups. **200 hours**

4. Conduct emergency drills and exercises involving communities and emergency agencies. **130 hours**

5. Brief councillors about floodplain and emergency planning and provide them with information to speak to communities and answer enquiries. **90 hours**

6. Use print media, radio and social media to run flood stories to raise flood awareness. Use interpreters and translated written material in a range of community languages relevant to the areas being targeted. **160 hours**

7. Hold post-flood community de-brief meetings. **60 hours per flood**

8. Engage with youth and multicultural networks about flood-related initiatives (e.g. flood studies, FRMPs) using Council's reference groups. **120 hours**

9. Train and support local community leaders to help their communities prepare, respond and recover. **80 hours**

10. Use and/or hold community events (e.g. Council Open Day, centenary of the 1988 flood) to engage with communities about floodplain and emergency management. **150 hours**

11. Prepare a FloodSafe Guide for Fairfield City. **30 hours**

12. Prepare curriculum-based school teaching units for Primary and Secondary students related to aspects of flooding. **30 hours**

13. Encourage and support businesses to complete the Business FloodSafe emergency plans. **90 hours**

14. Erect signage in strategic locations to help raise awareness of flooding in the City. **30 hours**

15. Maintain and update local flood information links on Council's website. **60 hours**

It should be noted that there is a reasonably large amount of in-kind required from Council as shown in Table 2, plus assistance from NSW SES volunteers.

In general, it is anticipated that the proposed action plan would be very cost-effective to obtain improvements in flood awareness, preparedness and overall flood resilience.

Table 2: Fairfield City community flood education action plan 2012-15

Option	Priority	Responsibility	Timeframe	Budget
1. Regularly write to all flood-affected residents to reinforce that they live in a flood-prone area and encourage preparedness activities e.g. development of emergency plans	High	Council	2012-15 produced every 6 months and as an initial action	In-kind Council
2. Hold 'meet-the-streets' in high-risk areas to engage households re flooding and encourage street support networks	High	Council, NSW SES, FMC members	2012-15 with four each year. Initial (trial) as soon as possible after first Option 1	In-kind Council and NSW SES for support
3. Problem-solve flood scenarios with community groups	High	Council, NSW SES	2012-15 (two workshops per year)	In-kind Council and NSW SES for support
4. Conduct emergency drills and exercises involving communities and emergency agencies	High	Council, NSW SES, Police, Ambulance	2012-15 (one per year)	In-kind emergency agencies and Council
5. Brief councillors about floodplain and emergency planning and provide them with information to speak to communities and answer enquiries	High	Council, NSW SES	2012-13 for initial training and then 2012-15 for follow up	In-kind Council
6. Use print media, radio and social media to run flood stories to raise flood awareness.	High	Council	2012-15 (on quarterly basis)	In-kind Council
7. Hold post-flood community de-brief meetings	High	Council, NSW SES, BoM	After a flood event	In-kind Council

8. *Engage with youth and multicultural networks about flood-related initiatives (e.g. flood studies, FRMPs) using Council's reference groups*	Medium	Council	2012-15 (one with each committee per year unless as part of FRMP consultation)	In-kind Council
9. *Train and support local community leaders to help their communities prepare, respond and recover*	Medium	Council, NSW SES, other FMC members	2013-15	$5,000 to develop training course
10. *Use and/or hold community events (e.g. Council Open Day, centenary of the 1988 flood) to engage with communities about floodplain and emergency management*	Medium	Council, NSW SES, other FMC members	2013-15 (at least one event per year)	$5,000 for centenary events (e.g. bus tour cost, venue hire)
11. *Prepare a FloodSafe Guide for Fairfield City*	Medium	NSW SES, Council	2012-13 An initial activity in conjunction with Option 1	$4,000 for printing of FloodSafe Guide
12. *Prepare curriculum-based school teaching units for Primary and Secondary students related to aspects of flooding*	Medium	Council, NSW SES	2014-15	$10,000 to employ contactor to develop curriculum-based units of work
13. *Encourage and support businesses to complete the Business FloodSafe emergency plans*	Medium	Council, NSW SES	2013-15 (one business breakfast held per year)	$3,000 for breakfasts and venues
14. *Erect signage in strategic locations to help raise awareness of flooding in the City*	Low	Council	2013-15	$6,000 for 20 signs
15. *Maintain and update local flood information links on Council's website*	Low	Council	2012-15 (updated every six months)	In-kind Council

6.4 TRIAL AND EVALUATION

Although the options listed in the summary action plan (Table 2) appear to be appropriate to Fairfield City and potentially effective, this is not necessarily guaranteed. Therefore it is important to use trialling or piloting prior to full implementation. This technique is well-established in community education and engagement, with an example being its use in community-based social marketing

The trial of an option could involve a small sample of the targeted group (e.g. for options 1 and 2) or a review of a draft document (e.g. options 11 and 12) by stakeholders (e.g. NSW SES, Floodplain Management Committee members). In relation to using a trial or pilot, according to McKenzie-Mohr (2000), 'Never include in a pilot components that you cannot afford to deliver in a broad-scale rollout. Removing these components when moving from a successful pilot to a broad-scale implementation may mean that your broad-scale program fails.' The trial or pilot will enable the option to be further refined (or even not used) prior to implementation.

Evaluation aims to determine the relevance and fulfilment of the action plan's outcomes, and its short-term and long-term impact, including as a result of a flood. It should be carried out regularly over the duration of the plan and at its completion.

The plan should be evaluated at five levels:

1. The achievement of the plan's outputs

2. Involvement and participation of Fairfield City communities

3. Levels of community flood awareness and preparedness

4. Levels of appropriate behaviours during and after a flood

5. Capacity to adapt to flooding.

As discussed in Section 4.3, there are benefits (e.g. ownership) in encouraging community participation in all aspects including evaluation e.g. through stakeholder feedback, community consultation, partnership development and representation on the Fairfield Floodplain Management Committee.

An evaluation process for the action plan is outlined in Table 3. It provides a series of success indicators with methods to evaluate each.

Evaluation should be conducted regularly using Table 3 by the internal Council flood education working group (see Section 6.2) and through the Floodplain Management Committee. The action plan should be reviewed in 2015 prior to the development of a new action plan.

There also should be ongoing (formative) evaluation of each education option from the action plan as it is being implemented. Ways to gauge option success include:

- Community feedback e.g. exit surveys from workshops, responses at 'meet-the-street' events

- Participation numbers e.g. for events, workshops

- Enquiries to Council as a result of an option being implemented

- Behavioural change specific to an option e.g. more emergency plans written

- Specific indicators of success e.g. emergency drills successfully conducted, councillors' demonstrated ability to handle flood-related enquiries.

If an education option has a poor learning response from the community (e.g. low numbers to workshops/events) the decision may be made by Council and the Committee not to further proceed with it and focus on the other options in the action plan.

Table 3: Evaluation plan

Evaluation level	Indicator	Evaluation method
1. Achievement of the action plan outputs	- Successful completion of actions	Ongoing review by the FMC
2. Involvement and participation of Fairfield City communities	- % of flood-affected population - Number of community-driven initiatives	Feedback from community events Anecdotal
3. Community flood awareness and preparedness	- % of flood-affected residents and businesses in Fairfield City that have completed emergency plans - Levels of resident and business flood awareness and self-reported preparedness	Re-survey Feedback from chambers of commerce, community groups Observations by the FMC
4. Appropriate behaviours during and after a flood	- Observed and reported behaviours of residents and businesses during and after a flood - Reduced calls to 132 500 (NSW SES Request For Assistance statistics) - Evacuation rates	Review by emergency agencies (e.g. de-briefs), FMC after floods Feedback from residents and businesses Request For Assistance statistics over time Data from evacuation centres
5. Capacity to adapt to flooding	- Networks formed and know how to prepare and respond to floods - Community leaders and NSW SES volunteers trained in increasing preparedness and appropriate response & recovery	Observations from FMC and Council's community development section Feedback from groups, residents and businesses

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APPENDIX A – COMMUNITY WORKSHOP OUTCOMES SUMMARY (STRAIGHT TALK PTY LTD)

Fairfield City Council (FCC), Water in the Landscape (WITL) Community Workshop Outcomes Summary

Introduction

WITL's purpose is to bring communities together to focus on and explore issues associated with water management and their impact on the environment.

The fourth of five community workshops was held 21 June 2012 in the Fairfield local government area (LGA) to explore local knowledge and attitudes to flooding, and motivations and barriers to being prepared for flooding events.

The workshop was facilitated by Straight Talk and attended by WSROC and FCC representatives.

This paper is an initial summary of what was said by a representative community sample in the workshop. The following is not a report; there is no analysis or recommendation.

Background snapshot

Overarching objective of the forum	Gain community insights to inform a flood awareness and education program
Recruitment	Twenty-three residents from the Fairfield LGA
	Recruitment by Jetty Research commenced 8 June. Participants were confirmed by 19 June and received a reminder call 20 June.
	Participants received $50 in Fairfield food shop vouchers for their involvement in this three hour workshop.
Forum objectives	Gain community representative insights into:
	1. Flooding (what's important to them)
	2. Attitudes: How does flooding make you feel? before, during and after
	3. How motivated are you to activate the learning process about flooding in your area? What are the barriers to being flood prepared?
	4. How would you like to become / stay more involved with learning about flooding in your area?

Forum outline

A local community forum was held on 21 June 2012 between 5.30 pm and 9 pm at Fairfield School of Arts building, Fairfield. The forum was attended by 18 Fairfield residents representing nearly 500 years of local knowledge. A facilitated forum was structured into the following four working sessions:

1   How does flooding make you feel: before, during and after?

2   What are your important flood issues?

3   How motivated are you to activate the learning process about flooding in their area? What are the barriers to being prepared for a flood?

4   How would you like to become or stay involved with learning about flooding in your area?

Key forum findings follow and are presented in the order the working sessions were delivered.

The summary provided below has been prepared by Straight Talk to detail the outcomes from the Fairfield City Council forum.

1. How does flooding make you feel: before, during and after?

In table groups, participants moved around three work stations expressing how they felt before, during and after a flood event. Images were provided to stimulate their responses, which follow:

Before

Feelings of:

- Anxiousness: "when will it stop?"

- Worry: about family, friends and pets

- Concern about getting from A to B and even worse, being cut off

- Surprise and shock: feeling of being caught out, people don't expect this area to flood

- Fear of the unknown

- Uncertainty about the level of danger and safety- "what is in the water - pollution, debris, wildlife?"

- Panic about the water rising quickly

- Some claimed they would make contact with the State Emergency Services (SES) prior a flood event.

During

Feelings of:

- Worry about family and friends

- Scared

- Shock

- Uncertainty about when it will stop - flooding updates are important

- Wet, cold and miserable

- Anxiousness when watching the water rise

- The majority stated they would concentrate on getting precious possessions away from the water.

- An even mix of opinions between wanting to stay and defend their property versus evacuating.

- One participant reflected on the difference in community attitudes between flooding and bushfires. This participant felt well prepared for a bushfire event but not so for a flood.

After

Feelings of:

- Devastation

- Frustration with Council procrastination - Council is unprepared and often change their messages

- Heartbreak

- Worry about problems with health - debris and pollution

- Worry about the expense of the clean-up

- Concern about impact on cost recovery and insurance

- Isolation - creepy "Armageddon like" feeling

- Community support - hard work repairing damage to local infrastructure

- Flood mitigation measures are not implemented until it's too late

Some thought flooding could be avoided if Council put in place the following:

- Cleaning rubbish from the creeks

- Offering building advice to residents

- Upgrading road pipes and drains.

2a. What are your important flood issues?

Unprompted important flood issues can be summarized within five key themes; responses are ranked by frequency of mentions:

- **Personal safety**
    - > Safety
    - > Fear of drowning
    - > Cautious
    - > Scared of unknown - 'where will the water go?'
    - > Quality of water - 'I wonder what's in there''
    - > Fear of rats and snakes

- **Safety and wellbeing of family, friends and pets:**
    - > Wellbeing of family
    - > Children getting out
    - > Animals getting out
    - > 'How can I help?'

- **Opportunities for escape and service access**
    - > Concern about being trapped and unable to get away
    - > 'Where is the emergency accommodation?'
    - > Finding a way to a safety zone
    - > Will I be able to access the services I need?

- **Information and communication**
    - > News updates
    - > The SES - 'thank God for the SES'
    - > Listening to what Council say at time of floods
    - > Information on depth and duration of flooding
    - > Post-flood information - 'what will Council do about the floods?''

- **Property**
    - > Cost and damage to personal property
    - > Inconvenience and waiting for repairs
    - > Insurance costs.

2b) Level of flooding preparedness

Participants were asked to rate their preparedness for flooding out of ten, ten being very prepared and zero being unprepared. Ninety-four per cent of participants rated their preparedness at five or lower. Feedback is shown graphically below:
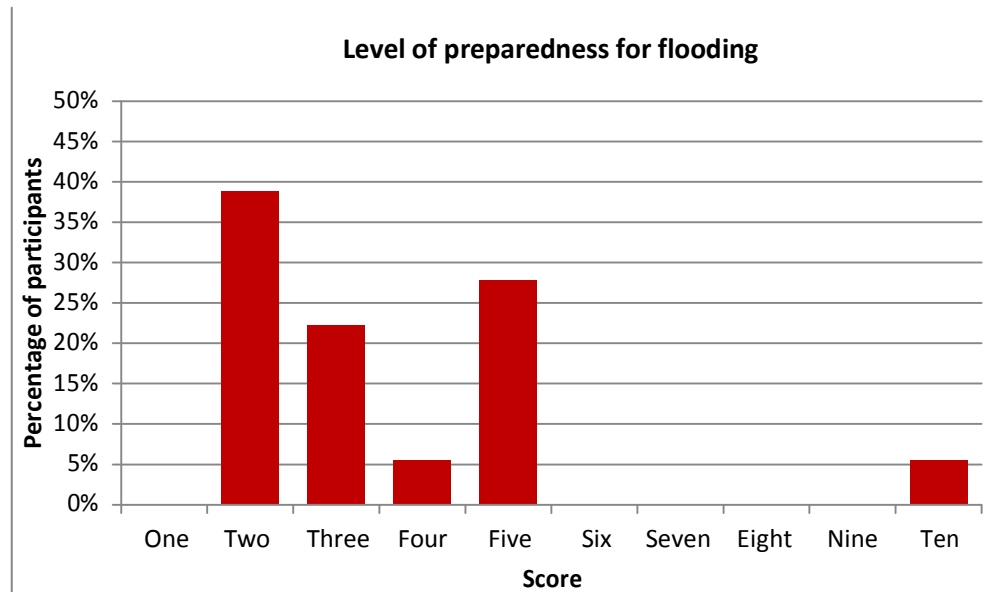
2c) Potential solutions to address above issues

Having discussed the above issues, all were asked to consider potential solutions (to these the issues). A range of potential solutions were identified and featured in the below 'wordle' diagram, the most popular were: education, signage, information from Council, better drains, school education, cleaning creeks, literature and rate notice reminder.
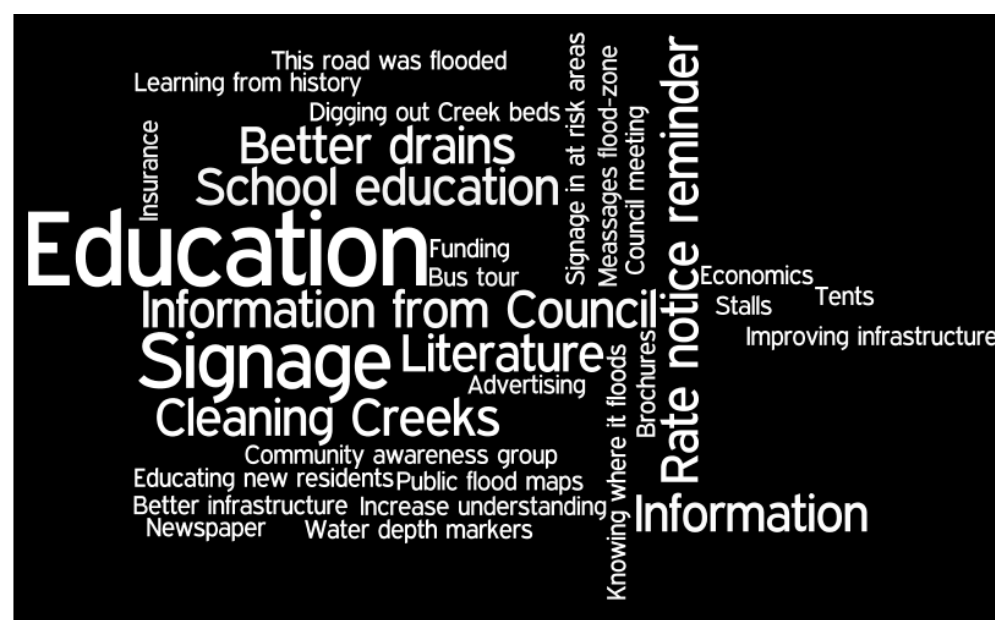
3. How motivated are you to activate the learning process about flooding in your area? What are the barriers to being prepared for a flood?

3 a) Current understanding of flood preparedness

> **What do you need to learn more?**

Participants were next asked to consider what it would take for the community to learn more? Responses included:

• Increase awareness of people who were prone to be flooded. Many don't realise they live on a flood plain**.**

• Education of flood risk. Prior Council explanation, all were misguided about flood definitions: i.e.1 in a 100 flood event caused no alarm to potentially affected residents, most claiming 'this won't happen to me.'

• Few were / would plan for a flood. This was attributed to the invisibility of water in their landscape and denial (see above). Yet all had / would have a fire evacuation plan.

• Advice on household preparedness, specific to domestic maintenance e.g. Keeping the drains clean

• A sense of non-responsibility emerged when it was mentioned that Council would be liable if their homes were adversely impacted by a flooding event. Participants mentioned they **were** more likely to listen to Council if there was a cost to them.

> **What's in an Emergency Kit?**

Most participants were unaware of Emergency Kit contents. Few identified some essential items**:** a portable radio and torch.

> **What does an Emergency Plan look like?**

Participants were asked to write down the key elements of an Emergency Plan. Responses have been summarised into five themes:

• **Be prepared**

> Be aware that it could happen in your neighbourhood

• **Plan what to escape with**

> Pack a box of valuables and important information

> Have essentials ready in the car

> Put things in plastic bags

• **Find elevated land**

> Find higher ground

> Go to a family and friends **place** to stay

> Follow a Council recommended escape route

> Try and clear the area for flood escape route

- **Safety**

  > Make sure your family and friends were safe

- **Seek information**

  > Find information using a battery powered radio

  > Seek information from the SES

What networks do you need to learn more about flooding?

Participants identified the following networks as sources to learn more from.

- Information from SES - letter box drop with information and pre-warnings

- Home Emergency Kit from SES - s**t**uck on fridge

- Information from Council on flood evacuation routes**.**

Despite the above mentions, most claimed they would not read the information provided due to lack of time and disinterest. It was evident some participants were in denial of their flooding vulnerability**.**

Council presented an SES's Home Emergency Kit information sheet. Participants thought it would be useful to distribute the kit to the community for their fridge.

3b) Motivations and Barriers to flood learning

> **What would motivate you to learn more about flooding?**

Participants were more motivated to learn about flooding if they had been previously affected by flooding or if there was a direct cost incurred.

Popular mechanics to elevate the communities flood vulnerability awareness were:

- Information in shopping centres (shop windows, news boards)

- Stalls at public events

- Reminders in the paper

- Signage around parklands, creeks and drains

- Images of previous floods in specific flood prone areas. Visuals about what could happen.

> **Barriers: What stops you from having an Emergency Flood Plan?**

Barriers to flood preparedness were next explored. The following 'wordle' summarises these barriers:

4. How would you like to become / stay more involved with learning about flooding in your area?

At the end of the workshop participants were asked what they had learned.

Key responses included:

- The area is at risk of flooding - "is probable they will be involved in a flood in our lifetime"

- Everyone should have an emergency kit and plan

- Education and awareness raising of flood risk is important

- Some new residents are unaware they were at risk

- Information is available but people don't read it

- This is real, the community need to be better prepared.

At the end of the workshop the majority of participants acknowledged their vulnerability to a flooding event yet registered no interest with accessing flood education material. Typical responses were:

- 'I can take care of myself'

- 'SES will come and get me'

- 'Are Council very involved?'

- 'How prepared can you really be?'

- 'I'll worry about it, if / when it happens'

- I don't think it's a high risk'

- 'I'll take my chances.'

> **Types of community engagement and information sources**

For those interested in getting or staying involved with learning about flooding, the following communications and engagement techniques were preferred:

- Letters in the mail

- Newspaper

- Council's website

- Rate notice

- Information available on phone

- Forums

- Talking to family unit

- Educate the people at most risk

- Community sessions that help the community assess whether to build in certain areas

END

A meeting will be held to discuss these findings.

ACTION: WSROC to advise on details.

See evaluation and feedback report.

APPENDIX B – FAIRFIELD LGA RESIDENTIAL FLOOD SURVEY
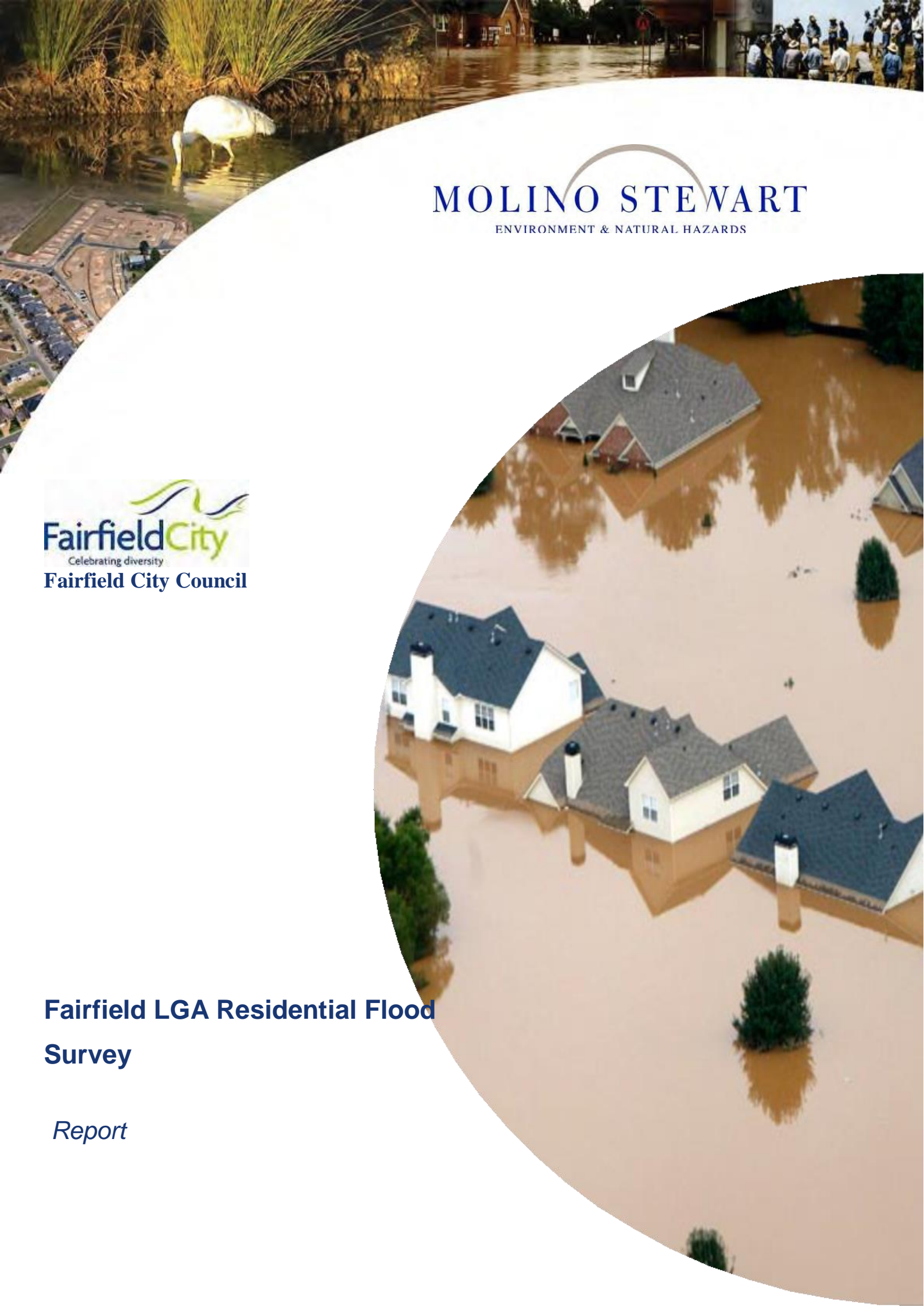
MOLINO STEWART

ENVIRONMENT & NATURAL HAZARDS

Fairfield City Council

Fairfield LGA Residential Flood Survey

Report

Fairfield LGA Residential Flood Survey

REPORT

for

Fairfield City Council

by

Molino Stewart Pty Ltd

ACN 067 774 332

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1 INTRODUCTION

1.1 BACKGROUND

Fairfield City Council wished to develop a community flood education plan to help build community resilience to flooding in the area. Consultants Molino Stewart Pty Ltd were commissioned to assist Council with this project.

To help inform the plan, Molino Stewart developed a residential survey in consultation with Council. The survey aimed to obtain the views of residents on flood awareness, preparedness, response and recovery.

1.2 METHODOLOGY

One thousand surveys were delivered by Molino Stewart staff via 'letter box drop' to residents in various flood-affected areas in Fairfield LGA.

Each letter contained the survey (see Appendix A), a self-addressed and stamped envelope and a letter from Council encouraging residents to participate in the survey.

A total of 204 responses were received – a 20% return. A response rate over 10% is generally considered acceptable.

Not all respondents answered every question.

1.3 STATISTICAL ANALYSIS

Where deemed necessary, statistical analysis was conducted using a chi-squared test. A chi-squared test compares different groups for significant differences. A probability less than 5% (P<0.05) is considered significant.

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2 RESULTS

2.1 SURVEY DEMOGRAPHICS

The majority of the respondents (69%) had lived at their address for more than 10 years.

There were slightly more male respondents than female, with a 51.5% male response and 47.1 % female response.

Table 1 shows the age range of respondents

Table 1: Age range of survey respondents

Age range	% response
<15	0.5
15 – 25	3.4
26 – 35	7.4
36 – 45	17.6
46 - 55	19.6
56 - 65	25.0
66 – 75	11.8
75+	14.2

As shown in Table 1, 62% of respondents were aged between 36 and 65. The largest response came from the age group 56 – 65, followed closely by 46 – 55 (19.6%) and 39 – 45 (17.6%).

English was the first language of 63% of the respondents. The other 34% spoke a variety of languages including:

- Arabic
- Burmese
- Cantonese
- Croatian
- Greek
- Indonesian
- Khmer
- Macedonian

- Maltese
- Mandarin
- Persian
- Portuguese
- Russian
- Serbian
- Spanish
- Turkish
- Vietnamese

Vietnamese was the most commonly spoken language of the languages other than English.

Seventy-five per cent either own their home or have a mortgage. Most respondents failed to tick any selections regarding the design of their house. From those who did respond:

- 14% live in a house of two storeys or more
- 22% live in a dwelling raised more than one meter above the ground
- 28% live in a single storey on the ground dwelling.

2.2 RISK PERCEPTION

When asked 'can your property flood?', 72% said yes, and 24% said no. Six respondents 'weren't sure'.

When asked 'can your house flood?', 48% said yes and 47% said no. Seven respondents said 'maybe', or 'weren't sure'.

It should be noted that all respondents live in flood-prone areas.

As shown in Figure 1, the majority of respondents regarded the risk of flooding to their property as either 'low' or 'moderate' (72% total), but the risk of flooding to their safety as 'moderate' or 'high' (69%).
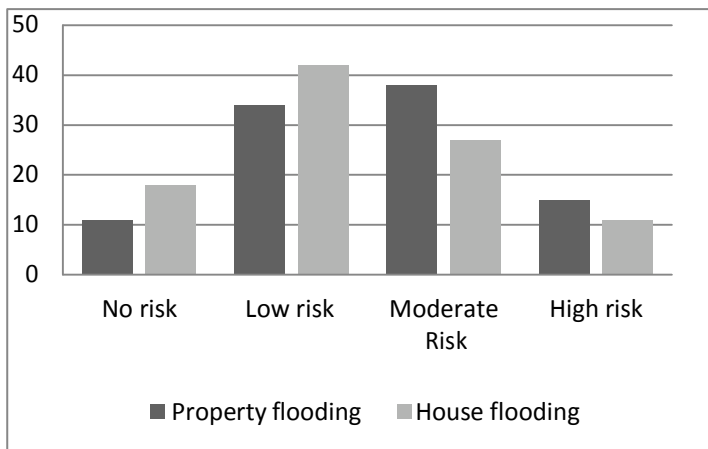
Figure 1 Respondents view of risk to their house and property from floods (%)

2.3 PREPAREDNESS

Twenty-one per cent of respondents said they have lived in a property that had flooded. Nearly all of these experienced the floods at Caramar, Canley Vale and Lansvale in 1986 and 1988.

Seventy-six per cent of all respondents do not have an emergency plan for their home.

Of the 42 respondents who had experienced a flood, 38% have an emergency plan for their house.

Of the 155 respondents who hadn't experienced a flood, 15% have emergency plans for their home.

A chi-squared test was used to ascertain if being in a flood had a significant enough impact to encourage development of an emergency plan.

The test found that experiencing a flood made a significant difference on whether an emergency plan was developed ($P<0.001$).

2.4 SELF-EFFICACY

Respondents were asked 'If a flood occurred, how well do you think you could keep yourself and others in your home safe?'. Sixty-six per cent were confident they could keep others safe, with 24% answering 'very well', and 42% answering 'fairly well'. Twenty-eight per cent

did not think they could keep others in their home safe during a flood.

When asked 'if your street started to flood, would you help others?', 88% said yes, and 7% said no. Many who said no added the caveat that they were elderly (often 75+) and therefore unlikely to be physically capable of helping others.

Sixty-four per cent said they would need help from others during a flood.

2.5 RESPONSE

The survey asked whether people would evacuate if there was a chance of flood in their street, or if they would evacuate when told to by the NSW SES or Police.

Although 56% said they would evacuate if there was a chance of flooding, 81% would evacuate if told to do so by the NSW SES or police.

Statistical analysis revealed that being told to evacuate by the NSW SES produced a significantly different response than when people have to decide to evacuate on their own. That is, if the NSW SES order an evacuation, significantly more people will evacuate.

Figure 2 outlines where the respondents would go if they were to evacuate. The four most common responses were 'family and/or friends', 'don't know', 'higher ground', and 'where SES tells me to/a safe place'.

'Family and friends' is the most popular option for both evacuating by choice or on direction of the NSW SES.

Nearly 20% of respondents 'don't know' where they would go if they evacuated, indicating a strong need for direction. Only one respondent who indicated they had an emergency plan also indicated they didn't know where they would go if they had to evacuate.
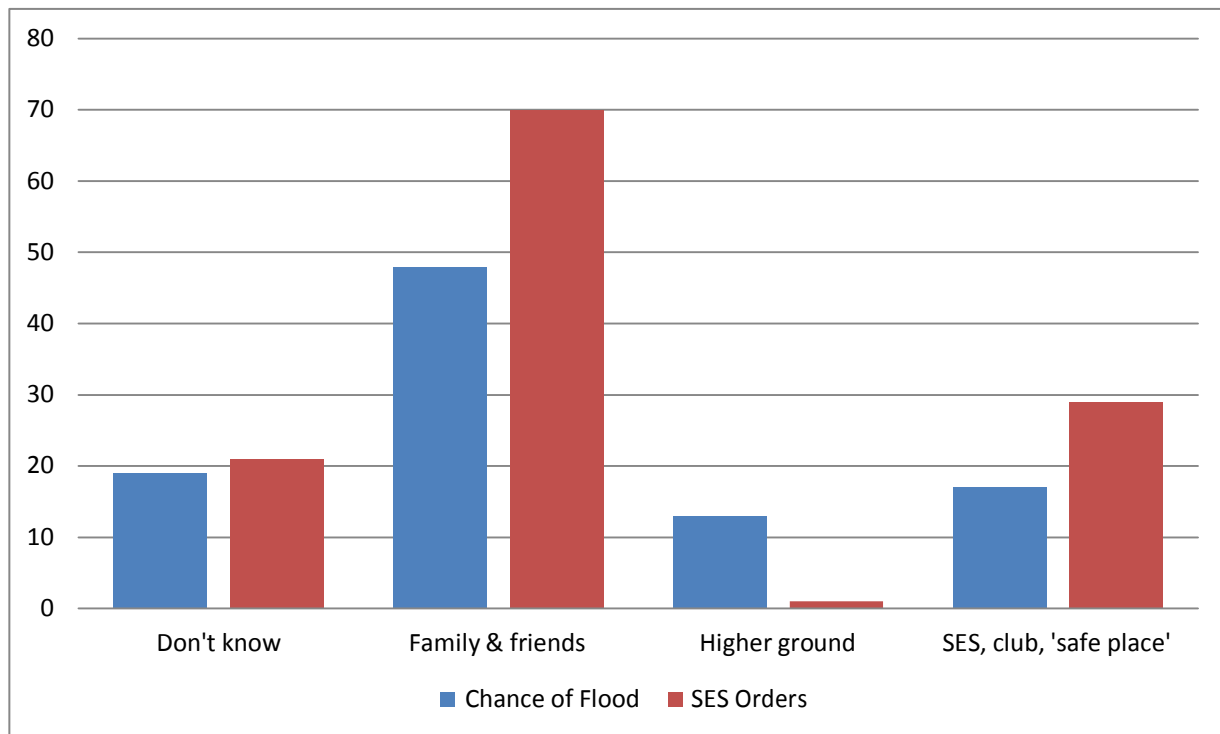
Figure 2 Where respondents would go if there was a chance of flood, or on SES evacuation orders

2.6 INFORMATION SOURCES

When asked 'how would you find out if a flood might happen in your street?', the most popular sources were 'Neighbours', 'Television', 'watch local rivers and creeks', and 'radio'.

'Television' and 'neighbours' were again the most popular options for learning more about what to do before, during and after a flood. 'Family and friends' and 'speak with the NSW SES in person' were the next two most common choices.

Table 2 ranks the information sources from most popular to least popular.

Table 2 Information sources on floods - ranked most to least popular

If a flood might happen in your street (ranking highest to lowest)	What to do before, during and after a flood
1. Neighbours	1. TV
2.TV	2. Neighbours
3. Watch local rivers and creeks	3. Family and friends
4. Radio announcements	4. Speak with SES in Person
5. Police	5. Radio
6. Family and friends	6. Police
7. Speak with SES in Person	7. SES website
8. Council	8. Flood meeting or forum
9. Speak with SES on phone	9. Council website
10. BOM website	10. Newspaper
11. Newspaper	11. Community group
12. SES website	12. Speak with Council in person
13. Social Media	13. Social Media
14. Other	14.Other

It should be noted that speaking with the NSW SES is a more common choice than visiting the NSW SES website.

2.7   RECOVERY

Respondents were asked if they were able to repair damages to their home, and if they would need help from others to repair damages.

Fifty-eight per cent were not confident they could make repairs to their own home, and 80% would need help from others to make repairs.

When asked who they would need help from, the most common responses were:

- SES/Government – 34 responses
- Trades people – 31 responses
- Insurance – 26 responses
- Family – 20 responses

2.8   VOLUNTARY HOUSE RAISING

At the time of writing this report, Council had supported the raising of 215 houses in flood-affected areas. Sub-analysis of the survey data was conducted to see if there were differences in responses from households that have had their houses raised with those that have not.

Only 23 responses (12%) were from households that had their houses raised. The sub-analysis found that there was a significant difference in some responses from this group with the non-house raising group of respondents. The differences included:

- All respondents from the raised house group knew their property could flood.

- Only 19% of the respondents living in unraised homes had ever lived in a property that had flooded, compared with 44% of respondents living in raised homes.

- Respondents living in raised homes tended to have emergency plans for their homes than respondents compared with unraised homes (35% and 20% respectively).

- Self-efficacy was greater with respondents that have their houses raised e,g. 52% of raised home householders were very confident they could keep themselves and their family safe in a flood, compared with 22% from the unraised group.

- Of the people living in raised houses, only 39% would evacuate if there was a chance of flooding in their street, as opposed to the 63% who would evacuate from unraised houses. However, once the police or the SES recommended evacuation, the number of respondents who would evacuate became almost equal between the two groups (88% for those in unraised homes and 86% for those in raised homes).

3 CONCLUSION

Although many respondents appear to be aware that their house or property could flood, few consider it a high risk.

Levels of preparedness in the community are low (as gauged by having an emergency plan), particularly from those that have not experienced a flood. However, there was a reasonably high level of self-efficacy in keeping themselves and others safe during a flood, although the majority of respondents said they would need help from others.

Almost all respondents would evacuate if ordered to do so by the NSW SES or Police, although only half said they would self-evacuate.

Face-to-face interaction and community appear to be the most preferred options for communication. 'Neighbours' were the in the top two choices when seeking flood information, and 'family and friends' the most common choice for where to go when evacuating. Respondents would rather speak to the SES in person than visit their website.

It is important to note that most of the responses came from people over 35 years of age. With limited response from younger residents, it is difficult to gauge how they feel about and would respond to flooding. Considering 42% of the population in Fairfield are under 42 years of age, it is important to ascertain how this group be best communicated with.

APPENDIX A – RESIDENT SURVEY FORM

Residential Survey – Flooding in Fairfield City

☐

1. How long have you lived at this address? (tick one answer)

☐ Less than one year   ☐ One to five years
☐ Five to ten years   ☐ More than 10 years

2. Which age bracket do you fall into? (tick one answer)

☐ <15   ☐ 15-25
☐ 26-35   ☐ 36-45
☐ 46-55   ☐ 56-65
☐ 66-75   ☐ 75+

3. Are you?

☐ Male   ☐ Female

4. How many people live with you? _____

5. Do you normally speak using English?

☐ Yes   ☐ No

If no, what is your first language? _____

6. Is your home? (tick all that apply)

☐ Rented   ☐ Two storeys or more
☐ Owned or mortgaged   ☐ Raised more than one metre above ground
☐ Holiday house   ☐ Single storey on the ground

7. Can your property (land) flood?

☐ Yes   ☐ No

8. Can your house flood?

☐ Yes   ☐ No

9. Rate the risk of flooding to your property (tick one answer)

☐ No risk   ☐ Low risk   ☐ Moderate risk   ☐ High risk

10. Rate the risk of flooding to your safety (tick one answer)

☐ No risk   ☐ Low risk   ☐ Moderate risk   ☐ High risk

11. Have you ever lived at a property that has flooded?

☐ Yes   ☐ No

If yes, where was this property? _____ When? _____

12. Do you have an emergency plan for your home?

☐ Yes   ☐ No

13. If a flood occurred, how well do you think you could keep yourself and others in your home safe? (tick one answer)

☐ Very well   ☐ Fairly well   ☐ Not well

14. If your street started to flood, would you help others?

☐ Yes   ☐ No

If yes, who would you help? _____

15. If your street started to flood, would you need help from others?

☐ Yes   ☐ No

If yes, who would help you? _____

16. How would you find out if a flood might happen in your street? (tick all that apply)

☐ Radio Announcements   ☐ Social media e.g. Facebook, Twitter
☐ Television   ☐ SES website
☐ Bureau of Meteorology website   ☐ Watch local creeks and rivers
☐ Family and friends   ☐ Council
☐ Newspaper   ☐ Speak with the SES over telephone
☐ Speak with the SES in person   ☐ Police
☐ Neighbours   ☐ Other (specify)_____

17. Would you evacuate your home if there was the chance of a flood in your street?

☐ Yes   ☐ No

If yes, where would you go to? _____

18. Would you evacuate your home if you were told to do so by the SES or Police?

☐ Yes   ☐ No

If yes, where would you go to? _____

19. If flood waters entered your home, how well would you be able to repair damages? (tick one answer)

☐ Very well   ☐ Fairly well   ☐ Not well

20. If a flood entered your home, would you need help from others to repair damages?

☐ Yes   ☐ No

If yes, who would you need help from? _____

21. How would you learn more about what to do before, during and after a flood? (tick all that apply)

☐ Community or cultural group   ☐ Social media e.g. Facebook, Twitter
☐ SES website   ☐ Speak with Council in person
☐ Council website   ☐ Television
☐ Family and friends   ☐ Flood meeting or forum
☐ Newspaper   ☐ Radio
☐ Speak with the SES in person   ☐ Police
☐ Neighbours   ☐ Other (specify)_____

Thank you for your help

To return this survey please mail to:

Molino Stewart c/o: Alisa Bryce
PO BOX 614
Parramatta CBD BC
NSW 2124

If you have any questions or for more information, contact:

Molino Stewart (02) 9354 0300

Please return the survey by **Friday 15 June 2012**