

SYSTEMATIC REVIEW of REPORTS ON EMERGENCY ALERT

[Final]

Prepared for the Office of the Emergency Services Commissioner by the
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Following the 'Black Saturday' bushfires of 7 February 2009, a number of research reports and government led initiatives on community safety were developed. These include the Council of Australian Governments agreement to take immediate steps to enhance the country's emergency management arrangements through the development of a telephone-based emergency warning system. This study presents a systematic review of reports on experiences of the telephone based emergency warning system, subsequently known as Emergency Alert, that became operational on 1 December 2009. Most of the reports are from Victoria.

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LIST OF ACRONYMS

EA	Emergency Alert
CFA	Country Fire Authority
COAG	Council of Australian Governments
NEWS	National Emergency Warning System
OESC	Office of the Emergency Services Commissioner
SMS	Short Message Service (text messages)

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EXECUTIVE SUMMARY

On the 30 April 2009, following the Victorian bushfire disaster, the Council of Australian Governments agreed to take immediate steps to enhance the nation's emergency management arrangements through the development of a telephone-based emergency warning system. The State Government of Victoria was requested to lead the National Emergency Warning System (NEWS) project known as Emergency Alert (EA). EA is a telephone warning system that emergency management agencies can use to send alerts to community members via landline and mobile phones based on the service address information of the subscriber. The EA system became operational on 1 December 2009.

The Office of the Emergency Services Commissioner (OESC) commissioned RMIT's Centre for Risk and Community Safety to undertake a review of the existing research on using telephony as a warning medium and the Emergency Alert (EA) telephone warning system. This review examined 14 research reports. The aim was to set out the strength and weaknesses and opportunities for further research and potential improvement. The review also considered the influence on results of each report's aims and approach.

Results

Awareness of the EA system: The review found that nationally, between 50 and 75% of respondents were aware of the EA system. Considering that EA is a new system that has only been recently introduced, this is a reasonably high level awareness.

Satisfaction with the EA system: The review found a high level of satisfaction with the EA system among recipients with the great majority of survey respondents stating that the EA system fully met or exceeded their expectations. There was strong support for the use of mobile phones as a delivery mode.

Receipt of the message: The review found that between 61% and 100% respondents in the various flood, bushfire and test areas reported having received EA messages on their landline phone, answering machine or mobile phone. This finding provides support for the accessibility and reach of the EA system.

Intended and actual responses to an Emergency Alert: An important issue raised by this review relates to the extent to which people's intended actions correspond to the actions that they actually take in a real emergency. Because different reports examined both intentions and actions, comparisons of this nature are possible: Across reports, the majority of people who received a real or test EA said they would do what the message told them to do. Intended responses also included evacuating or leaving for a safer location, activating plans and preparing, seeking more information, and contacting family, friends and neighbours. Importantly, these intentions were reflected in respondents' reports of their actual actions. There is some evidence that women and younger people were more likely to follow the instructions in the EA message.

Additional information sources: The review found some evidence that people in regional areas are more likely to access informal and localised information sources than those in metropolitan areas. It also found some evidence that women are more likely to seek information from family, neighbours and friends than men. However, insufficient data and depth of analysis prevents any conclusive statements in this realm.

Caution in interpreting results: The studies examined as part of this review have relied primarily on respondent self-report on a range of factors associated with the EA system. Methodologically, this is quite different from an evaluation of EA which employs experimental control groups to objectively establish its impact. There are a number of other methodological issues that may have influenced the results obtained in the studies examined, including sampling.

Areas for further research and potential improvement

The findings to date provide strong support for the utility of the EA system in both disseminating warnings and prompting action. The review also identifies areas in which future research would add to the available evidence and provide further insights into how the EA system might be further improved or enhanced. These are presented in three themes: those of most concern to agencies; those more concerned with recipients; and ways of gaining greater certainty about the results of studies into EA.

Agencies: Agency respondents were concerned that residents could have unrealistic expectations of the system or to develop an overreliance on it. They also expressed concern about community fatigue if the system is overused. Although there was no evidence of these problems in the reports examined, it could be worthwhile commencing a longitudinal study so that trends in community expectations or responses can be examined over time. Agency respondents also expressed concern about how residents might use EA in conjunction with other information sources, social media in particular. The interaction of the EA system with other information sources, including social media, warrants attention as such sources have the potential to undermine as well as to enhance the reach and effectiveness of EA.

Future research could also provide more detailed analyses of how recipients interpret EA messages and how these interpretations are influenced by individual characteristics, and by interactions with others (e.g. family, emergency services). This research would enable agencies to design and implement EA systems in a way that accommodates interpretative and social processes, and levels of satisfaction with the system could be enhanced.

Recipients: Knowledge and satisfaction: This review identified moderate to high levels of awareness of the EA system nationally. However, it would be useful to examine recipients expectation of the messages and message source. This information would provide agencies with a deeper understanding of how they can further tailor EA messages and their delivery to meet community expectations and correct misunderstandings. Research could also investigate recipient satisfaction to show how the EA can further capitalise on the particular elements that make it useful to recipients.

Intentions and actions: A key issue is the extent to which an EA message encourages people to take action. However, the actions were generally defined very broadly in the reports and this may create ambiguity which could result in overestimating or underestimating the rates of appropriate response. Additional research that provides more specificity in terms of actions would increase the certainty that receiving an EA message leads people to respond more appropriately to the emergency situation.

Gender: In the reports reviewed, women were found to contact friends and family more often than men, and to be likely to follow the instructions in the message. Research could examine these gender differences to establish their validity and implications.

Future studies: Future research could examine the EA system using more representative samples than those employed in the reports examined, and could consider the use of control groups to compare EA with other approaches. There are several important groups who were under-represented or excluded in the reviewed reports including non-English speakers, children and young people.

Taken together, these suggestions for future research represent some ways forward for further developing and evaluating the EA system. However, as this review has demonstrated the EA system is already proving itself to be a positive additional emergency warning medium. Additional research would give greater certainty about these preliminary results.

1. INTRODUCTION

On Saturday the 7 February 2009, 173 people lost their lives and more than 2000 homes were destroyed by bushfires in Victoria, Australia. On the 30 April 2009, in the wake of the Victorian bushfire disaster, the Council of Australian Governments agreed to take immediate steps to enhance the nation's emergency management arrangements through the development of a telephone-based emergency warning system.

The State Government of Victoria was requested to lead the National Emergency Warning System (NEWS) project. After the selective tender, Telstra was awarded the contract to develop and build the telephone warning system subsequently known as Emergency Alert (EA).

EA is a telephone warning system that emergency management agencies can use to send alerts to community members via landline and mobile phones based on the service address information of the subscriber. The EA system has been used in New South Wales, Victoria, South Australia, Queensland, Northern Territory and the Australian Capital Territory, whilst Western Australia has its own telephone-based warning system. The EA system became operational on 1 December 2009 and has since been used to disseminate warnings for flood, tsunamis, bushfire, storm surge, chemical incidents and missing person emergencies.

2. THIS REVIEW

The Office of the Emergency Services Commissioner (OESC) commissioned a study to review the existing research on the Emergency Alert (EA) telephone warning system. A number of reports on experiences of the EA system have been commissioned by the OESC, Victoria or one of the other participating States and presented to the OESC. These reports have different research aims and a range of methods and samples.

After describing the methods employed to conduct this systematic review, the aims, research methods and key findings of each report are described¹. Next, the aims and research methods of each report are compared and the implications for the findings are discussed. A consolidated picture of the reports is then presented, and knowledge gaps and opportunities for research and improvement are identified.

2.1 Aim

The aim of this report is to outline the consolidated picture based on the systematic review of reports related to a telephone based emergency alert system.

¹ Summaries of the aims and research methods for each report are provided in Appendices at the end of this document.

2.2 Methods

This study adopted a systematic review as the main research method. Bryman (2008) defines a systematic review as an approach to reviewing the literature that adopts explicit procedures (p. 85). Proponents of the systematic review method suggest that adopting explicit procedures reduces the influence of researcher bias (Bryman, 2008:85). In essence, a systematic review involves establishing a series of research questions that seek to identify, select and synthesize crucial research evidence. Tranfield et al. (2003) suggest that the systematic review process provides a more reliable foundation upon which to design research, because it is based on a more comprehensive understanding of what we know about a subject. The reports analysed in this study are listed in the following section.

2.3 Questions

This study reviewed 14 major community safety research reports on experiences of the telephone-based Emergency Alert system. Examination of each individual report was guided by the following key questions:

- What is the aim of the report? (Consider stated and un-stated aims)
- What are the key findings of the report?
- What research methods were used to collect and analyse data?
- Are the research findings consistent with the findings presented in the other reports?
- How might methodological choices have influenced results? (E.g. research questions; type and design of survey; interview/survey sample; timing of data collection; method of analysis, etc.)
- Are the surveys asking the right questions to help improve the warning system?
- How was the Emergency Alert used, by agencies and by the general public?
- General comments and observations. The consolidated view.
- What are future issues for research and potential improvement?

3. SUMMARY OF KEY RESEARCH FINDINGS

3.1 Introduction

The systematic review of the research reports identified a range of common findings related to the use and effectiveness of the Emergency Alert (EA) system. This section of the report sets out key research findings on the following issues:

1. Acceptance of telephony as a warning medium.
2. Preferred mode of delivery.
3. Awareness of Emergency Alert system.
4. Overall satisfaction with Emergency Alert.
5. Receipt of message.
6. Recall of message source.
7. Recall of message content and call to action.

8. Intended responses to Emergency Alerts.
9. Actual responses to Emergency Alerts.
10. Additional information sources.
11. Improvements to Emergency Alerts.

Overall, satisfaction with the EA system on the part of users (agencies) and recipients (residents) is high. The great majority of results presented in this section confirm that fixed and mobile telephone networks are viable mediums for the delivery of Emergency Warnings to the community.

Although many people could not recall the sender or source of the EA, results suggest that most people trust these messages and intend to take action upon receiving them. Variation in intended and actual responses to EA messages can be attributed to differences in interview questions, the location of recipients, the nature of the emergency and the content of the message. The majority of people who received an EA message took some kind of action to respond to the emergency situation. However, it remains ambiguous whether people already knew about the emergency from other sources or the actual EA message was the trigger and provided them with the information.

The results indicate that people are not relying solely on the EA system as a source of emergency information. However, the majority of people thought that an EA message was a convenient channel of information and an important source. Many people indicated that they would seek further information after receiving an EA from either another formal source such as the emergency services or an informal source such as family, friends or neighbours.

Possible improvements identified by EA recipients were largely focused on the timing and content of messages, in particular their accuracy and applicability to those who receive them. There is some indication that greater targeting of messages to local situations may be warranted.

Although the key findings set out in this review are well supported by the available evidence, we advise exercising a certain degree of caution when interpreting them. Firstly, it is important to emphasise that this review does not constitute a formal evaluation of the EA system. Secondly, the findings are derived from different research reports, each with different aims, research methods, interview questions and samples. This variation means that direct comparison between reports was not always possible. Nevertheless, the review of key findings presented below provides a number of important insights into the use and effectiveness of the EA system.

3.2 Summary of Reports

As noted above, the 14 reports included in this review had different aims and this had implications for the research findings: some of them aimed to assess levels of understanding and awareness of the EA system in particular communities; some of them aimed to gauge public opinion regarding the kinds of emergency situations for which an EA system should be employed; some reports investigated intended or actual responses to an EA message; and others examined public satisfaction with the system. The aim/s of each report and the implications for the research findings are provided in

the overview. A summary of the aims of the reports and the associated implications for the research findings is presented in *Table 3.2.1*.

Table 3.2.1: Overview of report objectives and the associated implications

(Note: Reports are presented in order of publication date).

Organisation	Report title	Primary aim(s)	Implications for research findings
1. OESC (2006)	<i>Community information and warning system: the report of the trial and evaluation.</i>	Evaluate responses and behaviour of communities and perception of emergency service representatives to a public telephone emergency warning system.	Focus on perceptions of both, on recipients and users of the EA system to provide a robust evidence for the programme logic model to deliver accurate and timely EA message.
2. Newspoll Market & Social Research (Oct, 2009).	<i>National Emergency Warning System.</i>	Investigate the types of hazards telephone-based emergency alerts should be used for; and the most appropriate name for a telephone-based emergency alerting system.	Focus on recipients/community perception of EA system aims and what hazard telephone based emergency services should be used for.
3. Quantum (Dec, 2009).	<i>Emergency Alert Benchmark Research Quantitative Findings.</i>	Gain a benchmark understanding of EA system as well as preparedness for emergencies in Victoria (both metro and regional, men and women and different age groups).	Focus on recipients/community perception of EA. Main focus on bushfire events.
4. OESC (March, 2010).	<i>Emergency Alert Telephone Warning Activation Evaluation Report.</i>	Evaluates the EA system and subsequent public responses following three activations during bushfire incidents in 2009 and 2010.	Focus on recipients/community perception. Primary focus on an early stage of the EA system in practice (the activation). Focus on specific bushfire events in East Gippsland, North East Victoria and Ballarat region during December 2009 and January 2010.
5. Quantum (March, 2010).	<i>Emergency Alert Wave 1 Research Report. Quantitative Findings.</i>	Determine levels of awareness/understanding of EA, level of preparedness for emergencies and information gaps and avenues for seeking emergency info. Understand how this then increased with the media campaign underway.	Focus on gaining benchmark awareness among potential recipients of EA message prior to media campaign launch.

Organisation	Report title	Primary aim(s)	Implications for research findings
6. OESC (March, 2010)	<i>Emergency Alert. Lessons Learnt: Workshop Report.</i>	Present lessons learnt based on EA system users, share experiences across jurisdictions; facilitate contract management with service provider for stage 2. Data collection since EA became operational on 1 Dec 2009. Key findings to be used to inform the Council of Australian Government Senior Officials in April 2010.	Focus on assessing experiences of EA system users/senders.
7. Quantum/ OESC (Nov, 2010).	<i>Emergency Alert Test. Quantitative Findings.</i>	Understand the perception of the EA systems in a test and a 'live' situation with recent alert recipients (one live event in Euroa and four test messages in Surf Coast Shire, Macedon, Dandenongs, Yarra Valley).	Focus on effectiveness of EA message in flood events based on recipients' perception. Focus on actual behaviour in a live situation (Euroa). Focus on intended rather than actual behaviour (Surf Coast Shire, Macedon, Dandenongs, Yarra Valley).
8. OESC Victoria (March, 2011).	<i>Emergency Alert. Lessons Learnt Workshop Report</i>	Present lessons learnt based on EA system users collected during a workshop organized by OESC Victoria for a cross selection of stakeholders from multiple jurisdictions and organizations.	Focus on assessing experiences of EA system users. The workshop allowed collecting EA experiences of agencies (the EA users/senders).
9. Quantum/ Torrens Resilience . Institute (April, 2011).	<i>Evaluation of EA in Victoria. Detailed Findings.</i>	Evaluate EA system based on experiences during floods in January and February 2011. Establish whether EA messages provided people with the information they needed and whether EA users are satisfied that the system enables them to send messages to inform people of potential risks and directs them to appropriate media.	Focus on assessing perceptions and lessons learnt of two groups: users/senders and recipients/community of EA system.
10. Quantum (May, 2011)	<i>Tostaree Emergency Alert System Research. Quantitative Findings.</i>	Assess the success of EA message used to warn residents of Tostaree area in 2010/11 bushfire season through evaluation of community response. Determine pre-fire planning of	Focus on a specific bushfire event. Concerned with 'live' EA message.

Organisation	Report title	Primary aim(s)	Implications for research findings
		residents; determine specific info sources used prior to and during event; assess resident attendance at info programs; determine recall and response to EA.	
11. Torrens Resilience Institute (May, 2011).	<i>An Evaluation of the Emergency Alert System. Pilot Evaluation Report. An Australian Government Initiative. 18 May 2011</i>	Conduct a pilot evaluation of effectiveness of EA system in Victoria. Assess users of EA satisfied that the system enables them to send messages which inform people of potential risks and directs them to appropriate media? 2) Are recipients of EA messages satisfied with the system; i.e. do the messages provide them with information they need and expect?	Focus on assessing perceptions and lessons learnt of two groups: users and recipients of EA system.
12. Quantum/ Torrens Resilience Institute (July, 2011).	<i>Evaluation of Emergency Alert Household Survey. Detailed Findings.</i>	Evaluate EA system focusing on both: users and recipients perceptions. Users were asked whether the system enables them to send messages which inform people of the potential risks and directs them to appropriate media? Recipients were asked about their satisfaction with the system; i.e. do the messages provide them with the information they need and expect?	Focus on assessing perceptions of two groups: users and recipients of EA system.
13. Torrens Resilience Institute (July, 2011).	<i>Assessment of the Effectiveness of EA. Final Report. An Australian Government Initiative 30 July.</i>	Evaluate the EA that formed part of the National Emergency Management Projects (NEMP) scheme for 2010-11. Assess the two groups: satisfaction of EA users (Does the system enables them to send messages which inform people of potential risks and directs them to appropriate media); Assessment of recipients of EA messages satisfied with the system; i.e. do the message provide them with the information they need and expect.	Focus on assessing perceptions of two groups: users and recipients of EA system.

Organisation	Report title	Primary aim(s)	Implications for research findings
14. Mediacom Insight (March, 2011).	<i>Campaign Emergency Alert Tracking March 2011 (NSW Report)</i>	Measure awareness and understanding of the EA system in Sydney and rest of NSW and to track the movements over the summer campaign period. Secondary, to understand community attitudes and perceptions of emergency risk and preparation.	Focus on recipients/community perception of EA in Sydney and New South Wales.

3.3 Key Findings

3.3.1 Acceptance of telephony as a warning medium

The data presented in the reviewed reports suggest that the majority of respondents viewed telephony is an acceptable warning medium. Across the various reports, 72% to 95% of respondents believed that an automated telephone message was an ‘*acceptable*’ or ‘*convenient*’ way to receive a warning from emergency services. Furthermore, the majority of respondents viewed both landline phones (74%-85%) and mobile SMS (72%-84%) as ‘*convenient*’ or ‘*very convenient*’ mediums of delivery. It must be noted, however, that not all respondents accepted telephony as an acceptable medium of delivery. Up to 15% of respondents reported that landline phones were an ‘*inconvenient*’ or ‘*very inconvenient*’ mode of delivery for emergency warnings. Similarly, up to 17% of respondents reported that mobile phones were an ‘*inconvenient*’ or ‘*very inconvenient*’ mode of delivery. The levels of acceptance of telephony as a medium across the reviewed reports are presented in Table 3.3.1.

Table 3.3.1: Acceptance of telephony as a warning medium

Organisation	Report title	Research findings
1. OESC (2006)	<i>Community information and warning system: the report of the trial and evaluation.</i>	95% of respondents in three Victorian townships (Mt Evelyn, Stawell, Halls Gap) reported that ‘an automated telephone message was an acceptable way to received emergency advice and warnings from emergency services’.
5. Quantum (March 2010).	<i>Emergency Alert Wave 1 Research Report. Quantitative Findings.</i>	75% of respondents reported they were unlikely to rely solely on the telephone emergency warning system rather than prepare themselves. 84% of respondents agreed that using mobile phones was an important way to receive emergency information. 72% agreed that using home phones is an important way to receive emergency information.
9. Quantum/Torrens Resilience Institute (April 2011).	<i>Evaluation of EA in Victoria. Detailed Findings.</i>	85% of respondents reported that landline phones are a ‘convenient or very convenient’ medium for receiving warning messages. 72% said that mobile phones were a ‘convenient or very convenient’ medium. 8% and 17% said that landline and mobile phones, respectively, were ‘inconvenient or very inconvenient’.
12. Quantum/Torrens Resilience Institute (July 2011).	<i>Evaluation of Emergency Alert Household Survey. Detailed Findings.</i>	78% of respondents said that landline phones are a ‘convenient or very convenient’ method of receiving warning messages. 78% said that mobile phones are ‘convenient or very convenient’. 15% and 16% said that landline and mobile phones, respectively, were ‘inconvenient or very inconvenient’.

3.3.2 Preferred mode of delivery (Landline or SMS)

As noted above, the majority of respondents viewed both landline and mobile phones as ‘convenient’ or ‘very convenient’ modes of delivery for EA messages. With regard to which mode of delivery recipients preferred, findings were mixed. For example, *Report 5: Quantum* found that agreement for delivering emergency alerts via mobile phones was significantly higher than for landlines (84% for mobile phones vs. 72% for home phones). Meanwhile, *Report 9: Torrens Resilience Institute* found that, overall, respondents’ preferred messages to be delivered via landline phones rather than mobiles (85% for landlines vs. and 72% for mobiles). This difference was also significant. Of particular interest, however, is that this latter report detected an age difference in the preferred mode of delivery: older respondents (55yrs and older) preferred landlines, whilst younger respondents (18-34yrs) preferred mobiles

Data relating to preferred modes of message delivery are presented in Table 3.3.2 below.

Table 3.3.2: Preferred mode of delivery

Organisation	Report title	Research findings
5. Quantum (March 2010).	<i>Emergency Alert Wave 1 Research Report. Quantitative Findings.</i>	While agreement for using both mobile phones and home phones was high amongst Victorians, it was significantly higher for mobile phones (84% for mobile phones compared with 72% for landline phones).
9. Quantum/ Torrens Resilience Institute (April 2011).	<i>Evaluation of EA in Victoria. Detailed Findings.</i>	Landline voice messages were considered more convenient than mobile telephone text messages (85% and 72%, respectively). However, results did vary by age, with residents aged 55 years and older significantly more likely to consider landline telephone messages as convenient (89%), and those aged 18-34 were significantly oriented toward mobile phone text messages (95%).
10. Quantum (May 2011).	<i>Tostaree Emergency Alert System Research. Quantitative Findings.</i>	No preference identified. Approximately three quarters of respondents found both ‘voice messages on landlines’ (74%) and ‘text messages on mobile phones’ (76%) to be convenient modes of delivery.
12. Quantum/ Torrens Resilience Institute (July 2011).	<i>Evaluation of Emergency Alert Household Survey. Detailed Findings</i>	No preference identified. 78% of respondents reported that landline phones are a ‘convenient or very convenient’ method of receiving warning messages. The same number, 78%, said that mobile phones are ‘a convenient or very convenient’ method of receiving warning messages.

3.3.3 Awareness of Emergency Alert system

Across reports, between 41% and 75% of respondents were aware of the EA system. Of particular note, is that *Report 3: Quantum* found that 56% of respondents were aware the EA system, even in the absence of an official marketing campaign or education programme. Importantly, however, urban and regional Victorians perceived the aims of the EA system differently. For example, urban Victorians were more likely to believe that telephone-based emergency alerts should be used for warnings concerning ‘chemical’, ‘major power or gas outages’ and ‘violent crime’, while regional Victorians were more likely to believe that telephone-based emergency alerts should be used for bushfire, cyclone and flood warnings (see *Report 2: Newspoll Market & Social*)*. Also, there was a widely held perception that people can opt in or out of the system which is not possible because all mobiles with a billing address within the warning area will be sent a message. These results indicate a need for education about EA system aims and functionality.

* It is important to note that the survey presented in *Report 2: Newspoll Market & Social* was undertaken following the Black Saturday bushfire disaster and the public’s experience and awareness of this event are very likely to have influenced results.

Table 3.3.3: Awareness of Emergency Alert system

Organisation	Report title	Research findings
2. Newspoll Market & Social (Oct, 2009).	<i>National Emergency Warning System.</i>	In urban areas people were more likely to believe that telephone-based emergency alerts should be used for warnings concerning ‘chemical’, ‘major power or gas outages’ and ‘violent crime’. Regional Victorians were more likely to believe that telephone-based emergency alerts should be used for bushfire, cyclone and flood warnings.
3. Quantum (Dec, 2009).	<i>Emergency Alert Benchmark Research Quantitative Findings</i>	56% of respondents were aware of the new telephone emergency warning system, despite the absence of an ‘official’ communication campaign. 60% of respondents reported that they heard about it on a news/public affairs program.
5. Quantum (March, 2010).	<i>Emergency Alert Wave 1 Research Report. Quantitative Findings</i>	69% of respondents knew that the EA system would involve a message (SMS or voice recording) being sent in the event of extreme danger.
6. OESC (March 2010).	<i>Emergency Alert. Lessons Learnt: Workshop Report.</i>	Identified a public perception that EA is only a text message service, highlighting the need for education about landline functionality. Also identified a public perception that people can opt in or out of the EA system; however, if your landline and /or mobile billing

Organisation	Report title	Research findings
		address are within the warning area you will be sent a message.
12. Quantum/ Torrens Resilience Institute (July, 2011).	<i>Evaluation of EA in Victoria. Detailed Findings.</i>	The majority of respondents recalled being sent an emergency alert (83%) and therefore were aware of the Emergency Alert system. However, 75% respondents who did not receive a warning message said they were aware of the Emergency Alert system.
14. Mediacom Insight (March 2011).	<i>Campaign Emergency Alert Tracking March 2011 (NSW Report)</i>	50% of respondents (during Wave 1) and 59% respondents (during Wave 2) reported that they were aware of the EA system

3.3.4 Overall satisfaction with Emergency Alerts

Across reports, results indicate a high level of satisfaction with the EA system with 78%-97% of survey respondents across Victoria, New South Wales, South Australia, Queensland, and the Northern Territory stating that the system had either fully met or exceeded their expectations. However, a small proportion of respondents (4-13%) indicated dissatisfaction with the EA system. The main causes of dissatisfaction were related to the timing, relevance, accuracy, clarity and detail of the message. Some respondents were also dissatisfied because they believed the message had made them 'panic'.

Although the reports tended to focus on the reasons underlying recipient dissatisfaction in much more detail than satisfaction, they do provide some general indications as to why recipients were satisfied with the EA system. For the most part, data pertaining to recipient satisfaction was obtained via unprompted comments from respondents. For example, *Report 10: Quantum* states that around 32% of respondents stated that the EA system to be 'fantastic/a great idea/life-saving'. Similarly, *Report 9: Torrens Resilience Institute* notes that when given the opportunity to provide additional, unprompted feedback about the EA system, 43% of respondents said that 'it's a great idea/lives will be saved/I'm appreciative'. *Report 13: Torrens Resilience Institute* found that 40% of respondents were 'reassured' by the emergency alert and that it made them feel 'relieved or comfortable'. *Report 7: Quantum and Office of the Emergency Services Commissioner* also found that many of the respondents in the Euroa flood area expressed a sense of appreciation for the development of the EA system. This particular report states that 'a sense comfort was expressed by many'.

Table 3.3.4: Overall satisfaction with Emergency Alerts

Organisation	Report title	Research findings
1. OESC (2006).	<i>Community information and warning system: the report of the trial and evaluation.</i>	95% of respondents reported that an 'automated telephone message was an acceptable way to receive emergency advice and warnings from emergency services'.
7. Quantum/OESC (Nov, 2010).	<i>Emergency Alert Test. Quantitative Findings.</i>	97% of Euroa respondents who had received an EA message about flood expressed satisfaction with the EA system. 98% of participants of the test alert also reported satisfaction with the system. Only 4% who received the test alert claimed they gained nothing from it.
9. Quantum/Torrens Resilience Institute (April, 2011).	<i>Evaluation of EA in Victoria. Detailed Findings.</i>	62% of respondents reported that the received EA message had 'fully met' their expectations, while 16% reported that the message had 'exceeded' their expectations. 17% said it did not meet their expectations. Of the 17% who indicated dissatisfaction: 44% said the message arrived too late or too early, 36% said the message was inaccurate or failed to provide appropriate information, 33% said the message did not provide enough information, 18% said the message made them panic, 9% said the message was unclear.
12. Quantum/Torrens Resilience Institute (July, 2011)	<i>Evaluation of Emergency Alert Household Survey. Detailed Findings.</i>	84% of respondents reported that the received EA had 'fully met' or 'exceeded' their expectations. 13% of respondents reported that it did not meet their expectations. Of the 13% reporting dissatisfaction, 44% said the content of the message was inaccurate or that the message failed to provide appropriate information; 35% said the message arrived too late or too early; 22% said the message was not applicable; 21% said the message made people panic/was exaggerated; and 8% said the message was unclear.

3.3.5 Receipt of messages

Across reports, 61-98% of respondents in the various flood, bushfire and test areas stated that they had received EA messages. The results of *Report 7: Quantum/OESC* and *Report 9: Quantum/Torrens Resilience Institute* suggest that almost all of the respondents affected by floods in September 2010 (Euroa) and in January/February, 2011 (Charlton, Creswick, Horsham, Kerang, Koo Wee Rup, Rochester) had received an EA message on their landline, answering machine or mobile phone (90-98%). *Report 9: Quantum/Torrens Resilience Institute*, which focused on the Tostaree area during the 2010/11 bushfire season, found that 61% of respondents received an EA message. The results also indicate that, overall, a higher percentage of people received

the EA message on their landline or answering machine than on their mobile phone. However, a substantial number of respondents received multiple messages on their landline phone, answering machine and mobile phone.

In this context, it is important to note that while all telecommunication systems are vulnerable in floods and fires, recent experience suggests that the mobile system is more likely to remain operational.

Table 3.3.5 Receipt of message

Organisation	Report title	Research findings
1. OESC (2006).	<i>The report of the trial and evaluation.</i>	Over the 6 trials, receipt of the EA messages steadily increased. At Trial 1, 80.5% of Yarra Ranges respondents and 71.5% of Northern Grampians respondents reported receiving a message. At Trial 6, 96.5% of Yarra Ranges respondents and 100% of Northern Grampians respondents reported receiving a message. The trial delivered messages via direct landline and answering machine. Across trials the majority of respondents received the message via direct landline.
4. Emergency Services Commissioner (March, 2010).	<i>Example Emergency Alert Telephone Warning Activation Evaluation Report.</i>	In the bushfire area, 65% of the targeted population were sent an EA message reported that they had received the message.
7. Quantum/OESC (Nov, 2010).	<i>Emergency Alert Test. Quantitative Findings.</i>	In the flood area (Euroa), 70% of the targeted population received the alert: 40% received a direct message on their landline telephone, 17% received a message on their answering machine, and 63% received an SMS message. The majority of respondents received the message in its entirety. Across the test areas, an average 76% of the targeted population received the alert: 44% on their landline, 33% on their answering machine, and 63% as a mobile SMS. The majority of respondents in the flood and test areas who received a message reported they that received the message in full (97% and 94%, respectively).
9. Quantum/Torrens Resilience Institute (April, 2011).	<i>Evaluation of EA in Victoria. Detailed Findings.</i>	90% of respondents in flood areas recalled receiving an EA message. A total of 53% of households received direct messages on their landline phone and a further 33% received a message on their answering machine. An additional 63% recalled receiving an SMS text message on their mobile phones. On average, surveyed households received two EA messages.

Organisation	Report title	Research findings
10. Quantum (May, 2011).	<i>Tostaree Emergency Alert System Research. Quantitative Findings.</i>	A total of 61% of respondents in bushfire areas recalled receiving an EA message. 83% of those who did not recall receiving a message said that they had heard of the Emergency Alert system.
12. Quantum/ Torrens Resilience Institute (July, 2011).	<i>Evaluation of Emergency Alert Household Survey. Detailed Findings.</i>	83% of respondents recalled receiving an EA message. 43% had received a live message on their landline phone, 33% had received a message on their answer phone, 71% had received an SMS text message on their mobile phone.

3.3.6 Recall of message source (sender)

Across reports, 43-53% of respondents could recall the source of the message. However, this does not necessarily represent a serious issue because the consistently high levels of satisfaction and support for the EA system in each of the reports suggest that respondents trusted the messages they had received.

Where respondents did recall the source of the message, a broad range of sources were identified. The range of variation in results can be explained by differences in location, the type of emergency and message content. For example, respondents in Victoria who received an EA warning of flooding most commonly identified the SES or emergency services as the sender or source of the message. In the case of the Tostaree bushfire, also in Victoria, respondents most commonly identified the CFA or the fire authorities as the sender or source of the message. The larger range of information sources identified in areas where 'test' messages were received most likely reflects differences in location and message content. This is also the case for the highly varied results in *Report 12: Quantum/Torrens Resilience Institute* where respondents from various States (Victoria, New South Wales, Queensland, the Northern Territory and South Australia) identified a wide range of sources (31% SES, 24% CFA, government, shire council, CFA/CFS, Telstra or some other source).

Table 3.3.6: Recall of message source

Organisation	Report title	Research findings
7. Quantum (Nov, 2010).	<i>Emergency Alert Test. Quantitative findings.</i>	During the Euroa floods, 47% of landline recipients 53% SMS recipients identified the SES or 'the emergency services' as the sender or source of the message. 48% landline recipients and 35% of SMS recipients could not recall the source. In the test areas, 23% landline recipients and 21% SMS recipients identified the SES or 'the emergency services' as the sender or source of the message. 43% of landline and 34% of SMS recipients

Organisation	Report title	Research findings
		could not recall the source.
9. Quantum/ Torrens Resilience Institute (April, 2011).	<i>Evaluation of EA in Victoria. Detailed findings.</i>	43% of respondents recalled the sender or source of the message as being the SES or 'the emergency services'. 8% thought the message had come from government, shire council, CFA, Telstra or some other source. 49% did not know, or were unsure of who sent the message.
10. Quantum (May, 2011).	<i>Tostaree Emergency Alert System Research. Quantitative Findings.</i>	24% of respondents who received an Emergency Alert reported that the message came from the CFA or fire authorities. 8% thought it had come from a government department and 5% thought it had come from the SES or emergency services. 50% could not recall who sent the message.
11. Torrens Resilience Institute (May, 2011).	<i>An Evaluation of the Emergency Alert System. Pilot Evaluation Report.</i>	<u>As for Report 9</u> (see above).
12. Quantum/ Torrens Resilience Institute (July, 2011).	<i>Evaluation of Emergency Alert Household Survey. Detailed Findings.</i>	31% of respondents who received an emergency alert reported that the sender or source of the message was the SES or 'the emergency services'. 24% of respondents thought the message had come from the government, shire council, CFA/CFS, Telstra or some other source. 49% of respondents could not recall the message source.
13. Torrens Resilience Institute (July, 2011).	<i>Assessment of the Effectiveness of Emergency Alert. Final Report.</i>	<u>As for Report 12</u> (see above).

3.3.7 Recall of message content and call to action

Across reports, respondents commonly identified a generic warning of an emergency, flood or bushfire as the first thing they read or heard in the message. Approximately 20-35% of respondents could not recall the first thing they read or heard in the message. For example, more than a quarter of respondents affected by the Euroa floods (28%) and the Tostaree bushfire (37%) could not recall the initial content of the message. These results might be explained by the delayed nature of data collection periods: interviews were conducted 6 weeks after the Euroa floods and 11 weeks after the Tostaree bushfire.

Across reports, recall of the overall or main message of the EA messages varied. Respondents in the different studies received messages that were particular to their locality and the circumstances surrounding the dissemination of the emergency alert (i.e. a real emergency or a test of emergency preparedness). For example, almost three-quarters (72%) of respondents in the Victorian 'test areas' indicated that the main message of the EA was to evacuate or make a decision to stay or go (see *Report 9*:

Quantum/Torrens Resilience Institute). In Tostaree, 61% of respondents said that the main message of the EA was to warn of a bushfire in the area.

Respondents' recollections of the 'call to action' in each EA message varied. Again, the content of each message varied according to the location of recipients whether the alert was related to a real emergency or test of emergency preparedness. Nevertheless, respondents most commonly recalled being advised to be prepared, get ready, or put their plan into action. Many also indicated that they were advised to leave or evacuate, seek further information or that no action was required. Approximately 15-20% of respondents could not recall how they were asked to respond.

Table 3.3.7: Recall of message content and call to action

Organisation	Report title	Research findings
7. Quantum/ OESC (Nov, 2010).	<i>Emergency Alert Test. Quantitative findings</i>	46% of those who received the alert message on their mobile phone recalled a generic 'flooding warning' as the first thing they read. 17% recalled the message as 'Prepare to evacuate / leave'. 28% could not recall the content of the message or took no notice of the message content.
9. Quantum/ Torrens Resilience Institute (April, 2011).	<i>Evaluation of EA in Victoria. Detailed Findings.</i>	72% of respondents recalled the key message of the Emergency Alert as 'evacuate / make your decision to stay or go'. 36% recalled 'flood warnings / heavy rain in the area / imminent' as the key message. 11% recalled 'be prepared / be aware / take precautions' as the key message. Only 2% of respondents could not recall the key message. 40% of respondents recalled that the Emergency Alert advised them to 'be prepared / get ready / put plan into action'. 11% recalled being advised to 'evacuate / leave'. 22% recalled being advised to 'take no action / no action required'. 20% could not recall how they were asked to respond.
10. Quantum (May, 2011).	<i>Tostaree Emergency Alert System Research. Quantitative findings</i>	36% of respondents recalled 'a warning / alert' or a 'fire warning' as the first thing they read or heard in the message. 13% recalled 'Prepare to evacuate / leave' as the first thing they read or heard. Importantly, 37% could not recall the message content at all. 61% recalled the overarching message of the EA to be 'bushfire warning / bushfire in the area'. 39% recalled that the overall message was 'be prepared / be ready / take precautions / be aware' and 32% recalled 'evacuate / make your decision to stay or go'. Only 8% could not recall the key message in the EA. When asked how the EA advised them to respond, 50% recalled being told to 'be prepared / get ready / put plan into action', 26% recalled being told to 'take no action / no action required' and 3% to 'evacuate / leave'. 21% could not

Organisation	Report title	Research findings
		recall how they were advised to respond.
11. Torrens Resilience Institute (May, 2011).	<i>An Evaluation of the Emergency Alert System. Pilot Evaluation Report.</i>	51% of respondents recalled being told to put a plan into action, get ready, or be prepared to act. 22% recalled being told to take no action, or that no action was required. 12% recalled being advised to seek further information. 15% reported taking no notice of the call to action or could not remember it.
12. Quantum/ Torrens Resilience Institute (July, 2011).	<i>Evaluation of Emergency Alert Household Survey. Detailed Findings.</i>	72% of Victorian respondents recalled the key message of the Emergency Alert as 'evacuate / make your decision to stay or go'. 36% recalled it as 'flood warnings / heavy rain in the area / imminent'. 11% recalled it as 'be prepared / be aware / take precautions'. Only 2% could not recall the key message [same results presented in Report 7]. 38% of respondents recalled being told to put a plan into action, get ready, or be prepared to act. 22% recalled being told to evacuate. 9% recalled being told to seek further information. 15% said they were told to take no action or that no action was required. 16% could not recall the call to action.
13. Torrens Resilience Institute (July, 2011).	<i>Assessment of the Effectiveness of Emergency Alert. Final Report.</i>	38% of respondents recalled being told to put a plan into action, get ready, or be prepared to act. 22% recalled being told to evacuate. 9% recalled being told to seek further information. 15% said they were told to take no action or that no action was required. 16% could not recall the call to action [same as Report 11].

3.3.8 Intended response to Emergency Alert

A key finding across reports, it is clear that the vast majority of respondents intended to take some form of action after receiving an EA. Intended responses included evacuating or leaving for a safer location, activating plans and preparing, seeking more information, and contacting family, friends and neighbours. Of particular importance is that approximately 70-80% of people who received a real or test EA reported that they would do what the message told them to do. These results stand in marked contrast to those of the OESC's 'Benchmark' and 'Wave 1' research in which respondents did not receive an EA message. This research found that only one-third of Victorians intended to do what the message told them to. This suggests that the EA messages were effective in encouraging people to think positively about taking the prescribed action. Other intended responses after receiving an EA included evacuating or leaving for a safer location, activating plans and preparing, seeking more information, and contacting family, friends and neighbours. It is also important to note that it was only a small minority of respondents who reported that they would 'do nothing' (1-8%) or didn't know what they would do (3-4%) after receiving an EA message.

It is important to note that the reports also suggest that women are more likely to follow the instructions provided in an EA message. Thus, education could specifically target men to encourage them to seek further information upon receiving an EA message.

Table 3.3.8: Intended response to Emergency Alert

Organisation	Report title	Research findings
3. Quantum (Dec, 2009).	<i>Emergency Alert Benchmark Research. Quantitative Findings.</i>	38% of respondents said they would do whatever an EA told them to do. 19% said they would 'evacuate / leave / get to safety' and 10% said they would 'activate my plans / get prepared'. 14% of respondents indicated they would 'consider the message and then decide for myself what to do'. 10% indicated that their response would depend on 'what the message was / circumstances are / if it applies to me'. 3% said they would 'do nothing' and 4% didn't know what they would do.
5. Quantum (March, 2010).	<i>Emergency Alert Wave 1 Research Report. Quantitative Findings.</i>	29% of respondents reported they would do whatever an EA told them to do. 21% reported they would 'evacuate / leave / get to safety'. 13% reported they would 'activate my plans / get prepared'. 14% of respondents reported they would 'consider the message and then decide for myself what to do'. 11% reported their response would depend on 'what the message was / circumstances are / if it applies to me'. 1% said they would 'do nothing' and 3% didn't know what they would do. 34% of metropolitan respondents said they would do whatever an EA told them to do, compared with 24% of regional respondents.
7. Quantum/ OESC (Nov, 2010).	<i>Emergency Alert Test. Quantitative Findings.</i>	The majority of respondents reported they would 'definitely' or be 'likely to' take the following actions: turn on the radio (89%); contact family, friends or neighbours (87%); follow the instructions in the message (83%). 3% said they would do nothing.
9. Quantum/ Torrens Resilience Institute (April, 2011).	<i>Evaluation of EA in Victoria. Detailed Findings.</i>	89% of respondents said they would seek further information from neighbours, friends and/or family and 73% said they would seek information from local radio stations. 71% said they would follow the instructions in the message. 5% said they would not seek further information. Female respondents reported that they would follow the instructions in the message at a higher frequency than male respondents (76% and 61%, respectively). Female respondents also reported that they would contact family, friends or neighbours at a higher frequency than male respondents (93% and 81%,

Organisation	Report title	Research findings
		respectively).
10. Quantum (May, 2011).	<i>Tostaree Emergency Alert System Research. Quantitative Findings.</i>	The majority of respondents reported that if they received an EA in the future, they would ‘definitely’ or be ‘likely to’ take the following actions: turn on the radio (95%); contact family, friends or neighbours (92%); follow instructions in the message (76%); do nothing (8%).
11. Torrens Resilience Institute (May, 2011).	<i>An Evaluation of the Emergency Alert System. Pilot Evaluation Report.</i>	89% of respondents reported that upon receiving an EA message they would seek further information from neighbours, friends and/or family and 73% reported that they would seek information from local radio stations. 71% reported that they would follow the instructions in the message. 5% reported that they would not seek further information [same results as Report 7]
12. Quantum/ Torrens Resilience Institute (July, 2011).	<i>Evaluation of Emergency Alert Household Survey. Detailed Findings.</i>	87% of respondents reported that they would seek more information from neighbours, friends and/or family and 73% said they would seek information from local radio stations. 81% said they would follow the instructions in the message. 6% said they would do nothing.
13. Torrens Resilience Institute (July, 2011).	<i>Assessment of the Effectiveness of Emergency Alert. Final Report.</i>	[Same as Report 11 (above)]

3.3.9 Actual response to Emergency Alerts

Across reports, 70-80% of respondents who received an EA message actually took some kind of action to respond to the emergency situation (e.g. left their property or sought further information about the emergency). However, the degree to which the reported actions were a direct result of receiving an EA message as compared to other triggers is not clear. Nevertheless, the results indicate that receiving an EA message contributed, at least in part, to people’s decisions to take some form of action. That said, the types of actions taken have been reported differently across the reports, making precise comparisons difficult.

The percentage of people that took particular kinds of action varies to some degree across the reports. For example, *Report 10: Quantum* found that only 3% of respondents sought more information compared with 74% in *Report 4: OESC*. This may be due to differences in sample characteristics. It may also be due to situational differences such as the type and severity of the particular emergency, the exact content of the EA message received, or the information that was available from other sources. An important and reasonably consistent finding, however, is that across all reports, less than a quarter of respondents reported that they took no action or could not remember what they did. In interpreting this result it is important to be aware that some messages advised no action.

Whilst there is some indication that females and younger people might be more likely to take particular types of action, conclusive evidence on this point is lacking. An examination of the combined actions taken by members of the same household could show whether the apparent gender and age differences are planned as part of an overall household response or reflect real differences in attitudes to risk. Evaluation of what responses were most appropriate for people to take in their particular situations could also assist in interpreting results. These are areas where further research would clarify the present role of EA in persuading people to take action.

Table 3.3.9 Actual response to Emergency Alert

Organisation	Report title	Research findings (upon receiving an EA message)
4. OESC (March, 2010).	<i>Emergency Alert Telephone Warning Activation Evaluation Report.</i>	In Mt Clear and Mt Helen, 75% of respondents took some action: 74% sought further information whilst 30% of females and 17% of males left their property. 40% of people aged 18-34 left their property compared to 22-25% for other age groups. 0% of those aged from 18-34 years did 'nothing because not threatened' compared to 9-11% for other age groups. In Cann River and Towong/ Tintaldra, 92% of respondents took some action: 92% sought further information; 17% of females left their property (% males not given). 25% of people aged 18-34 left their property compared to 10-17% of people in other age groups. 0% of those aged from 18-34 years did 'nothing because not threatened' compared to 9-13% of people in other age groups.
7. Quantum/ OESC (Nov, 2010).	<i>Emergency Alert Test. Quantitative Findings.</i>	In Euroa, 72% of respondents took some action: 39% followed message instructions; 40% contacted family, friends or neighbours; 37% turned on the radio. 33% of respondents aged 55 or over 'did nothing' or 'don't know' compared to 20% of those aged 54 or under.
9. Quantum/ Torrens Resilience Institute (April, 2011).	<i>Evaluation of EA in Victoria. Detailed Findings.</i>	79% of respondents took some action: up to 36%* of respondents began to make, review or implement an emergency response plan or plan of action; up to 36%* talked to family, neighbours and/or friends about the EA message; 4% sought further information from elsewhere; up to 17%* followed message instructions or left their property.
10. Quantum (May, 2011).	<i>Tostaree Emergency Alert System Research. Quantitative Findings.</i>	82% of respondents took some action: up to 43%* of respondents began to make, review or implement an emergency response plan or plan of action; up to 27%* talked to family, neighbours and/or friends about the EA message; 3% sought further information from

Organisation	Report title	Research findings (upon receiving an EA message)
		elsewhere; up to 21%* followed message instructions or left their property.
12. Quantum/ Torrens Resilience Institute (July, 2011).	<i>Evaluation of Emergency Alert Household Survey. Detailed Findings.</i>	70% of respondents took some action: up to 23%* of people began to make, review or implement an emergency response plan or plan of action; up to 34%* talked to family, neighbours and/or friends about the message (up to 40% of women and 24%* of men); up to 11%* sought information from radio, internet or elsewhere.

*These percentages are aggregated from the results of questions that allowed multiple responses. Consequently, some respondents may be represented more than once.

3.3.10 Additional information sources

Collectively, the reports focused on two ways that additional information sources were used: 1) for general information gathering during emergency situations; and 2) in response to receiving an EA message. In both cases, informal sources (e.g. family, friends, and neighbours) were found to be important for obtaining further information. The results show that 25-57% of respondents sought information from friends, family or neighbours as part of their general information gathering whilst 27-36% of respondents sought information from friends, family or neighbours in response to receiving an EA message.

Of particular interest, however, is the high rate at which people would seek information from friends, or neighbours upon receiving a future EA message (87-89%). It may be that experiencing and reflecting upon an emergency situation, respondents were able to see the value in seeking more information through this channel.

There was also some evidence of gender difference in the use of family, friends, and neighbours as a source of information. *Report 12: Torrens Resilience Institute*, for example, found that 89% of women intended to seek information through these channels compared with 80% of men. However, there is insufficient information to draw strong conclusions concerning this difference in the current context. It may be a function of a combined household strategy in which different household members adopt different roles, as mentioned earlier. There is also some indication that people in regional areas are more likely to access informal and localised information sources than those in metropolitan areas (56-57% and 45-47%, respectively). However the results on this point are not conclusive.

The results also show that 27-79% of respondents had used radio as a source of general information (27-79%). Yet, the results also demonstrate that it was rarely used as a source of additional information in response to an EA message with only 3-4% of respondents reporting that they sought information from the radio in this context. As was the case with sourcing information from friends, family or neighbours, however,

respondents indicated that they would be highly likely to seek information from the radio upon receiving a future emergency alert.

Other important sources from which respondents had used or would use in the event of receiving an EA, included telephone hotlines, television news, regional and local newspapers, and the emergency services. Thus, in general, the results indicate that people are not relying solely on the EA system as a source of emergency information. However, further research needs to evaluate the way EA messages are used in conjunction with other sources of information, particularly informal and localised sources, and as people become more familiar with the EA system.

Table 3.3.10: Additional information sources

Organisation	Report title	Research findings
1. OESC (2006)	<i>Community information and warning system: the report of the trial and evaluation.</i>	45.7% of respondents intended to use ABC radio stations to obtain information, 43.6% intended to use the CIWS telephone hotline, and 8.2% intended to use the local council website. Respondents in Stawell and Halls Gap were more likely to access the radio as their main source of information (52%), whilst respondents in Mt Evelyn were more likely to access the telephone hotline (49.5%). 48.7% of respondents listed convenience and ease of use as the main reason for their preferred choice of information.
3. Quantum (Dec, 2009).	<i>Emergency Alert Benchmark Research Quantitative Findings.</i>	74% of respondents reported that they were 'likely' to obtain information about emergencies from television news or public affairs shows. 73% reported that they would obtain it from the radio. In regional Victoria 47% and 30% of respondents reported that they were 'likely' to source information from regional and local newspapers, respectively. This contrasted with metropolitan areas, where 11% and 17% of respondents reported that they were 'likely' to source information from regional and local newspapers, respectively. In regional Victoria, 57% of respondents were 'likely' to turn to friends, family and work colleagues compared to 45% of respondents in metropolitan areas. Overall, 56% of respondents were unaware of websites offering emergency information. 44% of respondents who felt at risk from bushfire were aware of the CFA website as a source of information compared with 20% of respondents who did not feel at risk from any kind of hazard event.
4. OESC (March, 2010).	<i>Emergency Alert Telephone Warning Activation Evaluation Report.</i>	75% of respondents had already accessed information about the emergency before they received the EA message. The most common sources of information in this context were family/neighbours/word of mouth,

Organisation	Report title	Research findings
		with approximately 30% of people in Mt Clear/Mt Helen and 25% in Towong and Cann River listing these sources. Observations of smoke/fire were the next most common sources of additional information with just over 20% of respondents in both locations listing this source. 74% of respondents in Mt Clear and Mt Helen, and 92% of respondents in Cann River and Towong/Tintaldra immediately sought more information upon receiving the EA message.
5. Quantum (March, 2010).	<i>Emergency Alert Wave 1 Research Report. Quantitative Findings.</i>	71% of respondents reported they were 'likely' to obtain information about emergencies from television news or public affairs shows and 71% were 'likely' to obtain it from the radio. In regional Victoria 48% and 49% of respondents reported they were likely to source information from regional and local newspapers, respectively. This contrasted with respondents in metro areas, 11% and 38% of whom were 'likely' to source information from regional and local newspapers, respectively. In regional Victoria, 56% of respondents were likely to turn to friends, family and work colleagues compared with 47% of respondents in metro areas.
9. Quantum/Torrens Resilience Institute (April, 2011).	<i>Evaluation of EA in Victoria. Detailed Findings.</i>	On receiving an actual EA message, 19% of respondents talked to family, 17% talked to neighbours, and 4% sought further information from radio. On receiving a future EA message, 89% of people said they were likely to seek further information from neighbours, friends and/or family, 73% said they were likely to seek information from local radio. 93% of females said they were likely to contact neighbours, friends and/or family members compared to 81% of males. In a future emergency situation, 26% of respondents were likely to consult local sources of information (e.g. family, neighbours, local SES-CFA, local news), 22% were likely to consult other media, 20% were likely to consult the SES website and 13% were likely to consult a telephone hotline.
10. Quantum (May, 2011).	<i>Tostaree Emergency Alert System Research. Quantitative Findings.</i>	Prior to the fire, 63% of respondents had heard/read about the potential for fire in their area. During the fire respondents obtained information from the following sources: ABC radio (79%); 'local information sources' (e.g., family, friends and neighbours) (73%); and local emergency services (40%). ABC radio (44%) and local information sources (31%) were the most trusted information sources. On receiving an actual EA message, 24% of respondents talked to family, 3% to

Organisation	Report title	Research findings
		talked to neighbours, and 3% sought further information from radio.
12. Torrens Resilience Institute (May, 2011).	<i>Evaluation of Emergency Alert Household Survey. Detailed Findings.</i>	27% of respondents reported they would be most likely to go to radio or TV for information about emergencies. 23% reported they would be most likely to go to local sources (e.g. news/ local SES/ neighbours/ family/ friends). On receiving an EA message in the future, 87% of respondents said they were likely to seek further information from family, friends or neighbours and 73% said they would seek further information from the radio. 89% of females indicated they would contact neighbours, friends or family compared with 80% of males.

3.3.11 Improvements to Emergency Alerts

Overall, satisfaction with the EA system on the part of both users (agencies) and recipients (residents) was very high. Additionally, some of the suggested improvements, given in early reports (e.g., *Report 1: OESC*) appear to have been addressed as the system was rolled out because they are not offered again in the later reports.

There are some notable differences in the areas that users and recipients' identified as challenges or for future improvements of the EA system. Users indicate concern over unrealistic expectations of the system, community fatigue if the system is overused, and overreliance on it. With regards to the latter, however, *Report 5: Quantum* indicates that 75% of people would prepare themselves for an emergency rather than simply rely on an EA message – suggesting that at present the EA system is not creating dependency at the expense of preparedness. However, this situation could change after EA has been in active use for a number of years.

Users also expressed concern over how the EA system is used in conjunction with other information sources, particularly social media. Responses from recipients regarding the use of other sources of information suggest that concerns about overreliance on the EA system may not be warranted at this stage. However, for all of these areas of concern, further evaluation of the system will be needed, including studies of how EA messages are used in different circumstances, before strong conclusions can be drawn. In particular, the issues of community fatigue and the way the EA system is used in conjunction with other information sources, including informal sources such as word of mouth and social media, warrant particular attention in future evaluations.

Areas of improvement emphasized by recipients largely focused on issues of timing and the content of messages, including accuracy and applicability to the people who receive them. For both end users and agencies the most significant improvement to Emergency Alert would probably be the introduction of a location based capability. A location

based capability would allow warning messages to be sent to mobile phones based on the location of the handset at the time of the emergency, hence targeting those most at risk.

Further evaluation of the system ‘on the ground’ would help with understanding these issues in different circumstances, and they might be addressed. Certainty about the research results could be improved with changes to sampling and interview methodology. (Note: see also section on areas for future research).

Table 3.3.11: Improvements to Emergency Alerts

Organisation	Report title	Research findings
1. OESC (2006)	<i>Community information and warning system: the report of the trial and evaluation.</i>	Over 40% of respondents believed that no improvements were necessary to make the EA system easier to use and understand. However, five main improvements were suggested by over 25% of respondents: 1) enable messages to be sent to mobiles; 2) SMS and other nominated numbers; 3) deal with issues around accessing messages left on answering machines; 4) make the message slower and clearer; allow message to be repeated; 5) broadcast details of the emergency over more radio stations.
6. OESC (March, 2010).	<i>Emergency Alert. Lessons Learnt: Workshop Report.</i>	Greatest challenge is balancing community expectation with community resilience. The community should not be dependant upon receiving a warning message nor should the message be the initial trigger for action. There is some confusion between Emergency Alert, Fire Danger Rating System and to a lesser extent other opt-in systems. Public perception that Emergency Alert is only a text message service, highlighting need for education about fixed line functionality. Public perception that people can opt in or out.
8. OESC (March, 2011).	<i>Emergency Alert. Lessons Learnt Workshop Report 22 March 2011.</i>	Users identified 6 main issues and potential improvements: 1) the EA system may lead to unrealistic expectations that a telephone warning will be issued for every hazard and the community may become over-reliant on the EA system as a trigger for action; 3) overuse of the EA system may result in community fatigue or desensitisation; 4) people with phones that require mains electricity may not get messages if there is a black out 5) rumours disseminated and perpetuated through social media may undermine 'official' messages; 6) there may be a need to "close off" events by advising people when they are no longer at risk; 7) the EA system can be enhanced by improving the way information is provided using various media.

Organisation	Report title	Research findings
11. Torrens Resilience Institute (May, 2011).	<i>An Evaluation of the Emergency Alert System. Pilot Evaluation Report. An Australian Government Initiative. 18 May 2011</i>	<p>Users suggested the following improvements: training and support for users to make best use of system and prepare best messages/ target right people; need to inform people when they are no longer at risk; improve how EA system is used with other information sources (e.g. 000, web pages and social media); facilitate learning and sharing lessons amongst users.</p> <p>78% of recipients said the EA system met or exceeded their expectations. Of the 17% who indicated dissatisfaction, 44% said the message arrived too late or too early, 36% said the message was inaccurate or failed to provide appropriate information, 33% said the message did not provide enough information, 18% said the message made people panic, and 9% said the message was unclear. When given the opportunity to provide further comment, 37% provided very strong support for EA. In contrast, there were very few negative comments.</p>
12. Quantum/ Torrens Resilience Institute (July, 2011).	<i>Evaluation of Emergency Alert Household Survey. Detailed Findings.</i>	84% of respondents reported that the EA system met or exceeded their expectations. Of the 13% who indicated dissatisfaction, 31% said information was insufficient, 26% said it arrived too late, 22% said it wasn't applicable to recipients, and 13 % said it was inaccurate

4. SIMILARITIES AND DIFFERENCES

This section examines the possible methodological reasons for similarities and differences in the findings of the different reports. Detailed analysis is presented in appendices to this report

Two basic questions guide this section:

1. Are the research findings consistent with the findings presented in the other reports?
2. How might methodological choices have influenced results? (e.g. research questions; type and design of survey; interview/survey sample; timing of data collection; method of analysis, etc.

In summary, comparisons of the reports revealed only small differences in the major findings. These differences are generally accounted for by variations in the aims, methods of data collection, samples, timing and methods of analysis that were undertaken for each report.

4.1 Research aims

The aims of a research project have important implications for the research methodology that is selected.

A broad distinction can be drawn between those reports that aim to investigate the views and perceptions of EA message recipients (the majority of reports) and those that aim to investigate the views and perceptions of EA message users/senders (*Report 8: OESC* and *Report 6: OESC*). Another key distinction relating to the aims of the various reports is between those reports that investigate the success of EA messages used to warn residents of an actual emergency and those that aim to assess reactions to a test warning message (i.e. *Report 7: Quantum/OESC*; *Report 9: Quantum/Torrens Resilience Institute*; *Report 12: Quantum/Torrens Resilience Institute*).

Nevertheless, most of the reports share aims that enable research findings to be compared. For example, the majority of reports aimed to investigate the effectiveness of the telephone based warning system from the perspectives of recipients. However, some of the reports also sought to examine recipient's awareness and understanding of the EA system. Key research findings relating to these research aims are presented and compared in Section 3 of this report.

4.2 Methods of data collection

Quantitative research methods employing telephone questionnaires constituted the predominant mode of data collection for the evaluation of recipients' perceptions of the EA system. By contrast, evaluations of users' perceptions of the EA system employed group discussions and semi structured interviews to gather data relating to their understanding of system functionality, utilisation, and performance, as well as their views on community awareness, understanding and expectations (*Report 8: OESC* and *Report 6: OESC*). Although research findings relating to users' perceptions of community awareness, understanding and expectations provide insight into agency views, they are not a substitute for empirical studies of EA recipients. Hence, they should be interpreted with caution and used in conjunction with empirical survey data derived from community surveys.

The reviewed reports relied primarily on quantitative data that can be coded and often allows for generalisation of findings to the larger population. Quantitative data collection is often the most efficient approach in terms of time and resources, when matched with qualitative data collection, a more in-depth understanding of how people think and why they take certain actions is likely.

4.3 The sampling method

A number of reports took measures to avoid standard sampling bias. These included taking a large, random sample and/or seeking to fill certain demographic and geographical quotas in order to obtain a representative sample. For example, *Report 1: OESC* took a random sample of 362 residents in three areas where the 'Community Information and Warning System' trial was conducted. This sample size was sufficient to ensure 95% confidence that results were within 5% of overall population values.

Similarly, *Report 2: Newspoll Market & Social Research* took a random sample of 1,055 residents and employed a system of call backs and appointments to ensure the sample was inclusive of people who spend a lot of time away from home. *Report 3: Quantum/OESC* and *Report 5: Quantum* research split the sample evenly between metropolitan and regional participants based on an assumption that ‘... regional Victorians are more likely to experience an emergency’ (*Report 3: Quantum/OESC*, p. 4). Consequently, regional Victorians are over-represented in the sample (as a proportion of the Victorian population). Where results from metropolitan and regional populations are aggregated, findings may be skewed towards regional responses.

As can be seen in Appendix 3 many of the studies did not place quotas on age and gender. Although most studies took large enough samples to ensure a low margin of error, these samples tend to be less representative of the wider populations from which they are drawn. For example, women and older people are over-represented in the sample taken for *Report 9: Quantum/Torrens Resilience Institute*, with females constituting 68% of the total sample and 61% of the sample being aged over 65 years (and less than 20% aged under 45). This is a potential issue in a number of the reports.

A common issue across all of the reports is the level of representation of non-English speakers. At the 2006 Census, 21.5% of all Victorians spoke a language other than English at home (Australian Bureau of Statistics, 2008). Yet, non-English speakers typically comprised just 1-4% of the samples. This could be rectified in future research by setting quotas or by conducting an evaluation that specifically examines perceptions of and reactions to EA messages in households where English is not the main language spoken.

4.4 Timing of data collection

The timing of data collection was of particular importance for studies that evaluated recipients’ recall of EA messages. Amongst these studies, the elapsed time between the receipt of the EA message and the administration of the survey varied from two months to six and a half months. Thus, caution must be exercised when making cross-study comparisons of message recall. There was also variation in elapsed time within studies. For example, in *Report 12: Quantum/Torrens Resilience Institute* there was a substantial variation in the elapsed time across the 15 sites included in the study (ranging from 2-6.5 months). Some of the reports note that recipients’ recall of the ‘*call to action*’ in the EA message was low. However, one could query how important a high level of recall might be 2-6 months after the emergency situation. Arguably, it is the clarity and salience of the call to action at the time of the emergency that is most important.

Another issue relates to the timing of the surveys relative to significant events that may have influenced peoples’ responses. The surveys often made explicit reference to previous events, such as the Victorian bushfires in February 2009 and the subsequent Royal Commission. These events would almost certainly have increased people’s awareness of and concern about bushfire risk, and may have influenced responses to some questions. In studies evaluating awareness of the EA system, the influence of contextual factors such as these makes it difficult to directly attribute changes in people’s awareness to the EA media campaign, rather than to the emergency events.

For two of the reports (*Report 4: OESC* and *Report 14: Mediacom Insight*) there was insufficient information provided to evaluate the impact of timing on the research findings.

4.5 Method of data analysis

The telephone interviews and online questionnaires produced quantitative data that were analysed via basic frequency counts. This type of analysis enabled basic quantification of results for each question, which were then expressed as percentages. Most of the reports used cross-tabulations to explore relationships between different variables. For example, a number of reports looked at the relationship between gender and intended responses to EA messages, and in doing so found that women were more likely than men to follow instructions in the message and were more likely to contact neighbours, friends and relatives. Results were most commonly cross-tabulated against age, gender and location.

The advantage of quantitative interviews and questionnaires is that data can be easily subjected to a range of statistical procedures and techniques to identify trends and relationships. Moreover, if the sample is representative, results can be generalised to the wider population. Future research may benefit from the addition of qualitative approaches – such as interview-based case studies – to develop contextualised, in-depth understandings of people's perceptions of and responses to EA.

Note: Tables summarising summarizing these sections are provided in Appendix 3.

5. THE CONSOLIDATED VIEW

This section of the review consolidates the main research themes, findings and issues that were identified in earlier parts of this report. What emerges is a consolidated picture of the Emergency Alert system, as well as any potential weaknesses or limitations in the work examined.

The reports reviewed had distinctive aims which make some direct comparisons untenable. Whilst the majority of reports aimed to investigate recipients' perceptions of EA messages, some of them aimed to investigate the perceptions of EA message users/senders. Different reports examined attitudes, intentions and actions. Nevertheless, this review has allowed for a broad range of issues to be identified and explored.

5.1 Awareness of the EA system

The review found that almost half of the respondents in the examined reports were aware of the EA system. Considering that EA is a new system that has only been recently introduced, this might be considered a reasonably high level awareness. Of particular interest is that even in the absence of an official marketing campaign, up to

half of the respondents were aware of the system, primarily through television news or a public affairs program. Urban and regional Victorians differed in their perceptions of the aims of the EA system and this most likely reflects differences in their perceptions about potential emergencies.

5.2 *Satisfaction with the EA system*

The review found a high level of satisfaction with the EA system among recipients with the great majority of survey respondents stating that the EA system fully met or exceeded their expectations. The majority of recipients viewed both landline phones and SMS text messages as acceptable modes of delivery for warning messages with the strongest support being for mobile phones. A small minority of recipients were dissatisfied with the EA system and suggested that the EA messages lacked clarity or were not timely enough. Similarly, a small minority of people were dissatisfied with landline and mobiles as a mode of delivery.

5.3 *Receipt of the message*

The review found that between 61% and 100% respondents in the various flood, bushfire and test areas reported having received EA messages on their landline phone, answering machine or mobile phone. Moreover, around half of the respondents reported having received more than one message. This finding provides encouraging support for the accessibility and reach of the EA system. However, it would be useful to identify the factors that facilitate or impede the delivery and receipt of messages so the lower rates of receipt may be lifted.

5.4 *Intended and actual responses to an Emergency Alert*

An important issue raised by this review relates to the extent to which people's intended actions correspond to the actions that they actually take in a real emergency. Because different reports examined both intentions and actions, comparisons of this nature are possible.

Across reports, the majority of people who received a real or test EA said they would do what the message told them to do. Intended responses also included evacuating or leaving for a safer location, activating plans and preparing, seeking more information, and contacting family, friends and neighbours. Importantly, these intentions were reflected in respondents' reports of their actual actions. Across all reports, less than one quarter of respondents reported they had taken no action or that they could not remember what they had done.

Whilst the review identified some preliminary evidence that women and younger people were more likely to follow the instructions in the EA message there is not sufficient data or depth of analysis to draw any conclusions on this point.

5.5 Additional information sources

The review found some evidence that people in regional areas are more likely to access informal and localised information sources than those in metropolitan areas. It also found some evidence of gender differences: specifically, that women are more likely to seek information from family, neighbours and friends than men. However, insufficient data and depth of analysis prevents any conclusive statements in this realm. It is possible that the gender differences reflect household strategies in which different household members adopt different roles. However, household dynamics were not evaluated in any of the reports.

5.6 Caution in interpreting results

The studies examined as part of this review have relied primarily on respondent self-report on a range of factors associated with the EA system, in particular with their satisfaction with the EA approach. Methodologically, this is quite different from an evaluation of EA which employs experimental control groups to objectively establish its impact. The lack of experimental controls in the studies examined is a major limitation that prevents drawing definitive conclusions from the systematic review.

There are a number of other methodological issues that may have influenced the results obtained in the studies examined. The sampling issues outlined earlier undermine the assumption that the results are representative of the population of Victoria. Specifically, the samples under-represent non-English speakers, with non-English speakers typically comprising only 1-4% of the samples, while 21.5% of all Victorians speak a language other than English at home (Australian Bureau of Statistics, 2008). Men are also under-represented in the various samples. For example, in *Report 9: Quantum/ Torrens Resilience Institute* males constitute only 32% of the total sample. Similar imbalances between males and females also characterise a number of the other reports. Younger recipients are also underrepresented in the various samples. For example, in *Report 12: Quantum Torrens Resilience Institute* 69% of the total sample was aged over 45 and in *Report 7: Quantum/OESC*, 75% of the total sample was aged over 45.

6. AREAS FOR FURTHER RESEARCH AND POTENTIAL IMPROVEMENT

The research examined as part of this review represents a valuable first step toward understanding the effectiveness of an EA system in the Australian emergency management context. The findings to date provide strong support for the utility of the EA system in both disseminating warnings and prompting action. However, the review also identifies several areas in which future research would add to the available evidence and provide further insights into how the EA system might be further improved or enhanced. These are presented in three themes: those of most concern to agencies; those more concerned with recipients; and ways of gaining greater certainty about the results of studies into EA.

6.1 Agencies

Agency respondents expressed a number of concerns about the EA system including the potential for residents to have unrealistic expectations of the system or to develop an overreliance on it. They also expressed concern about community fatigue if the system is overused. Whilst there was no evidence of these problems in the reports examined, EA is a new system and these issues could emerge over time. It could be worthwhile commencing a longitudinal study so that trends in community expectations or responses can be examined over time. Agency respondents also expressed concern about how residents might use EA in conjunction with other information sources, social media in particular. The way the EA system is used in conjunction with other information sources, including informal sources such as word of mouth and social media, warrant attention as such sources have the potential to undermine as well as to enhance the reach and effectiveness of EA.

Future research could also provide more detailed analyses of how recipients interpret EA messages and how these interpretations are influenced by personal characteristics such as age, gender, socio-economic status, ethnicity, and educational attainment. It might also be desirable to understand how people's interactions with others (e.g. friends, family, neighbours, emergency services) influence the meaning that is drawn from a message. This research would enable agencies to design and implement EA systems in a way that accommodates interpretative and social processes. Conducting such research would be consistent with the literature which emphasises the importance of understanding the psychological and social characteristics of the target audience. By understanding recipient expectations and interpretative processes in more depth, levels of satisfaction with the system could be enhanced.

6.2 Recipients

Knowledge and satisfaction: This review identified moderate to high levels of awareness of the EA system: however, it would be useful to examine recipients' knowledge of the system in more detail. For example, what are they expecting the messages to say; when are they expecting to receive the messages; and who are they are expecting the messages to come from. This information would provide agencies with a deeper understanding of how they can further tailor EA messages and their delivery to meet community expectations. Also, misconceptions or misunderstandings held by the community could be addressed through community engagement strategies. This research would be consistent with the warnings literature where it is argued that understanding the perspectives of recipients underpins the design and implementation of effective warning systems.

Research to date has tended to pay more attention to the reasons underlying recipient dissatisfaction with the EA system. However, the reasons underlying recipient satisfaction are just as important, and investigating recipient satisfaction in more detail may provide important insights into how the EA can further capitalise on the particular elements that make it useful to recipients.

Intentions and actions: A key issue is the extent to which an EA message encourages people to take action. In the reports in this review, this was examined in questions on intentions and various actions undertaken. However, the actions tended to be defined

very broadly and this may create ambiguity which could result in overestimating or underestimating the rates of appropriate response, as defined by the fire and emergency services. Additional research that provides more specificity in terms of actions would increase the certainty that receiving an EA message leads people to respond more appropriately to the emergency situation.

Gender: In the reports reviewed, women were found to contact friends and family more often than men. They were also found to be likely to follow the instructions in the message. Research could examine in greater detail these gender differences, as well as how the EA system interacts with household dynamics and the way in which it influences the roles that are played by different members of the same household.

6.3 *Future research*

Future research could examine the EA system using more representative samples than those employed in the reports examined, and could consider the use of control groups to compare EA with other approaches. There are several important groups who were under-represented or excluded in the reviewed reports including children and young people. Given the high rates of mobile phone ownership amongst children and young people, it could be worthwhile conducting research on how this group operates within the EA warning system.

Future research could also focus more closely on communities that are more ethnically diverse or have higher numbers of households in which English is not spoken at home. Language barriers could potentially undermine the efficacy of an EA system and could be given consideration as the EA system is developed further.

Taken together, these suggestions for future research represent some ways forward for further developing and evaluating the EA system. However, as this review has demonstrated the EA system is already proving itself to be a positive addition to emergency management plans and procedures. Additional research would give greater certainty about these preliminary results.

At present, the single most effective way to enhance the Emergency Alert system is to work on the implementation of sending warnings to mobile telephones based on the location of the handset, so those who most need the message receive it. At the time of finalising this report the Victorian Government was in negotiations with each of the three mobile telecommunication carriers about the development and implementation of this capability.

REFERENCES

Australian Bureau of Statistics, 2008. National Regional Profile: Victoria. Available from:
<http://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/LGA2Population/People12002-2006?opendocument&tabname=Summary&prodno=LGA2&issue=2002-2006>
(Last accessed 12 October 2011).

Bryman, A. (2008) '*Social Research Methods*' Third Edition, Oxford University Press

Tranfield, D., Denyer, D. and Smart, P. (2003) 'Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review', *British Journal of Management*, 14:207-22.

APPENDICES

Appendix 1: Method of Data Collection

Table 1: Method of data collection

Organisation	Report title	Method of data collection	Implications for research findings
1. OESC (2006)	<i>Community information and warning system: the report of the trial and evaluation.</i>	Methodological triangulation: qualitative and quantitative methods. Social Science research methods for evaluation involved: the pre-trial survey; the log booklet survey with questions completed by participants after they received each of the trial messages; the telephone interviews conducted after each trial message with a random sample of the participating residents and; the post-trial telephone survey of all participating residents conducted at the end of the trial (results are comparable to the other reports).	Primary focus on fairly basic questions due to an early stage of telephony as emergency warning medium (2006 report). Difficult to assess how methodological choices have influenced results, as details of the sample and questionnaire are not provided.
2. Newspoll Market & Social Research (Oct, 2009).	<i>National Emergency Warning System.</i>	Quantitative method, a telephone interviews with 1,055 respondents aged 18 years and over. Interviews were conducted in several Australian states (NSW, VIC, QLD, SA, TAS), over the period of 23 to 25 October 2009. Household telephone numbers were selected using random digit dialling (RDD).	Focus on recipients/ community perception on what EA system should be used for and how should it be called.
3. Quantum (Dec, 2009).	<i>Emergency Alert Benchmark Research</i>	A combined approach (Computer Assisted Telephone Interviewing and online interviewing). Telephone-based and	Focus on recipients/ community's perception. The chosen (combined) methodology reflected the nature of audience of

Organisation	Report title	Method of data collection	Implications for research findings
	<i>Quantitative Findings.</i>	online quantitative survey with 20 non-demographic questions conducted between 23-26 November 2009 (sample: 620 Vic only, evenly weighted between metro/regional community members rather than to rep Vic population profile.)	interest and the objectives and allowed to better reach all age groups.
4. OESC (March, 2010).	<i>Emergency Alert Telephone Warning Activation Evaluation Report.</i>	The report does not provide details of the research methods that were used to collect and analyse data (it is noted that these are included in the Appendix to the report, but they aren't there).	Focus on recipients/community perception following three activations during bushfire incidents in 2009 and 2010. Chosen methodology was not presented hence difficult to assess how might methodological choices have influenced results.
5. Quantum (March, 2010).	<i>Emergency Alert Wave 1 Research Report. Quantitative Findings.</i>	A combined approach (Computer Assisted Telephone Interviewing and online interviewing).	Focus on potential recipients of EA message prior to campaign launch.
6. OESC (March, 2010).	<i>Emergency Alert. Lessons Learnt: Workshop Report.</i>	Half a day workshop, 3 March 2010, coordinated by OESC, Victoria. The group discussion was conducted across the four categories: system functionality; system utilisation; system performance; community understanding & awareness and expectation.	Primary focus on users experiences only. Conclusions should be interpreted with caution and used only in conjunction with empirical survey data derived from community surveys.
7. Quantum/OESC (Nov, 2010).	<i>Emergency Alert Test. Quantitative Findings.</i>	Quantitative research interviews amongst those residents who received the actual EA message in test and disaster area. Telephone-based survey (8 minute questionnaire) conducted from 27 Oct - 1st Nov 2010 - 750 respondents (150 Euroa, 600 test area - all in regional Victoria). questionnaire formats used for Euroa and test area	Focus on recipients perception related to both, test and actual flood warning EA message. Participants were screened to ensure they had received an EA.

Organisation	Report title	Method of data collection	Implications for research findings
		respondents.	
8. OESC (March, 2011).	<i>Emergency Alert. Lessons Learnt Workshop Report 22.</i>	A workshop conducted on 22 March 2010, coordinated by OESC (VIC). The group discussion was conducted across the four categories: system functionality and performance; guidance materials; community awareness, acceptance and expectation; and data and reporting.	Findings/conclusions are based on practitioners' perceptions of community awareness, understanding and expectations, not data from a community survey hence conclusions should be interpreted with caution and used only in conjunction with empirical survey data derived from community surveys.
9. Quantum/Torrens Resilience Institute (April, 2011).	<i>Evaluation of EA in Victoria. Detailed Findings.</i>	Quantitative telephone interviews with 600 respondents that received EA message in Jan/Feb 2011 floods in Victoria - conducted 23-28 March 2011 (conducted by Quantum for Torrens using similar survey to the one used for Report 7). Those who had not received EA message were asked questions on their awareness and understanding of the EA, and their preparedness for an emergency.	Focus on respondents that received actual EA message. Focus on EA system used during floods.
10. Quantum (May, 2011).	<i>Tostaree Emergency Alert System Research. Quantitative Findings.</i>	Quantitative telephone interview (Computer Assisted Telephone Interviewing) among 600 Tostaree, Vic residents, 20-29 April. Total sample included those who received and those who did not receive an EA message.	Primary focus on interviewees that received the actual EA message (61% among 600 respondents). The remaining 39% of those who did not receive a message or could not remember whether they'd receive one (5%).
11. Torrens Resilience Institute (May, 2011).	<i>An Evaluation of the Emergency Alert System. Pilot Evaluation Report. An Australian Government Initiative. 18 May 2011</i>	1. Users: 60 minute semi structured interviews to gain understanding of their perception on the ideal capabilities of an ideal alert system in emergencies and disasters. 2. Recipients: data collection through a household survey (questionnaires to households in six chosen areas), door to door interviews, focus groups, and telephone interviews.	Focus on both recipients and users perception of EA system.

Organisation	Report title	Method of data collection	Implications for research findings
12. Quantum Torrens Resilience Institute (July, 2011).	<i>Evaluation of Emergency Alert Household Survey. Detailed Findings.</i>	Telephone survey of 1,500 households in Victoria, Queensland, New South Wales, South Australia and Northern Territory. Participants were screened to ensure they had received an EA message. Those who had not received a message were asked questions on their awareness and understanding of the EA, and their preparedness for an emergency.	Focus on participants that received the actual EA message in 15 areas in across Australian rural areas/townships. Findings therefore not representative of/cannot be generalised to urban and suburban areas.
13. Torrens Resilience Institute (July 2011).	<i>Assessment of the Effectiveness of EA. Final Report. An Australian Government Initiative 30 July.</i>	The project was conducted in three phases: a literature review and scoping study, a pilot evaluation in Victoria, followed by an evaluation of the other states and territories. Twenty users and operators of EA and 1,500 households were interviewed.	Focus on both recipients and users perception of EA system.
14. Mediacom Insight (2011).	<i>Campaign Emergency Alert Tracking March 2011 (NSW Report)</i>	Quantitative 10 minute on-line survey conducted before and after the EA media campaign to measure awareness and understanding of the EA in Sydney and rest of NSW.	Focus on EA recipients' perception in metro and regional areas.

Appendix 2: Sampling Method

Table 2: Sampling Method

Organisation	Report title	Sampling method	Implications for research findings
1. OESC (2006)	<i>Community information and warning system: the report of the trial and evaluation.</i>	Random sample of 362 residents in three areas where the Community Information & Warning System trial was conducted: Mt Evelyn (n=223); Stawell (n=100); Halls Gap (n=39).	Majority of sample from Mt Evelyn, which is a peri-urban suburb on Melbourne's north-eastern fringe. Stawell and Halls Gap are smaller rural townships. ‘The sample size allows 95% confidence that sample results will be within 5% of overall population values’ (p. 52) within the surveyed areas.
2. Newspoll Market & Social Research (Oct, 2009).	<i>National Emergency Warning System.</i>	Random sample of 1,055 residents of New South Wales, Victoria, Queensland, South Australia and Tasmania aged 18 years and over. Quotas set for each capital city and non capital city area. Household telephone numbers were selected using random digit dialling (RDD) and individuals within each were selected randomly using a ‘last birthday’ screening question. System of call backs and appointments used to ensure sample included those who spend a lot of time away from home.	
3. Quantum (Dec, 2009).	<i>Emergency Alert Benchmark Research. Quantitative Findings.</i>	Sample of 620 Victorians aged 18 years or over. Sample split evenly between metro and regional areas: ‘This is different to a more general Victoria-wide campaign as	Regional Victorians over-represented in the sample (as a proportion of the Victorian population). Where results from metro and regional populations are aggregated, findings may

Organisation	Report title	Sampling method	Implications for research findings
		<p>normally the sample is skewed towards metro residents in tune with the population (73% compared to 27% in regional)' (p. 4).</p> <p>Telephone sample (n=223); online sample (n=397)</p> <p>Women and men equally represented (50/50 online; 56/44 telephone).</p> <p>Vast majority of respondents in the online (96%) and telephone (94%) spoke English as the main language at home.</p>	be skewed by regional responses.
4. OESC (March, 2010).	<i>Emergency Alert Telephone Warning Activation Evaluation Report.</i>	Detail of sample not provided.	N/A
5. Quantum (March, 2010).	<i>Emergency Alert Wave 1 Research Report. Quantitative Findings.</i>	<p>Sample of 650 Victorians aged 18 years or over. Sample split evenly between metro and regional areas: 'This is different to a more general Victoria-wide campaign as normally the sample is skewed towards metro residents in tune with the population (73% compared to 27% in regional)' (p. 4).</p> <p>Telephone sample (n=250); online sample (n=400)</p>	<p>Regional Victorians over-represented in the sample (as a proportion of the Victorian population). Where results from metro and regional populations are aggregated, findings may be skewed by regional responses.</p> <p>Women (54%) and men roughly equally represented</p> <p>Vast majority of respondents (96%) spoke English as the main language at home.</p>
6. OESC (March, 2010).	<i>Emergency Alert. Lessons Learnt: Workshop Report.</i>	Self-selected sample of emergency services personnel / EA users (n=14).	Results reflect the perspectives of participating emergency services personnel / EA users only. Qualitative nature of workshop means results not quantifiable.

Organisation	Report title	Sampling method	Implications for research findings
7. Quantum/ OESC (Nov, 2010).	<i>Emergency Alert Test. Quantitative Findings.</i>	<p>Euroa flood area: Sample of 150 residents who received the emergency alert.</p> <p>Test areas: Sample of 600 residents who received an emergency alert in the Dandenongs (n=150); Macedon (n=150); Surf Coast (n=160) and Yarra Valley (n=140). Participants were screened to ensure they received the recent emergency alert.</p> <p>No quotas were placed on age and gender.</p>	<p>Euroa sample error: The margin of error at 95% is +/- 8% for a total sample of 150 interviews.</p> <p>Test sample error: The margin of error at 95% is +/- 4% for a total sample of 600 interviews.</p> <p>75% of the total sample was aged over 45</p> <p>65.5% of the total sample was female</p> <p>99.5% of the total sample spoke English as the main language at home.</p>
8. OESC (March, 2011).	<i>Emergency Alert. Lessons Learnt Workshop Report 22 March 2011.</i>	Self-selected sample of emergency services personnel / EA users (n=28).	Results reflect the perspectives of participating emergency services personnel / EA users only. Qualitative nature of workshop means results not quantifiable.
9. Quantum/ Torrens Resilience Institute (April, 2011).	<i>Evaluation of EA in Victoria. Detailed Findings.</i>	<p>Total sample of 600 respondents from Charlton (n=105), Creswick (n=65), Horsham (n=100), Kerang (n=110), Koo Wee Rup (n=110), and Rochester (n=110).</p> <p>Participants were screened to ensure they had received an Alert message. Those who had not were asked questions on their awareness and understanding of Emergency Alert, and their preparedness for an emergency.</p> <p>No quotas were placed on age and gender.</p>	<p>'Results from the total sample of 600 provide a margin of error of +/- 4% at 95% confidence' (p. 5).</p> <p>81% of the total sample was aged over 45; 61% was aged over 65.</p> <p>68% of the total sample was female.</p> <p>99% of the total sample spoke English as the main language at home.</p>
10. Quantum (May, 2011).	<i>Tostaree Emergency Alert System Research. Quantitative Findings.</i>	<p>Total sample of 62 respondents, including residents who received an emergency alert (n=38) and those did not or were unsure if they received an emergency alert (n=24).</p> <p>Due to the relatively small population, additional participants were recruited via media announcements (e.g.</p>	<p>The maximum margin of error at 95% confidence is +/- 12% for the total sample of 62 interviews.</p> <p>Women (52%) and men were fairly equally represented.</p> <p>82% of the total sample was aged over 45; 56% over 55.</p> <p>100% of the total sample spoke English as the main</p>

Organisation	Report title	Sampling method	Implications for research findings
		newspaper, radio) and through 'snowballing', whereby participants provide details of other residents who may want to participate. No quotas were placed on age and gender.	language at home.
11. Torrens Resilience Institute (May, 2011).	<i>An Evaluation of the Emergency Alert System. Pilot Evaluation Report. An Australian Government Initiative. 18 May 2011</i>	Total sample of 600 respondents from Charlton (n=105), Creswick (n=65), Horsham (n=100), Kerang (n=110), Koo Wee Rup (n=110), and Rochester (n=110). Participants were screened to ensure they had received an Alert message. Those who had not were asked questions on their awareness and understanding of Emergency Alert, and their preparedness for an emergency. No quotas were placed on age and gender.	'Results from the total sample of 600 provide a margin of error of +/- 4% at 95% confidence' (p. 9). 81% of the total sample was aged over 45; 61% was aged over 65.
12. Quantum Torrens Resilience Institute (July, 2011).	<i>Evaluation of Emergency Alert Household Survey. Detailed Findings.</i>	Total sample of 1500 respondents from Victoria (n=600), Queensland (n=535), South Australia (n=287), New South Wales (n=54) and the Northern Territory (n=24). Participants were screened to ensure they had received an Alert message. Those who had not were asked questions on their awareness and understanding of Emergency Alert, and their preparedness for an emergency. No quotas were placed on age and gender.	'Results from the total sample of 1,500 interview provide a margin of error of +/- 2.5% at 95% confidence' (p. 5). Results for areas with small samples should be interpreted with caution. 67% of the total sample was female. 69% of the total sample was aged over 45 99% of the total sample spoke English as the main language at home.
13. Torrens Resilience Institute (July 2011).	<i>Assessment of the Effectiveness of EA. Final Report. An Australian Government Initiative 30 July.</i>	<u>As for Report 12.</u>	<u>As for Report 12.</u>

Organisation	Report title	Sampling method	Implications for research findings
14. Mediacom Insight (2011).	<i>Campaign Emergency Alert Tracking March 2011 (NSW Report)</i>	Samples of 300 residents of NSW ('Sydney' and 'Rest of NSW') in both the pre- and post-campaign surveys. No other detail of sampling method provided.	

Appendix 3: Timing of Data Collection

Table 3: Timing of Data Collection

Organisation	Report title	Timing of data collection	Implications for research findings
1. OESC (2006)	<i>Community information and warning system: the report of the trial and evaluation.</i>	Trial period: May- Sept 2005 Data collected: May-November 2005 Report notes trial was completed prior to Mt Lubra wildfire in Jan 2006 which threatened residents in trial area.	
2. Newspoll Market & Social Research (Oct, 2009).	<i>National Emergency Warning System.</i>	Household survey conducted: 23-25 Oct 2009	As survey does not evaluate experiences of EA system, are no recall issues. Timing in relation to Victorian bushfires in Feb 2009 and Victorian 2009 Bushfires Royal Commission process likely affected results (e.g. More participants felt a telephone-based warning system should be used for bushfire - 85% - than other event types, e.g. flood – 44%)

Organisation	Report title	Timing of data collection	Implications for research findings
3. Quantum (Dec, 2009).	<i>Emergency Alert Benchmark Research Quantitative Findings.</i>	Benchmark survey conducted: 23-26 Nov 2009 - conducted prior to the roll out of the EA communication campaign. As noted in report, were discussions of the EA system in the media at the time, and the Bushfire Royal Commission was also underway.	<u>See Report 5 below.</u>
4. OESC (March, 2010).	<i>Emergency Alert Telephone Warning Activation Evaluation Report.</i>	EA message received: Dec 2009 & Jan 2010 Household survey conducted: Dates not given. Time difference: unknown	Insufficient information to evaluate implications for findings.
5. Quantum (March, 2010).	<i>Emergency Alert Wave 1 Research Report. Quantitative Findings.</i>	Benchmark survey: <u>as for Report 3.</u> Wave 1 survey conducted 15-20 Feb 2010 during communication campaign, which included items on TV and radio, in metro and regional paper, in CALD media, online and in cinemas.	Impact of EA campaign on findings cannot be completely separated from impact of other contextual factors.
6. OESC (March, 2010).	<i>Emergency Alert. Lessons Learnt: Workshop Report.</i>	Focus: EA system since it commenced in Dec 2009. Workshop with users conducted: 3 March 2010 Time difference: approx. 3 months	View of “what worked well” and “what could be done differently” should be considered a snap shot in time as use of system has evolved and changed over time.
7. Quantum/ OESC (Nov, 2010).	<i>Emergency Alert Test. Quantitative Findings.</i>	EA message received: 5 Sept 2010 (Euroa) EA test message received: 24-26 Oct 2010 (Surf Coast Shire, Macedon, Dandenongs, Yarra Valley) Household survey conducted: 27 Oct – 1 Nov 2010 Time difference: Euroa – approx. 2 months; test locations – none.	Caution needed in comparing findings between live location (Euroa) and test locations due to difference in context as well as difference in time between receipt of EA message and survey.

Organisation	Report title	Timing of data collection	Implications for research findings
8. OESC (March, 2011).	<i>Emergency Alert. Lessons Learnt Workshop Report 22 March 2011.</i>	Focus: on “significant recent use” of EA system (Jan-Feb 2011) Workshop with users conducted: 22 March 2011. Time difference: approx. 1 month	View of “what worked well” and “what could be done differently” should be considered a snap shot in time as use of system has evolved and changed over time.
9. Quantum/ Torrens Resilience Institute (April, 2011).	<i>Evaluation of EA in Victoria. Detailed Findings.</i>	EA message received: Charlton – 28 Nov 2010, 13-14 Jan 2011 Creswick - 4 Feb 2011 Horsham - 17 Jan 2011 Kerang - 16 & 18 Jan 2011 Koo Wee Rup – 5 Feb 2011 Rochester – 28 & 30 Nov 2010, 15 Jan & 5 Feb 2011 Household survey for all locations: 23-28 March 2011 Time difference: approx. 2.5 months	Time between receiving EA message and responding to survey may have affected participant’s recall of message and their responses.
10. Quantum (May, 2011).	<i>Tostaree Emergency Alert System Research. Quantitative Findings.</i>	EA message received: During bushfire in 2010/2011 bushfire season (3-4 Jan 2011) Household survey conducted: 20-29 April, 2011 Time difference: approx. 4 months	
11. Torrens Resilience Institute (May, 2011).	<i>An Evaluation of the Emergency Alert System. Pilot Evaluation Report. An Australian Government Initiative. 18 May 2011</i>	<u>As for Report 9.</u>	Report notes that recall of ‘call to action’ was low (51%) and that “time may have affected people’s recollection of the action required”.
12. Quantum/ Torrens	<i>Evaluation of Emergency Alert Household Survey.</i>	EA messages received: Vic locations - <u>as for Reports 9 and 11.</u>	Caution needed in comparing findings across locations given significant difference between when EA message was

Organisation	Report title	Timing of data collection	Implications for research findings
Resilience Institute (July, 2011).	<i>Detailed Findings.</i>	Boggabilla, NSW – 12 Jan 2011 Cabbage Tree, QLD – 28 Feb 211 Currumbin, QLD – 28 Feb 2011 Darwin River, NY – 17 Feb 2011 Light River, SA – 8 Dec 2010 Mareeba, QLD – 7 Mar 2011 Roma, QLD – 19 April 2011 Ulmarra, NSW – 15 Jan 2011 Wakefield River, SA – 8 Dec 2010 Household survey for all locations: 8-22 June 2011. Time difference: 2 – 6.5 months	received and time of survey.
13. Torrens Resilience Institute (July, 2011).	<i>Assessment of the Effectiveness of Emergency Alert: Final Report 30 July 2011</i>	<u>As for Report 13.</u>	Caution needed in comparing findings across locations given significant difference between when EA message was received and time of survey.
14. Mediacom Insight (2011).	<i>Campaign Emergency Alert Tracking March 2011 (NSW Report)</i>	Wave 1 survey: 16-20 Dec 2010 (before Summer campaign period) Wave 2 survey: 1-7 March 2011 (after Summer campaign period)	Insufficient information to evaluate implications for findings. Report doesn't consider possible contextual factors that may have interceded during Wave 1 and Wave 2 surveys.

Appendix 4: Method of data analysis

Table 4: Method of data analysis

Organisation	Report title	Method of data analysis	Implications for research findings
1. OESC (2006)	<i>Community information and warning system: the report of the trial and evaluation.</i>	Frequency counts.	Enables basic quantification of findings from each question. Findings expressed as percentages; easily understood. Can obscure complexity of issues.
2. Newspoll Market & Social Research (Oct, 2009).	<i>National Emergency Warning System.</i>	Frequency counts and cross-tabulations with key demographic variables (age and gender). ‘To reflect the population distribution, results were post-weighted to Australian Bureau of Statistics data on age, highest level of schooling completed, sex and area’ (p. 2).	As above, with cross-tabulations enabling exploration of relationships between different variables (e.g. gender and intended response to EA).
3. Quantum (Dec, 2009).	<i>Emergency Alert Benchmark Research Quantitative Findings.</i>	Frequency counts and cross-tabulations with key demographic variables (age, gender, metro/regional).	As above.
4. OESC (March, 2010).	<i>Emergency Alert Telephone Warning Activation Evaluation Report.</i>	Frequency counts and cross-tabulations with key demographic variables (age and gender).	As above.
5. Quantum (March, 2010).	<i>Emergency Alert Wave 1 Research Report. Quantitative Findings.</i>	Frequency counts and cross-tabulations with key demographic variables (age, gender, metro/regional).	As above, with cross-tabulation enabling analysis of differences in responses of metropolitan and regional respondents.

Organisation	Report title	Method of data analysis	Implications for research findings
6. OESC (March, 2010).	<i>Emergency Alert. Lessons Learnt: Workshop Report.</i>	No analysis undertaken.	Qualitative nature of data means that results are not quantifiable. Results are highly contextualised and cannot be generalised beyond participants.
7. Quantum/OESC (Nov, 2010).	<i>Emergency Alert Test. Quantitative Findings.</i>	Frequency counts and cross-tabulations with key demographic variables (age, gender, location).	As above, with cross-tabulations enabling exploration of relationships between different variables (e.g. gender and intended response to EA).
8. OESC (March, 2011).	<i>Emergency Alert. Lessons Learnt Workshop Report 22 March 2011.</i>	No analysis undertaken.	Qualitative nature of 'data' means that results are not quantifiable. Results are highly contextualised and cannot be generalised beyond participants.
9. Quantum/Torrens Resilience Institute (April, 2011).	<i>Evaluation of EA in Victoria. Detailed Findings.</i>	Frequency counts and cross-tabulations with key demographic variables (age, gender, location).	As above.
10. Quantum (May, 2011).	<i>Tostaree Emergency Alert System Research. Quantitative Findings.</i>	Frequency counts.	As above.
11. Torrens Resilience Institute (May, 2011).	<i>An Evaluation of the Emergency Alert System. Pilot Evaluation Report. An Australian Government Initiative. 18 May 2011</i>	Frequency counts (cross-tabulations with key demographic variables were undertaken as part of the research and are presented in Report 9).	As above.

Organisation	Report title	Method of data analysis	Implications for research findings
12. Quantum/ Torrens Resilience Institute (July, 2011).	<i>Evaluation of Emergency Alert Household Survey. Detailed Findings.</i>	Frequency counts and cross-tabulations with key demographic variables (age, gender, location).	As above.
13. Torrens Resilience Institute (July, 2011).	<i>Assessment of the Effectiveness of EA. Final Report. An Australian Government Initiative 30 July.</i>	Frequency counts (cross-tabulations with key demographic variables were undertaken as part of the research and are presented in Report 12).	As above.
14. Mediacom Insight (2011).	<i>Campaign Emergency Alert Tracking (NSW Report)</i>	Frequency counts and cross-tabulations (distance from bushland; metro/regional).	As above, with cross-tabulation enabling analysis of differences in: responses of metropolitan and regional respondents; responses of those less than and greater than 1km from bushland/low-lying areas.

LIST OF REPORTS REVIEWED

1. OESC. (2006). *Community information and warning system: the report of the trial and evaluation*.
2. Newspoll Market & Social Research. (2009) *National Emergency Warning System*. Prepared for Ms Lerna Avakian, Department of Justice. Job No: 091006. October 2009.
3. Quantum (2009) *Emergency Alert Benchmark Research Quantitative Findings*. Department of Justice. December 2009. Job No: 29075.
4. Emergency Services Commissioner (2010) *Emergency Alert Telephone Warning Activation Evaluation Report*. March 2010.
5. Quantum (2010) *Emergency Alert Wave 1 Research Report. Quantitative Findings*. Victorian Department of Justice. Job number 29095. March 2010. Quantum Contacts: Imogen Randell & Leanne Carl.
6. OESC (2010) *Emergency Alert. Lessons Learnt: Workshop Report*. Version 1. STRICTLY CONFIDENTIAL (3 March 2010).
7. Quantum and Office of the Emergency Services Commissioner (2010) *Emergency Alert Test. Quantitative Findings*. Job No: 10063. November 2010.
8. OESC Victoria (2011) *Emergency Alert. Lessons Learnt Workshop Report 22 March 2011*. Document issued on 28 April 2011.
9. Quantum/Torrens Resilience Institute (2011) *Evaluation of EA in Victoria. Detailed Findings*. Job No:11008. April 2011.
10. Quantum (2011) *Tostaree Emergency Alert System Research. Quantitative Findings*. Job No: 11014. May 2011.
11. Torrens Resilience Institute (2011) *An Evaluation of the Emergency Alert System. Pilot Evaluation Report. An Australian Government Initiative*. 18 May 2011
12. Quantum Torrens Resilience Institute (2011) *Evaluation of Emergency Alert Household Survey. Detailed Findings*. Job No: 11024. July 2011.
13. Torrens Resilience Institute (2011) *Assessment of the Effectiveness of Emergency Alert. Final Report. An Australian Government Initiative*. 30 July 2011.
14. Mediacom Insight (2011). *Campaign Emergency Alert Tracking March 2011 (NSW Report)*.

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