

Fire Research Report

Building Resilience: Engaging with Rural Communities about Fire Safety

**Julie Warren &
Associates**

April 2011

This Southland-based research was designed to improve fire safety outcomes for rural communities whose vulnerability to fire is increased by their low population density and physical remoteness, coupled with recent social and economic changes. The research was based on three case studies: Otautau, Otatara, and the rural area adjacent to the Awarua Wetlands. The research sought new ways for the New Zealand Fire Service and Rural Fire Authorities to engage with these communities to raise their awareness of fire risk and encourage them to take responsibility for reducing risk for households, community amenities and the environment. The research, which drew on the principles of action research, showed the importance of face-to-face contact over any written or visual materials and communities' acceptance of risk as a basis for further engagement activities. Activities need to target the specific needs of communities and individuals; focus on relationship-building; work with grassroots community networks; foster community relationships; and empower communities to take ownership of fire-preparedness. Fire safety agencies also need to build community trust; take account of changes in rural communities; take advantage of existing community networks and events; and ensure that they have appropriate resourcing, for initiating and maintaining engagement activities with target communities. Research outputs include (i) a review of a range of community engagement processes trialled in selected Southland rural communities; (ii) three case study reports; and (iii) a toolbox for building resilience, through engaging with rural communities about fire safety.

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BUILDING RESILIENCE: ENGAGING WITH RURAL COMMUNITIES ABOUT FIRE SAFETY

**A review of a range of community
engagement processes trialled in selected
southland rural communities**

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Julie Warren and Carla Wilson**

April 2011

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Abstract

This Southland-based research was designed to improve fire safety outcomes for rural communities whose vulnerability to fire is increased by their low population density and physical remoteness, coupled with recent social and economic changes. The research was based on three case studies: Otautau, Otatara, and the rural area adjacent to the Awarua Wetlands. The research sought new ways for the New Zealand Fire Service and Rural Fire Authorities to engage with these communities to raise their awareness of fire risk and encourage them to take responsibility for reducing risk for households, community amenities and the environment. The research, which drew on the principles of action research, showed the importance of face-to-face contact over any written or visual materials and communities' acceptance of risk as a basis for further engagement activities. Activities need to target the specific needs of communities and individuals; focus on relationship-building; work with grassroots community networks; foster community relationships; and empower communities to take ownership of fire-preparedness. Fire safety agencies also need to build community trust; take account of changes in rural communities; take advantage of existing community networks and events; and ensure that they have appropriate resourcing, for initiating and maintaining engagement activities with target communities. Research outputs include (i) a review of a range of community engagement processes trialled in selected Southland rural communities; (ii) three case study reports; and (iii) a toolbox for building resilience, through engaging with rural communities about fire safety.

1. Introduction

Fire is one of the most common disasters individuals and communities can face, and the impact of fire on property and lives can be devastating. Being prepared for fire and using safe practices to minimise risk, is key to fire safety. Residents of rural communities often face increased risk from fire because of the nature of their activities, the type of vegetation surrounding them, low population numbers and isolation from fire agencies.

Research shows the importance of effective engagement between communities and fire safety agencies to encourage communities to take ownership of, and responsibility for, fire safety and prevention (Bones, 2005; Graham and Langer, 2009). The research also shows that more self-reliant communities have better fire safety outcomes. Yet, the New Zealand Fire Service, Rural Fire Authorities and other agencies experience difficulty engaging with rural communities about fire safety and other matters. Factors implicated in these difficulties include an absence of community leadership and a decline or loss of factors that underpin social cohesion, or social capital (e.g. volunteers, schools, sports teams, community groups). Statistics New Zealand (2002, 3) defines social capital as:

the social resource that is embodied in the relations between people. It resides in and stems from the contact, communication, sharing, co-operation and trust that are inherent in ongoing relationships...Social capital is a collective resource rather than one accruing to an individual. However, the circumstances surrounding an individual or household may result in their having access to greater or lesser stocks of the community's social capital.

For most households, taking action to reduce fire risk has a far lower priority compared with other day-to-day priorities, and there can be a common perception that fire safety is 'someone else's problem' with little sign of community self-reliance in taking control of the situation (Wilson, 2007).

Because community preparedness and ability to respond effectively to fire is shown to reduce fire risk, fire safety agencies are increasingly seeking ways to engage effectively with their local communities to ensure they are organised, resourced, well informed, proactive, motivated and 'self-reliant' (Anthony-Harvey-Beavis *et al.*, 2006). This Southland-based research project was designed to develop, trial and evaluate innovative ways for fire safety agencies to engage with hard-to-reach, vulnerable rural communities to encourage community self-reliance and improve fire safety outcomes.

1.1 Research aims and objectives

The research aimed to improve the fire safety outcomes of rural communities through facilitating increased community ownership and responsibility for fire safety, and greater community self-reliance, by:

- developing more effective ways for relevant agencies to establish effective working partnerships with at-risk rural communities;
- developing ways for agencies to work with communities to build and facilitate community self-reliance;
- identifying barriers to and opportunities for relevant agencies to work in partnership with at-risk rural communities;
- raising at-risk rural communities' awareness of their fire risk through implementation of a household risk assessment tool (Warren and Fraser, 2009).

1.2 Southland as a case study

Southland is New Zealand's second largest region, with approximately a quarter of its land intensively farmed and 60 percent taken up by National Parks and conservation reserves. Despite its large size, Southland is one of the most sparsely populated regions in the country. Over recent years, there have been considerable changes in land use – with a shift from beef and sheep to dairying, increasing intensification and, potentially in the future, mining and oil exploration¹. With these land-use changes, rural communities are undergoing significant change, including in demographic composition and community dynamics. Although Southland has been less ethnically diverse than the country as a whole, this is changing². How communities function is also changing. As Venture Southland reported³ community members' willingness and ability to get involved in community activities, including those relating to fire safety, and help with community projects is diminishing as people's lives become busier. These changes make it more difficult for communities to maintain their local facilities, infrastructure and way of life.

Southland's fire statistics⁴ signal a need for new approaches to encourage communities, especially in rural areas, to take more responsibility for fire safety. The region has double the national average of structure fires (usually house fires), a high number of burn-off escapes, more than double the national average of fire injury rates (including two fatalities in 2009) and a growing number of vehicle fires.

Factors identified by various agencies⁵ concerned with fire safety and/or community development as possibly contributing to these fire statistics include the following:

- a prevalence of old and poor quality housing and use of poor quality fuels and heating mechanisms, coupled with cold, damp and windy weather;
- a prevalence of low income households;
- the isolation of many communities given low population density;
- large distances between communities;
- a large network of local (often poor quality) roads;
- the difficult egress and exit of some communities (e.g., to road-end communities like Naseby and Milford);
- the changing nature of rural communities, including diminishing social and other resources, the introduction of urban attitudes to risk (i.e., less awareness of the rural fire risk and need for compliance with fire regulation);
- an attitude that vegetation fires in Southland are unlikely to 'get out of control';
- increasing reluctance to engage in awareness-raising and consultation processes; and
- increasing tourism activity leading to: more risk behaviours (by visitors); more tourism traffic (especially on difficult-to-access roads); population fluctuations during the tourist season; and increasing numbers of vacant (holiday) dwellings.

¹ <http://www.maf.govt.nz/sff/about-projects/search/07-115/index.htm> (viewed 25 April 2011).

² For instance, the 93% identifying as of European descent in the 2001 census had decreased to 78% by the 2006 census, with a corresponding increase in the proportions of other ethnicities.

<http://www.stats.govt.nz/census.aspx> (viewed 25 April 2011).

³ <http://www.southland.org.nz/Home/LandPeople.aspx> (viewed 25 April 2011).

⁴ Recent NZFS statistics show a link between fire rates and population density: both fire fatality and fire damage rates are higher in areas of lower population density (e.g. Southland, Northland and Eastern regions).

⁵ Personal Communication Southern Rural Fire Authority, the New Zealand Fire Service Southland, the Southland District Council, the Department of Conservation, Environment Southland, and Venture Southland.

1.3 Report overview

The remainder of this report:

- outlines the process the researchers used to develop, implement and review a range of community engagement processes in Southland;
- identifies the 'best practice principles of effective engagement' based on a review of literature that provided the framework for the research;
- provides an overview of the case studies included in the research and the engagement tools trialled in these case study areas, including the rationale for their selection and development. Individual case study reports have also been prepared for the key stakeholders and agencies who participated in the research in the three case study areas. These reports provide more details about the case study areas, the tools trialled and the lessons learned;
- reflects on the lessons learned from the engagement tool trials for effective engagement with rural communities.

In addition to this report, and the separate case study reports, an operational 'tool box' has also been prepared which provides a series of guides on how to best use the range of tools trialled in this work titled *A toolbox for building resilience: engaging with rural communities about fire safety*.

2. Methodology

2.1 Action research approach

This research draws on the principles of action research. In action research, the researcher focuses on creating a 'bottom up' approach to address key problems and improve a situation (Reason and Bradbury, 2001; Munford and Sanders, 2003). Action research encourages stakeholder participation, collaboration and ownership, with the researchers facilitating, but not leading, the process.

The applied action research approach involved working collaboratively with communities, and key agencies in Southland to identify, develop and test effective awareness-raising and engagement processes. The research was structured around a cycle of action-reflection (Munford and Sanders, 2003) that meant stakeholders involved were able to review and evaluate the effectiveness of the various engagement methods as the research progressed and give their feedback to the researchers.

2.2 Research phases

The reflective research process can be separated into the following six key phases:

- Relationship building;
- Case study selection;
- Scoping of community needs;
- Review of existing engagement processes and methods;
- Identifying and trialling engagement tools; and
- Reflection and evaluation.

It is important to note that these phases did not take place in a linear, sequential order. Relationship building and reflection, for example, occurred as an ongoing task throughout the research process. Each of these phases is discussed in more detail below.

2.2.1 Agency relationship building

Good relationships and partnerships are critical to the completion of any action research project (Reason and Bradbury, 2001). According to Munford and Sanders (2003, 273):

All social research is embedded in relationships and in many ways the quality of data gained is directly related to the quality of relationships researchers can build with participants and others who generate research data.

A significant amount of project time was spent on building and maintaining relationships with stakeholders and communities in order to encourage people to participate and share their expertise and time. Fire agency⁶ personnel, in particular, have had an essential and ongoing role in the research process and were involved in all aspects of the research.

In order to build relationships with key agencies⁷, and to encourage them to contribute to the research over the course of the project, the researchers organised two workshops for agency staff (refer to sections 2.2.2 and 2.2.6) and held regular face-to-face meetings with agency representatives to discuss findings to date and identify ways to progress the research. Agencies were also kept up to date through regular e-mail correspondence.

⁶ Personnel from both the Rural Fire Authority and the New Zealand Fire Service provided substantial support and ideas throughout the research process. In the report, these agencies are referred to individually by name, and collectively as 'fire agencies'.

⁷ Key agencies included Southern Rural Fire Authority, the New Zealand Fire Service Southland, the Southland District Council, the Department of Conservation, Environment Southland, and Venture Southland.

2.2.2 Case study selection

The next stage of the research involved making a decision about what communities would be included in the research. This phase involved discussions with agency staff to review the research questions and identify the main outcomes stakeholders wanted from the research. An initial day-long workshop was held in Invercargill and representatives of the Southern Rural Fire Authority, the New Zealand Fire Service Southland, the Southland District Council, the Department of Conservation, Environment Southland, and Venture Southland attended this workshop.

In line with the principles of action research, the initial planning workshop enabled relevant agencies and individuals to contribute to the research process. The purpose of the workshop was to identify trends and characteristics in rural Southland, fire safety issues, possible case study communities, and the next steps for the research.

Given the complexity of wider social and environmental issues that can add to fire risk, and the varied and diverse nature of communities in Southland, workshop participants developed criteria for selecting case study communities. These criteria were not weighted or prioritised. These criteria are listed in section 4: Case studies.

After discussions on possible case study areas that met these criteria (in the workshop and conversations following the workshop), the following three communities were agreed on: the rural area adjacent to the Awarua Wetlands; Otatara; and the township of Otautau (discussed in further detail in Section 4 and the separate case study reports).

2.2.3 Scoping community needs

In line with the approach adopted by the County Fire Authority in Victoria (2003), the researchers scoped community needs in the three case study areas. This scoping of community needs provided a basis for identifying and developing possible approaches to bring about changes desired by communities. In the case studies, the desired changes centred around improving the way that the New Zealand Fire Service, the Rural Fire Authority and related agencies engaged with rural communities as a pathway to increasing community self-reliance around fire preparedness and safety. This scoping stage was an essential part of the action research process, which was driven by the identified needs of the communities rather than the agendas of the researchers or agencies.

The scoping of community needs for this research involved: developing community profiles, reviewing relevant documents, and talking with stakeholders and community members. As part of this scoping of community needs, the researchers visited the three case study areas and spoke with a range of residents in small groups about:

- their previous experiences with community engagement;
- what had worked or not worked in the past; and
- on the basis of this previous experience, their preferred forms of engagement with agencies.

The visit provided an opportunity for researchers to identify the key groups and networks in each community, their issues and concerns, and community perspectives on the geographical boundaries of each area, and to seek some advice on the best way forward. The first visits involved connecting with pre-existing formal and informal groups of residents to seek advice on the most effective ways of working with their community on fire safety issues.

2.2.4 Review of existing engagement processes and methods

Before deciding on the appropriate engagement methods or tools to trial the researchers reviewed what had been found to be the most effective processes and methods to encourage community engagement in fire safety and other community initiatives.

This review involved:

- a review of relevant community, fire safety and risk communication literature and research;
- an in-depth review of current tools and methods used by: the New Zealand Rural Fire Authority, New Zealand Fire Service, the County Fire Authority in Victoria and the New South Wales Rural Fire Service;
- discussions with Australian academics and practitioners working within the area of fire safety, community and risk communication; and
- discussions with other agencies that have undertaken community consultation processes in Southland.

In order to learn from the experiences of other researchers in related fields, the researchers attended conferences and workshops focused on emergency and hazards management, and interviewed people working in other community safety areas such as road safety, safety from crime, and emergency management.

The key lessons from this review are included in Section 3: Principles of effective community engagement, and also in discussions about each of the tools trialled in the case studies.

2.2.5 Identifying and trialling engagement tools

Following the discussions with agencies and communities and the review of existing tools, the researchers identified a number of face-to-face community engagement methods to be trialled in each case study. The ongoing consultative approach and inclusion of fire safety personnel was essential, as an objective of the research was to ensure a high level of ownership of the process by both agency staff and community stakeholders.

This report describes the variety of face-to-face community engagement methods that were trialled in each case study.

In each instance, the researchers visited the case study areas a number of times to learn more about the needs of the community, to build relationships and to secure buy-in and ownership of the engagement processes trialled. Community needs shaped the number of visits and their timing in each of the case studies, which is consistent with an action research approach. The initial research plan included three visits in total (including the scoping of community needs visit) to each area. However, in reality a number of additional visits were needed and the timing of the visits often had to be adjusted to fit in with the needs of the communities (e.g. scheduling visits around farming activities or school calendars). It was therefore necessary to adopt a 'creative, flexible and adaptable approach to research processes' (Munford and Sanders, 2003, 273) to ensure the researchers could respond and adapt to new challenges and information and amend the research approach where necessary.

2.2.6 Reflection and evaluation

As part of the cycle of action and reflection, the researchers engaged in a critical reflective process with key stakeholders to critique the effectiveness of the engagement tools and

identify areas for improvement. This process took place through follow-up phone calls and meetings.

The goal of action research is to solve problems or, in this instance, to identify new ways of engaging with communities. Therefore, it is important that the work started through the action research process is carried on by the agencies after the research is completed. With this in mind, the researchers held a final workshop with participating agencies to discuss the research and identify how the findings could be applied as part of their ongoing day-to-day work. They also worked with a newly appointed Fire Risk Management Officer, who works with both the New Zealand Fire Service and the Rural Fire Authority in Southland. He was involved in some of the later tool trials and plans to maintain the community engagement momentum by keeping in touch with case study communities and repeating some of the engagement processes trialled.

3. Principles of effective community engagement

From reviewing relevant literature on risk communication and fire preparedness, the researchers have identified the following key principles for engaging effectively with communities about fire safety and preparedness. As part of the action research approach, the researchers adopted, reflected on, and evaluated the effectiveness of these principles in relation to the case study engagement methods trialled. The principles, discussed below, are:

- focus on acceptance of risk;
- build relationships;
- use a 'bottom up' community approach;
- foster well-connected communities;
- empower communities; and
- target communication.

Best practice guidelines for engaging with rural communities, based on these principles are included in the accompanying toolbox entitled: *A toolbox for building resilience: engaging with rural communities about fire safety*.

3.1 Focus on acceptance of risk

In order to engage effectively with communities about fire safety, the relevant literature frequently refers to the need to first ensure that people understand and accept that they face potential fire risk. According to Sweeney Research (2009, 39):

No matter how effective communication material are, if people don't see the importance of informing themselves then the message will never get through and behaviour won't change.

Similarly Mitchell *et al.* (2010, 6) noted that, in order for people to willingly participate in fire preparedness initiatives, they need to have 'tangible reasons to participate in processes that demand their time and support'. Thus, a top priority for any communication is to convince people that they need to be informed (Sweeney Research, 2009).

In the New Zealand context, authors have commented on the common perception that fire risk is low and how this has impacted on their subsequent preparedness. Jakes *et al.*, (2010, 48), for example, commented:

The general view is that wildfires impact on communities in Australia, the western United States and Mediterranean countries rather than rural communities in New Zealand. Perceptions that the fire risk is low and that large damaging wildland fires occur infrequently mean that New Zealand communities are not well prepared to withstand a wildfire and are vulnerable as conditions change (Jakes *et al.*, 2010, 48).

Bones (2005, 23) also noted:

Greater community education and community involvement in fire management is required in New Zealand, particularly as the community's perception of fire risk is low because of the low frequency of large damaging wildfires.

Paton (2009, 6) has concluded that motivation to take action and improve fire safety decreased when people perceived that there was not an immediate risk. As bushfires are low frequency events, and people can tend to underestimate the risk of low frequency events and not take action, Paton (2006, 65) advocates focusing on the likely consequences of a bushfire rather than the likelihood of it occurring in any risk communication.

3.2 Build relationships

Much of the literature emphasises the need to build relationships and trust between agencies and communities. According to Prior and Paton (2008, 17):

In order for homeowners to actually implement the preparedness strategies advocated by the emergency services they must trust the message and the messenger implicitly.

The County Fire Authority (2008, 10) Community Engagement Framework *Living with Fire* (2008) concluded that:

Safety from fire and the protection of our environment are both highly complex and emotive issues and it is essential that all parties recognise the value of partnerships that foster mutual trust, respect and understanding.

Paton (2008) also emphasised the importance of trust, and notes that deciding to adopt safe behaviours is linked to trust in the source of the information.

Research findings also emphasise that gaining the support and trust of local people is the primary factor for encouraging engagement, acceptance and support for fire mitigation and prevention messages (Shindler, Toman and McCaffery, 2009).

In order to build trust, the literature reinforces the importance of face-to-face communication (in addition to broader regional or national risk communication messages) for engaging with communities. In the New Zealand context, recommendations in two research reports on rural fire prevention emphasised the need for further face-to-face open meetings and dialogue between rural communities, fire agencies, and local authorities as a means of building relationships and understanding and promoting fire mitigation and prevention in rural areas (Graham and Langer, 2009; Punsellie and Langer, 2008).

3.3 Use a 'bottom up' community approach

Many authors advocate using a 'bottom up' approach to motivate communities to take action to increase their fire safety. In order to engage communities in discussions on fire safety, the literature refers to the importance of targeting existing groups and informal community networks (e.g. social, cultural, recreational, political groups) and getting them to talk about fire safety as part of their wider brief.

According to Paton (2006, 68):

Many public education strategies target households in isolation and do not access the potential benefits of informal community networks and strategies based on community engagement. Strategies to increase bushfire preparedness are more effective if they are transmitted and reinforced through informal community networks.

Paton (2009, 5) also notes:

Strategies to increase bushfire preparedness are more effective if they are transmitted and reinforced through community networks. Participation in activities which are embedded within the fabric of communities is infinitely more effective in motivating preparedness than the passive receipt of information through generic media.

Compared with broader communication campaigns, interactive grassroots approaches provide more spaces and opportunities for people to talk with fire authorities and their

neighbours and ask questions about fire safety and preparedness. According to Paton (2009, 6):

Interactive participation in which community members ask 'what does bushfire mean for me', and 'what will I do about it' is much more likely to occur in community groups than it is through agency focused campaigns.

Actively working with pre-existing groups and supporting community networks means that people can begin to talk about and reinforce fire safety and preparedness within their usual social contexts and networks. According to Paton (2009, 6), working with a pre-existing group, 'is likely to be more effective in weaving bushfire preparedness into the fabric of communities, than holding public meetings specifically to discuss bushfire risk and preparation'.

In a report for the County Fire Authority, Boura (1998, 7) also commented on the value of working with small self-initiated groups in a friendly and informal atmosphere.

A small group in a neighbour's lounge provides a more effective learning environment than a larger gathering in a cold uncomfortable public hall. The optimum learning environment is one where people feel comfortable to ask questions, safe to explore different ideas, and where their participation is valued.

Boura (1998, 8) also suggests that working with pre-existing and neighbourhood groups has social benefits that may increase the likelihood that residents will choose to be involved in a fire preparedness programme over a period of time.

3.4 Foster well-connected communities

One objective of this research is to identify ways to work with at-risk rural communities where there may be limited social capital and lack of grassroots networks and groups. In these environments, it may be difficult to identify and work with pre-existing groups as suggested in Section 3.2. The review of literature suggests that, in these situations, it is important to first develop and foster social connections to try and create a 'sense of community'. The County Fire Authority Community Engagement Framework *Living with Fire* (2008, 10), for example, emphasises the need 'to build community connectedness by actively supporting community networks in areas vulnerable to bushfire'.

Thus, in some communities it is not possible to separate the task of enhancing the skills and abilities of individuals with regard to fire safety from the more fundamental job of building the social capital of the community in order to develop social networks and trust. In Prior and Paton's (2008) research following the bushfires in Tasmania, for example, interviewees reflected on their low level of interaction with fellow community members prior to the fires. Prior and Paton (2008) suggest this could partly be explained by the mix of old and new residents, and because property sizes are relatively large, with neighbours distant from one another and less likely to engage in regular interaction. According to Prior and Paton (2008, 17):

Taking an approach to risk communication that encourages community members to interact with each other (and the emergency services) and share place-specific information about their bushfire experiences would be a crucial step toward generating a higher level of collective preparedness and stronger sense of community.

Their research found that facilitating contact between neighbours and communities can also generate a stronger sense of community by fostering householders' reliance on their peers in the community, instead of on the fire service (Prior and Paton, 2008).

3.5 Empower communities

Much of the literature emphasises the importance of empowering people to be more self-reliant through increasing their skills and understanding of risk and safety (Anthony-Harvey-Beavis *et al.*, 2006; Mitchell *et al.*, 2010). A key focus of much literature on risk communication is the need for any initiatives to be interactive in order to build capability, actively engage participants, and encourage them to be self-reliant.

The Fire Ready Victoria programme, for example, emphasises the need for a strong sense of ownership in engagement programmes by providing quality information, community involvement in decision making and the development of skills, resources and community networks. The programme aims to develop a culture of shared responsibility for community safety and ensure that 'self-reliant Victorian communities are empowered with the knowledge, skills and resources needed to manage their own fire safety' (County Fire Authority, 2003, 3).

In its *Living with Fire* programme, the County Fire Authority (2008) places a strong emphasis on fostering well-connected communities, building skills and knowledge and offering opportunities for involvement in decision-making. According to the County Fire Authority (2008, 11):

It is well recognised that participatory involvement is essential in supporting attitudinal and behavioural change in adults and is therefore a vital tool in building community resilience.

Similarly, Boura (1998, 8) highlights the importance of empowering people to develop their own strategies and states, 'the only bushfire strategies that people will understand, trust and actually implement during a major fire are those they develop themselves'.

Bringing people together can also encourage and empower them to take responsibility for fire safety as they realise others are not as prepared as they imagined and they therefore need to take 'action'. According to Paton (2009, 6) 'people commonly over-estimate the contribution of others (including agencies such as fire authorities) and underestimate the need for their own preparation'. Paton (2009, 5) talks further on this issue:

People commonly face bushfire hazard with unrealistic optimism. Preparedness is over estimated and the hazard (or likelihood of it occurring to the individual) is underestimated. People tend to see other people at more risk than them ... This is one reason why community participation is important. Participation can confront and threaten the belief that 'other people are less well prepared than you are.

Thus, there is a significant theme throughout the literature about the importance of empowering people through bringing people together to discuss fire issues. Paton (2009, 5) also highlights the importance of the social influence of others:

The degree to which people discuss bushfire issues with others on a regular basis is a significant predictor of whether people will prepare for bushfires ... peoples' perceptions of risk and how they might mitigate it, is influenced by information from others who share their interests and values. People must therefore have access to social contexts within which discourse about bushfire issues can take place, and is likely to take place.

In order to encourage communities to take ownership of their fire safety and build capability and self-reliance, much of the literature highlights the importance of fire agency representatives taking on a facilitative role rather than being the 'font of all knowledge' (Boura, 1998, 7).

In their work on community-based civil defence emergency planning in Northland, Mitchell *et al.* (2010) emphasised the need for communities to take ownership of the process and for agency staff to take on the role of enablers and facilitators. The authors also emphasised that each process needs to be flexible as communities will have different characteristics and priorities.

Paton (2006, 68) also advocates for this type of approach:

Emergency management agencies should act as consultants to communities (e.g. facilitators, resource providers, change agents, coordinators) rather than directing the change process in a top down manner. Facilitating community-led discussion of issues, community leadership and the provision of information into these community fora, risk management strategies are more likely to embed the processes by which adaptive capacity is developed into the fabric of society.

Thus, in order to empower and build the capability of communities to work together to enhance community resilience, it is important to facilitate the involvement of those potentially affected by fire. This can be achieved through using open, participatory approaches.

3.6 Target communication

Within the broader framework of grass roots community engagement, research and literature also highlight the need to target information in a meaningful way to the particular context of the individual. The County Fire Authority (2003), for example, emphasises the importance of analysing the community in context to identify needs and develop strategies that reflect community diversity and target the varying needs of individuals. Sweeney Research (2009, 10-13), in their research for the County Fire Authority based on community and agency focus groups, highlighted the importance of using targeted channels to reach the different types of communities and individuals and identified the following typology for bushfire preparedness:

Informed enthusiasts – a minority, they are committed, engaged and prepared, they tend to have some fire experience, they are moderate in their views but open to receiving advice from others, they include men and women of different ages, but tend to be older;

Old fashioned cynics – they defer to no one, believing primarily in their own skill and judgement as something of a birth right having been farmers/country people for many generations. Most have some experience of fire or burning off. They are highly parochial and suspicious. They are almost always men. They will invariably see education as being for others, not for them. They are a difficult audience to reach;

Inert – these seem to be the majority. They are generally underprepared but receptive to doing more. They welcome agencies providing more information and may attend meetings but often fail to follow this up with any sort of action and preparedness; and

Passively reliant – they are the most naive and tend not to have a plan of any kind, they have a laissez-faire approach and are characterised by a belief that somebody else should do something to protect them.

According to Sweeney Research (2009), often *informed enthusiasts* are civic minded and may more frequently volunteer for community consultation and engagement processes. Many traditional processes of engagement (e.g. community meetings or cumbersome fire plans) can therefore capture these groups but they are often ‘preaching to the converted’.

This typology provides a useful framework for considering the best approaches for actively targeting other, often vulnerable and at-risk, community groups and individuals. Often vulnerable groups, who are not *informed enthusiasts*, are hardest hit by disasters like fire (Bones, 2005). 'According to Sweeney Research (2009, 39) 'most *passively reliant* and the *inerts* are not proactive in educating themselves and they operate under the assumption that if it is something they really need to know, someone else will tell them'.

Many of the current resources and methods (e.g. community meetings and substantial booklets) available may suit the needs of the *informed enthusiasts*. The *passively reliant* and *inerts* may not respond to these information-heavy approaches, which may only be 'preaching to the converted. Sweeney Research (2009, 37) elaborates on this concern:

One of the biggest problems with the current information materials is that they are too text-heavy, which overwhelms people and many feel that they would be unlikely to get round to reading it, or they easily 'switch off' when they do read it. Even people who had the best intentions to read the material admitted they may put it aside and never return to it.

Instead, a number of authors (Mitchell *et al*, 2010; Sweeney Research 2009) stress the need to target information in a meaningful way and advocate for clear, concise action-focused material such as checklists and bullet-pointed information.

Grassroots hands-on engagement, therefore, provides the opportunity to adopt targeted approaches in order to reach different groups in the typology, particularly vulnerable, at-risk members of the community.

4. Case studies

Tools trialled

Farmers' discussion group: Participants included landowners within a 1-2 kilometre radius of the Awara Wetlands who meet on a regular basis to share information and best practice on a range of topics. The workshop focused on effective and safe use of fire as a land management tool and resulted in the development and dissemination of place-based best practice guidelines.

Rural Fire Authority presentation at a community event: The workshop, organised by the Department of Conservation, focused on the role of fire in wetland ecology. It provided an opportunity to raise issues around fire safety and build social capital by encouraging partnerships between communities and agencies and enhancing social networks.

Key stakeholder group as agent of change: The tool involved working with Rural Women New Zealand at their sub-regional meeting to disseminate fire safety messages relating to appropriate planning around the use of fire as a land management tool.

Rural Fire Authority presentation at Rural Women New Zealand's Southern Conference: The Rural Fire Authority presented findings from the research as a whole and facilitated discussion on fire safety on rural properties and in rural homes.

Application of a household fire risk assessment tool to families and older residents: The questionnaire was distributed to families with children at Otautau primary school. A follow-up report was sent to the school for feeding back to families. It was also distributed to older people in the community through the Otautau senior citizens group. Results from the household assessment were used by the New Zealand Fire Service as a basis for a subsequent meeting with the group to both establish a working relationship and discuss fire safety issues. The tool was also given to rural women, who were asked to report back about its usefulness, the lessons from applying the tool, and the actions they expected to take to improve their fire safety.

Fire safety demonstration at a community event: The New Zealand Fire Service provided a visual presence (i.e., fire engine and equipment), a stove-top fire demonstration and some related fire safety messages at Otautau Primary School pet day, which involved all the children and their families.

Street-based planning/mapping process: This event was held in a 'high risk' street in Otatara and focused on fire safety issues; map hazards (e.g. to access); identify and map fire-response infrastructure; and identify any actions that need to be taken. Issues for discussion included: defensible spaces, home fire-safety, causing fires, reducing hazards, and developing appropriate infrastructure.

School-based community event: This event aimed to build community engagement and resilience that tied in with the school's outdoor education initiative. The Rural Fire Authority and the New Zealand Fire Service participated in activities around an overnight camping experience with year 5 pupils and their parents. Activities included awareness-raising and skills development.

4.1 Introduction

This research was structured around three case studies: the township of Otautau, the residential and life style block area of Otatara, and the rural area adjacent to the Awarua Wetlands. As described in the Section 2: Methodology, and in line with the principles of action research, the selection of these case studies was a collaborative process involving representatives of the Southern Rural Fire Authority, the New Zealand Fire Service Southland, the Southland District Council, the Department of Conservation, Environment Southland, and Venture Southland.

In a workshop setting, representatives of these organisations were asked to work through a process to select case study areas that was informed by (i) regional and local social and economic trends, (ii) current and possible future issues and concerns that potentially add to

fire risk and/or undermine community engagement processes and fire safety, and (iii) the responsibilities and needs of the different organisations.

In order to provide a wider context for the research, participants identified the following community issues and concerns in Southland that potentially added to fire risk and/or undermined community engagement processes:

- the changing nature of communities, especially as a consequence of the dairying boom, the arrival of new migrants, increasing urban-based employment, urban drift and the ageing of the New Zealand population as a whole;
- the prevalence of absentee landowners;
- transient populations and diminishing 'community spirit';
- higher levels of fire risk in some areas of the region;
- potential pressure for economic development based on natural resources (e.g., mining);
- social, economic and environmental effects of climate change (including changes to fire risk); and
- increasing difficulties recruiting volunteer fire fighters into the future.

Given the complexity of social and environmental issues that can add to fire risk, and the varied and diverse nature of communities in Southland, workshop participants developed a list of criteria for selecting case study communities. The selection criteria developed by the stakeholders were intended to ensure that the case study communities included a range of social, economic and demographic characteristics as well as different geographical settings (i.e., isolated from major urban centres, close to urban centres, etc). The criteria was not weighted or prioritised.

The criteria include the following:

- regional and local social and demographic trends (i.e., degree of change);
- degree of community isolation;
- patterns of land/resource use;
- hazard and risk prevalence;
- conservation value (e.g. of vegetation areas);
- commercial value (e.g., forestry, farming, tourism, etc);
- fire event history;
- chance of research (engagement) success;
- links with current engagement processes (e.g., by local government, Department of Conservation, etc); and
- relevance of findings to other communities (usability of research findings in other regions).

After discussion on possible case study areas that met these criteria (in the workshop and following the workshop) the three case study areas were agreed on. They were selected, as far as possible, to represent a diversity of demographic, social and economic characteristics, as well as a range of fire risk factors (including for structure and vegetation fires) and geographical settings. Below are brief descriptions of the case study areas. More detailed information is contained in related appendices and three separate case study reports.

At the workshop, participants were also asked to identify the features of self-reliant communities: that is, communities taking responsibility for their fire safety. Communities perceived as self-reliant are those that work collectively to manage risk and hazards, understand fire science and safe practices, and have knowledge of permit requirements. The purpose of this research is, therefore, to identify how fire authorities can work with communities to encourage and maintain these characteristics, which will be further discussed with reference to each case study.

These initial discussions with key Southland agencies indicated there was widespread recognition of the importance of effective community engagement to develop appropriate policies and actions and to encourage behaviour changes. At the same time, these agencies were aware of, and concerned about, the increasing difficulty they faced establishing such engagement given community changes and people's increasingly busy lives.

The **Otautau** township was selected because of its lower socio-economic profile, higher than average incidence of structure (house) fires, older population, and changing economic base. It was also selected because it was seen to share similar characteristics to other small rural settlements throughout Southland and New Zealand as a whole. It is a small rural centre in Southland about 45 kilometres west of Invercargill. The population of the township has hovered around 800 since 1991. A local spokesperson estimates that there are currently around 1,200 households in the wider Otautau area, of which 300 are in the township. This is consistent with Statistics New Zealand's census results that showed 285 households in the township in 2006⁸.

Dairy farming is increasingly supporting the local economy, although timber and sheep farming are also important. Forestry and the related transport industry are also major contributors to the local economy. The main sources of employment include: Invercargill, where a number of people commute daily, dairy farms in the area, the local trucking company, the freezing works, forestry and the local primary school.

Over the last 15-20 years, the community has changed, particularly in its composition. However, community spokespeople identified a core community of people with long-term links to the area (including those with multi-generational links). As with New Zealand as a whole, the Otautau community is aging, but at a greater rate than for Southland overall and for New Zealand as a whole. One consequence of this is a greater proportion of single person households (particularly older women). The community is also becoming more ethnically diverse, mainly due to the transition to dairying and growth in the numbers of new immigrant farm-workers, especially from the Philippines and Eastern Europe. Although the community is becoming more skilled, skill levels as defined through educational attainment, lags behind both Southland and New Zealand overall. Otautau residents are considerably less likely to have school or post-school qualifications.

The lower incomes of Otautau can, at least partially, be attributed to the lower skill base and a predominance of labourers in the workforce. Where people work reflects Otautau's rural location. At the last census, a significant proportion of the working population were agricultural and forestry labourers.

The **Awarua Wetlands** and adjacent rural area were selected because of their high conservation, cultural and recreational values, its close proximity to Invercargill and its considerable fire risk. Within the area there is a mix of dairy and sheep and beef farming (with rapid growth in dairying). The area does not have a significant settlement or township to give it a community focus although Invercargill is only 20 km north of the area. Awarua Wetlands⁹, which is recognised as a wetland of international significance, includes approximately 19,000 hectares of waterways and peat land and is an important habitat for birds, native fish and trout. The area is also an important recreational area for Southland as a whole, with activities including white baiting, fishing, waterfowl hunting, and wildlife observation.

⁸ <http://www.stats.govt.nz/census.aspx> (viewed 25 April 2011).

⁹ See the Department of Conservation website for further information: <http://www.doc.govt.nz/conservation/land-and-freshwater/wetlands/wetlands-by-region/southland/awarua-wetlands/> (Viewed 25 April 2011).

The wetlands area poses significant fire risk, because of its vegetation and peat composition, recreational use and the use of fire as a land management tool in the adjacent farming area. Two recent fires, in 2005 and 2009, burned significant tracts of wetland and, in the latter fire, private pine plantation. The most recent fire was estimated to cost at least half a million dollars to suppress.

The **Otatara** area is characterised as an urban/rural interface. Community characteristics include a rapidly growing population; a relatively high socio-economic status; and a mix of residential housing, life-style blocks, economic farming units, and residential bush sections. In the latter bush area, fire risk factors are exacerbated by a lack of reticulated water supply, a lack of defensible spaces around houses and, in a number of cases, poor access for fire fighting equipment given narrow driveways and vegetation barriers. The use of fire in land management (e.g., to burn rubbish) is also common.

The area also has high conservation value, with areas within the Otatara sub-area identified as containing "significant indigenous vegetation and habitats of indigenous fauna".

4.2 Community needs

A scoping of community needs was carried out in each of the case study areas to identify: the demographic, social and economic composition of the community (through a review of documents and statistics); and the issues and concerns that potentially impact on agency engagement with each community (through consultation with the community and key agencies).

Community consultation focused on collecting information about residents' perceptions of:

- the potential fire risk in their area;
- gaps in their knowledge around fire safety and preparedness;
- the high priority groups to target in the community;
- the most effective ways to engage with the community around fire safety (based on participants' previous experiences with community engagement); and
- the groups and networks in the area with which to work.

In order to engage communities in discussions on fire safety, it was important to target existing groups and informal community networks and get them to talk about fire safety as part of their usual brief. The stakeholders, community groups and individuals, the researchers consulted with during the scoping exercise included:

- in the Awarua Wetlands and Otatara areas, environmental groups focused on protecting the conservation and recreational values (Awarua Wetlands Advisory Group, Awarua Landcare Group, Otatara Landcare Group);
- in the Awarua Wetlands area individual farmers (sheep, beef and dairy) and other landowners in the adjacent area;
- in Otautau, representatives of the older Otautau population;
- in Otautau and Otatara, school representatives;
- in Otatara and Awarua areas, formal and informal residents' groups.

The researchers also consulted with other agencies who had previously worked with these communities in order to reflect on the most effective methods of engagement and what had worked or not worked as a forerunner to identifying preferred forms of engagement to trial. In each of the case study areas, the researchers talked with private and public organisations with planning, environmental protection, fire safety, and economic and social development and wellbeing responsibilities. These included the Rural Fire Authority, the New Zealand Fire Service, the Department of Conservation, Environment Southland, Southland District Council, Invercargill City Council, Fonterra, and Rural Women New Zealand.

Scoping activities, as with all other research activities, were designed to provide opportunities for the Rural Fire Authority and the New Zealand Fire Service to establish and build working relationships with key groups in the three case study areas. Because the ongoing utility of the research findings are dependent on the quality of community/agency relationships, it was important to maximise opportunities for this to happen as part of the research process.

The collective issues and concerns of relevance to fire safety, as raised by stakeholders in the three case study areas, are summarised below. They included issues around:

- perceptions of fire risk;
- use of fire in land management;
- a need to increase fire skills and knowledge of regulatory framework;
- diminishing community connectivity; and
- target groups.

4.2.1 Perceptions of fire risk

In the Otautau area, views were mixed about fire risk. The New Zealand Fire Service was concerned about community characteristics that signal greater fire risk than in some other rural communities in the area. In particular, it noted the lower socio-economic profile of the community, which is generally accepted as a high risk factor¹⁰. Other stakeholders talked about the size of the older population in the township, and the growing proportion of new immigrant farm-workers and their families who may not be aware of fire safety and fire response practices in New Zealand.

Together, fire incident reporting and research have identified a number of risk behaviours linked to personal and household socio-economic status that have relevance to Otautau. These include unattended cooking, careless smoking, burning of candles and other naked flames, and a lack of functioning smoke alarms. Other demographic factors implicated in fire risk include age and ethnicity¹¹. Fire risk, especially from unattended cooking, is exacerbated by drinking and impaired cognitive capacity, including that associated with old age.

Household composition is also linked to fire risk, with fire incidence higher amongst single-parent and crowded households and in those with older people, children and people with disabilities.

In the Awarua Wetlands area, stakeholders generally recognised the significant fire risk that exists in the area, made more evident by the recent fires in the wetlands. Two recent fires, in 2005 and 2009, both the result of burn-offs on nearby private land that went wrong, burning 1322 and 200 hectares of wetlands respectively. The most recent fire was estimated to cost at least half a million dollars to suppress. Stakeholders talked about the risks posed by the combustibility of the vegetation in the wetlands (especially manuka), the high peat composition of the soil and increasing recreational use. Views differed about the extent to which use of fire as a land management tool in the adjacent farming area was a risk factor. However, farmers and other landowners in the area generally accepted that they needed to take special care in their use of fire because of the risk factors and the damage that fire has demonstratively caused to the wetlands.

The Department of Conservation called for tighter restrictions on landowners' use of fire following the 2009 event. The Department also recently published research (Johnson, 2005)

¹⁰ For further information, see Warren and Fraser (2009).

¹¹ Fire risk associated with ethnicity, however, may be explained by socio-economic factors.

on the negative impact of fire on wetlands. It found that fire reduces the diversity of native woody species, with manuka becoming more invasive and abundant after each fire event. Australian research further emphasises the risk that fire poses to areas like the Awarua Wetlands, for instance, finding that there is an increase in the probability of a fire occurring in environments where fire has occurred in the past (NRFA, 2004).

Stakeholders were also very aware of the added fire risk that local peat soils pose to the wetlands and the surrounding area given its combustibility. In the wetland, for instance, the peat soil reaches up to two metres deep. Together, this peat and the underground tree-root systems make it almost impossible to put out subterranean hotspots. Stakeholders talked about fires they knew of, in addition to the well-publicised wetlands fires, which had burned for weeks or months. At the time of the research the Pike River coal mine disaster was on people's minds. They likened the risk from peat fuelled fires to the prolonged burning of the underground fire in the mine.

In Otatara, local residents talked about a range of hazards and risks in their area and the need to mitigate them. Their close proximity to Invercargill City gave some people a false sense of security. Some simply assumed that fire fighters would always be able to attend fires and others, living on bush sections with high vegetation fuel loadings, assumed that their sections were not at risk as the native vegetation on their properties was unlikely to burn.

However, some Otatara residents were also interested in what could be done to ensure that fire fighters would be able to respond to a fire. In some areas, particularly where there is a significant bush covering, people were concerned about fire fighters' access to properties being seriously hampered by narrow driveways and vegetation. In addition, they were concerned because the area does not have a reticulated water supply and tank water is not always available, because tanks are not accessible, have the wrong couplings or have insufficient water levels.

4.2.2 Use of fire as a land management tool

Most farmers and landowners in the Awarua Wetlands case study area defended their need to use fire in their land management. However, they acknowledged the risks associated with fire use if carelessly managed. Identified uses for fire included land clearing, rubbish disposal, sheep disposal (especially in the wake of recent and harsh weather events), tidying up (e.g., bog wood), disposing of tree cutting and topping material, and clearing gorse.

A smaller group of stakeholders, including iwi representatives, were less supportive of the use of fire in land management. They stressed the need to encourage wider adoption of alternative ways to both clear scrub and dispose of rubbish. For instance, some talked about more ecologically beneficial ways to clear gorse. Mulching, in particular, was suggested as an alternative land management practice that both reduced the risk of unintended fire and decreased ecological damage. They saw fire as an indiscriminate tool that reduced biodiversity.

Land owners' awareness of the risks associated with their use of fire was heightened by publicity around the case of a Southland farmer who was taken to Court and fined after a fire burnt conservation land in the Awarua Wetland¹². Time and again landowners referred to the case and their fear of possible liability for suppression and damage costs in the future. A number of stakeholders referred to this threat as a 'stick' that would change people's

¹² A farmer was fined \$1200 after fire destroyed conservation land, as reported in the *Southland Times*, 24 August 2010.

behaviour more than any awareness-raising or education strategies. Discussions about what their public liability insurance would or would not cover were also common.

4.2.3 A need to increase fire skills and knowledge of the regulatory framework

A number of landowners in the Awarua Wetlands area who used fire as a land management tool (and virtually all reported doing so), admitted that their fire skills could do with improving. They talked about a need for skills around lighting an effective fire and better understanding of what to do to prevent fire getting out of control. They also wanted to better understand how to respond if a fire does get out of control. Local landowners' knowledge of local fire regulations was also patchy.

As one farmer explained, farmers are often reluctant to own up to any lack of skills and experience amongst their peers. A number of landowners new to Southland also talked about their lack of understanding of local conditions, including peat soils, vegetation types and weather and wind patterns. For instance, some referred to the windiness of Southland and the changeability of the weather, especially wind direction. They were unsure about how to light a safe fire in these conditions. They all admitted their skills could do with honing but that it was not clear how that could be done without 'losing face' amongst their more experienced peers. These landowners generally expressed an interest in improving their fire use practice. They supported any opportunity to get together and up-skill. Initial discussions with farmers evolved into more specific talks about the utility to local farmers of developing best practice or a checklist of things to consider before using fire in the vulnerable area adjacent to the wetlands.

Local landowners' knowledge of local fire regulations was patchy. So was their interest in them. Some professed ignorance of the regulations, some knew them well, some wanted more information, and a minority saw them as potentially limiting their ability to manage their land productivity and profitability. A few were fearful that authorities like the Rural Fire Authority were keen to ban fire use entirely. This patchy understanding of the regulations is probably not peculiar to this area. It possibly reflects a wider lack of understanding of fire regulations and fire danger communications. A recent pilot study (Langer and Chamberlain, 2007) suggested, amongst other things, that the public are confused about fire seasons, fire restrictions and permits and what and when outdoor fire activities require permits.

4.2.4 Diminishing community connectivity

In Otautau, stakeholders talked about the loss of features that, in the past, held the community together and gave it strength and self-reliance. One person referred to the change as loss of 'social glue'. People talked about a loss of community networks made up of strong family links that had built up over generations. Residents now tend to be more inward-focused, with most attention given to themselves and their nuclear families. One reason for this loss, it was suggested, is the dispersal of families. As well as young people leaving for tertiary education or employment, others are also leaving for work and other reasons.

The loss of community connectivity was also attributed to a growing urban focus. Those who had lived in the township or the local area for most of their lives talked about a past when people seldom went to town (say monthly) and, therefore, had more time for community activities and were more reliant on local services, amenities and people. The community as a whole was more self-reliant. However, for a number of reasons, people now look beyond the community to meet their economic and social needs. People often work in Invercargill, both because there are more work opportunities and because of local job losses. One person referred to the closure of the mill around 12 months before the research. However, she also pointed out that its opening did not necessarily create the local jobs expected as

most employees travelled from elsewhere. This mobility of workers is one reflection of a general increase in transport options, which has resulted in rural people being busier and less reliant on local community activities and resources. So, as well as work in the city, local people also have city friends, do their shopping in the city and engage in leisure and recreational activities before they come home. The loss of community amenities, particularly three banks, the post office and the butchery has both exacerbated this trend and, maybe, provided further impetus for its continuation.

Discussions with Otatara community members, as part of the initial scoping of community needs, highlighted some residents' sense of detachment from the community, particularly those without children at the school. The school acts as an important gathering point in the community. Interaction amongst residents was hampered by factors such as people commuting to Invercargill for work, the large size of some properties, and the isolation of other properties surrounded by bush.

4.2.5 Target groups

The target groups identified in each of the three case study areas reflected their different community characteristics and needs.

In the Awarua Wetlands area, the identified target groups reflected the land use and settlement patterns in the area around the wetlands. Stakeholders focused on farmers when thinking about groups that the Rural Fire Authority and other agencies might want to work with to reduce fire risk. They talked about some absentee landowners, those who might light fires without due care and farmers in general, including sheep farmers, share-milkers, dairy farmers and dairy farm managers. Stakeholders concluded that absentee landowners and careless users of fire would be the hardest to reach, the latter group, for instance, less likely to come to any organised meetings and other events.

In Otautau, people talked about two broad sets of people when considering fire risk – those who live in the town and those who live in the rural hinterland. In the town, the two groups that stakeholders focused on were families with young children and older people, many of whom live alone. In the rural hinterland, stakeholders were concerned about new immigrant farm-workers on dairy farms. They considered that these rural workers were exposed to a number of risk factors including living in temporary or substandard housing and working on farms where farming practices are different from those in their countries of origin (e.g., in the use of fire as a land management tool). They also talked about their poor understanding of fire safe behaviours (e.g. what to do in the case of a fire); their unfamiliarity with New Zealand cooking and heating technologies and practices; in some situations, their exposure to sub-standard and/or poor quality housing; and social isolation given their hours of work, lack of transport and language barriers.

The number of new immigrant workers in the Otautau area is not known. Even numbers for the whole of Southland are estimates only. It is estimated¹³ that, for Southland overall, the number of workers from the Philippines (the largest group) and their families is around 3,000-4,000 (probably around 1,500 households). The numbers are expected to increase further given an expected continuation of dairy conversions.

In Otatara, key target groups identified as high priority by residents were: people living in the bush sections; and new Otatara residents who have come from a (sub)urban setting.

¹³ Personal communication Settlement Support, Venture Southland. These estimates are based on the Agricultural ITO's reporting of 1,500 Philippine farm-workers seeking basic English qualifications. Most of these workers, predominantly young men, came three years ago and are now bringing their families.

Evidence here and overseas points to the importance of targeting existing groups and informal community networks. For instance, farming extension groups provide valuable access to farming communities. Members often have good historical knowledge of previous fires and good fire management practices. In the Awarua area, the farmers' discussion group was identified as one of the most useful groups with which to work. Senior citizens groups provide access to older community members. Schools provide access to families with young children. In all case studies, regular events and activities provided valuable starting points for developing fire safety community engagement processes.

4.3 Things considered in selecting tools to trial

In all the case study areas, discussion with local community members and other stakeholders showed the need to focus on target groups' acceptance of risk in any community engagement activities before other fire safety messages could be effectively disseminated and acted on. In addition to encouraging acceptance of risk, the researchers, in consultation with local stakeholders and the New Zealand Fire Service, explored interest in engagement processes that would:

- establish and strengthen relationships between the target groups and the New Zealand Fire Service;
- provide opportunities for people to get together socially, to encourage partnerships between communities and agencies and enhance social networks; and
- encourage people to identify actions they could take to increase their fire safety.

In cases where there already appeared to be some acceptance of risk (as was the case in the Awarua Wetlands area and, to some extent, Otatara), the researchers, in consultation with local stakeholders and the Rural Fire Authority, explored interest in processes that would:

- increase people's awareness of conservation values and the damage that fire causes;
- provide opportunity for people to enhance their fire science skills and abilities (e.g., farmers in the Awarua Wetlands area and children and their families in Otatara).

There are a number of broad principles of effective engagement with rural communities. These interrelated principles, discussed below, also guided the selection and development of tools to be trialled in all the case study areas. These are discussed in relation to the needs identified above.

Focus on acceptance of risk: Before people will change their fire safety behaviour, they must first understand and accept that there is a potential risk. Amongst the target groups in Otautau, it seemed that awareness of fire risk was patchy. A spokesperson for the senior citizens' group, for instance, said that one of the difficulties she was facing in getting people to come along to a meeting was their lack of interest in fire safety as a topic. Similarly, community commentators suggested that families tend to acknowledge the risk only after a fire event. For these reasons, the tools to trial needed to have a strong focus on awareness-raising. One person, in commenting on engagement processes that have worked in the past, reported that shock tactics seemed to work in getting people to recognise the risk and change their behaviour. This is consistent with New Zealand Fire Service experience that providing 'open-home' visiting opportunities to burnt-out houses worked as a tool to frighten people into preparedness.

With acceptance of risk less evident in Otautau, discussions with local community members and other stakeholders showed a need to focus on target groups' acceptance of risk as core to the engagement processes trialled. This was a necessary prerequisite to any fire safety messages being effectively disseminated and acted on. In addition to encouraging acceptance of risk, the researchers, in consultation with local stakeholders and the New

Zealand Fire Service, explored interest in processes that would provide activities to encourage people to identify actions they could take to increase their fire safety.

Conversely, in the Awarua area, landowners were very aware of fire risk. Their heightened awareness could be attributed to the two recent wetlands fires, coupled with the court finding that a landowner was legally liable for the costs of fire suppression. This general awareness of risk provided a good foundation for engaging with landowners about fire safety matters without a need for an undue focus on awareness-raising activities.

In Otatara, perceptions of risk varied. Some people were overly confident both about their lack of risk and about fire fighters ability to respond in the event of a fire. Others recognised risk factors such as bush density and lack of accessibility for fire fighters.

Build relationships: Research and experience show that community trust is an essential prerequisite for both the messenger and its fire safety messages to be trusted and acted on. There was evidence that there would be value in fire safety agencies devoting time and resources to building relationships with the target groups identified and/or those who could represent their interests.

In the Awarua Wetlands area, the misunderstandings that landowners seemed to have about the Rural Fire Authority's and other agencies' attitudes to the use of fire in land management suggested that communication links could be strengthened. There was evidence that there would be value in agencies devoting time and resources to building relationships with these landowners.

In Otautau, the initial lack of interest in fire safety by the senior citizens group, despite their increasing vulnerability to fire, suggested that communication links between its members and the New Zealand Fire Service could be usefully strengthened.

In Otatara, the significant fire risk in some areas, coupled with some people's over-confidence in the capacity of fire fighters to respond to fires, signalled the need for more face-to-face communication between fire agencies and communities for both awareness-raising and building self-reliance.

Use a 'bottom up' community approach: It is important for fire agencies to target existing groups and informal community networks in any engagement processes to ensure they can access grassroots community. It is also important to tap into existing networks and activities as it is unlikely that people will come together in new groups or around new activities that focus solely on fire safety. Even in an area like Awarua, where fire risk is recognised, it is generally not a priority concern. In Otautau, a spokesperson for older residents indicated that people do not see fire safety as a priority concern.

In Awarua, agency stakeholders identified three existing community activities and events that could be expanded to include a focus on fire safety. These included existing farmer discussion groups, the Department of Conservation's community wetlands information evening, and Rural Women New Zealand's sub-regional and regional meetings.

Three grassroots access points were identified in Otautau, through suggestions made by agency stakeholders. These included the school, the senior citizens group and farm managers and landowners. At the same time, agencies identified existing activities and events these groups were involved in that could be expanded on to include fire safety components. These included the senior citizens' bi-monthly 'get-togethers' and the annual school pet day. By linking in with existing community events and activities, the researchers could avoid planning events that clashed with other community events. As discussed above, people's lives are busier and their out-of-town commitments are greater.

In Otatara, the initial scoping of community needs identified the school as a key focal point in the community. Thus, it was important for the researchers and fire agencies to work with the school as part of a 'bottom-up' approach.

Foster well-connected communities: An important principle of community engagement is to encourage social interaction to build a 'sense of community'. This is especially important where there is diminishing community connection or social capital, as is a concern of people in Otautau. One of the changes identified by local stakeholders is the loss of community connectedness as people's lives become busier and there is more of an urban focus in people's working and recreational lives. One of the problems in developing community engagement processes for the Awarua area is the lack of a settlement of any size that can act as a hub for community engagement processes. It is a farming and recreational area, supported by few community amenities. A key finding from the scoping of community needs in Otatara was that people in the community often did not see their neighbours (as people were busy and often commuted to work in Invercargill) and did not feel connected to the community unless they had children at the school. It was therefore important to create opportunities for people to come together and meet face-to-face.

Given the importance of well-connectedness to community self-reliance, in all three case study areas it was important to ensure that any tools trialled would help to create a 'sense of community' through providing opportunities for social interaction and for landowners and agencies to meet face-to-face.

Empower communities: This research is about how fire safety agencies can better engage with rural communities to encourage them to be more self-reliant and take more ownership of fire safety. Self-reliant communities (i.e., those that are organised, resourced, well informed, proactive and motivated) are better prepared to respond appropriately to fire risk and fire events. Communities are empowered to become more self-reliant through their better understanding of risk and safety and through gaining more skills. Providing engagement processes that facilitate incorporation of local understanding and knowledge into community actions is one important aspect of encouraging community ownership of fire safety.

A much anticipated annual school event like pet day provides one of few opportunities for a cross section of a community to meet together. Typically, in a rural centre like Otautau, the event is multi-generational and both mothers and fathers come along, as well as grandparents and siblings. Stakeholders, including those involved in the school, saw value in taking advantage of an event that brings children and their families together to both raise their awareness of fire risk and show them ways to respond more appropriately in the event of a fire.

A key focus of the Otatara case study was to look for opportunities to build skills and knowledge and empower people through bringing them together to discuss fire safety. In particular, community members saw value in up-skilling children and their families in the use of fire for camp cooking. It was seen as important to ensure that fire safety agencies took on a facilitative role, rather than a role as the 'font of all knowledge' (Boura, 1998, 7).

Some landowners in the Awarua area indicated their wish to improve their fire skills through a process of information sharing with their peers and fire safety experts. They wanted an opportunity to pool their knowledge as a way to develop some principles of best practice for their own area and circumstances. It was important that any tools trialled with landowners provided tangible and useful outputs (e.g., a checklist for planning and managing fire use) that would empower them to take more responsibility for their own fire safety.

Target communication: Effective communication needs to reflect the diversity of communities and the different needs of individuals. The tools to be trialled in the Awarua area needed to target the stakeholder groups identified, including landowners who farmed in the area adjacent to the wetlands, groups and individuals with a concern for the protection of the wetlands and their recreational and conservation values, and women in rural areas. Initial consultation with Otatara residents showed a need for targeted communication. People tended not to read pamphlets or information sent to them in the post. Large public meetings only attracted the minority who are already committed, engaged and prepared. People favoured engagement approaches that were more social or fun in nature. In Otautau, engagement approaches needed to target older residents and families with young children. The resources of both this research and the fire agencies were such that including new immigrant farm-workers as a target group in the Otautau case study was not possible.

4.4 Tools trialled in the case study and lessons learned

The following sections provide an overview of the tools trialled in each case study. Further detailed information on the case studies and these tools (including the advantages of each tool and the process for organising and implementing the tools) can be found in the accompanying individual case study reports and toolbox report: *A toolbox for building resilience: engaging with rural communities about fire safety*.

4.4.1 Otautau

Two target groups and two community events/activities were identified as ideal avenues through which to develop and trial engagement tools that would meet the needs of the Otautau community and be consistent with the principles of good engagement. The target groups included families with young children (that is children of primary school age and younger) and older residents. Events and activities included the annual school pet day that attracted a large community turnout (i.e., mothers, fathers, siblings, grandparents, etc.) and bi-monthly meetings of the Otautau senior citizens group. Key contacts for these groups were identified during the scoping of community needs process. These contacts were asked about their interest in being involved in the trials. They were also asked for ideas about engagement processes that might work with their groups and organisations. The tools identified, developed and trialled included:

- application of a household fire risk assessment tool to families with children at Otautau primary school and follow-up with the community to distribute results;
- application of a household fire risk assessment tool to the senior residents, distributed through the Otautau senior citizens group and a follow-up visit by the New Zealand Fire Service to discuss fire safety issues and answer questions;
- a fire safety demonstration and presentation at a community event, the Otautau School pet day.

Application of a household fire risk assessment tool to two target groups: Core to encouraging communities to engage with fire safety agencies is some awareness of fire risk factors and acceptance that it is a community problem. The need to encourage some community ownership of the problem before positive changes can be made is not unique to fire safety. People working in other community and individual safety areas (e.g., road safety¹⁴ in rural areas) also reported the need for some level of community-wide awareness and acknowledgement of risk, and people's part in that risk, before they can develop effective prevention strategies. One approach to raising people's awareness of household fire risk, and the actions they can take, is a self-administered fire safety awareness tool (see Appendix 1). This tool, in the form of a questionnaire, focuses on risk factors relating to the

¹⁴ Personal communication from the New Zealand Transport Agency and Southland District Council.

dwelling and how it is used; household composition and characteristics; risk behaviours; and fire precautions in place.

The school distribution and questionnaire return was planned to coincide with Otautau School pet day to take advantage of planned fire safety activities at this event. The results of the survey were sent to the school shortly afterwards. They are included in Appendix 2. Despite the New Zealand Fire Service providing substantial incentives, in the way of prizes, to encourage families to return the questionnaire, the response was disappointing. On reflection, it would probably be better to distribute such a tool to coincide with school modules that focus on safety. The children could then be encouraged to ensure their parents complete the assessment and take actions taken as part of the module. The lack of response may also indicate that more needs to be done in the community to raise the profile of fire safety and raise families' awareness of their risk.

Distribution to older residents was organised through one of the regular senior citizens' group meetings. A Fire Risk Management Officer representing the fire agencies made a subsequent visit to the group to provide advice and answer any questions. The results of the survey, attached as Appendix 3, provided a starting point for this two-way dialogue, which also provided the basis for on-going engagement. Despite a representative of the older residents saying that the group initially was not that interested in fire safety, their response to the assessment tool was better than expected. Virtually all those who were given the questionnaire completed it, and their responses to questions suggested high levels of preparedness. Further, the group responded very positively to the visit by the Fire Risk Management Officer, even telephoning the researchers to report the success of the event. The fire agencies now have a strong basis upon which to maintain a working relationship with this group and maximise their safety.

Community event - school pet day: A key focus of this research was on how to build community engagement and resilience when there is limited social capital in a community. Key informants noted the diminishing sense of community in Otautau and a decrease in the number of events that bring the community together. The school pet day is a popular school and community event that attracts many parents and grandparents. The school principal suggested that this event would provide the New Zealand Fire Service with an excellent opportunity to meet with the community and communicate fire safety messages in an entertaining way. The local volunteer brigade came with a fire engine and equipment and New Zealand Fire Service staff from Invercargill did a stove-top fire demonstration and related presentation.

4.4.2 Awarua Wetlands

Tools for the Awarua case study were developed around three target groups and three community events/activities. The target groups included individuals and organisations with an interest in the wetlands (protection and/or recreation), landowners who farmed in the area adjacent to the wetlands and rural women in the wider area (including the area adjacent to the wetlands). Events and activities included a Department of Conservation community evening that focused on providing information about the wetlands to landowners and recreational users; monthly meetings held by a local farmers' discussion group; and a sub-regional meeting of Rural Women New Zealand. The tools identified, developed and trialled include:

- a Rural Fire Authority presentation at a community evening organised by the Department of Conservation;
- a farmers' discussion group devoted to fire safety issues;
- a key stakeholder group (Rural Women New Zealand) acting as agents of change; administration of a self-complete household fire safety assessment tool; and a follow up

presentation of research results and discussion of fire safety issues by the rural Fire Authority at a regional Rural Women New Zealand gathering.

Rural Fire Authority presentation at a community evening: The Department of Conservation has held a number of Awarua Wetlands community evenings focused on sharing information and building relationships with landowners and recreational users. To coincide with this research, the Department held a community evening at the local country club focused on the role of fire in wetland ecology. The evening included presentations from the Rural Fire Authority, an insurance company, an ecologist and a weeds scientist. The Rural Fire Authority presentation focused on raising awareness of risk and hazard (through discussing previous fires in the area) and the legal obligations of individuals.

This event aimed to establish contact with local landowners and invite them to join a farmers' discussion group (as outlined below). However, because of its timing (at the beginning of daylight saving) few landowners attended the evening. Nevertheless, the evening provided the Rural Fire Authority with an opportunity to build face-to-face relationships with attending recreationalists and discuss risk, hazard and legal responsibility.

Farmers' discussion group: This discussion group was organised to both build good working relationships between the group and the agencies involved and provide a forum for participants to share their knowledge about what makes an effective and safe fire. Participants included landowners and farm-workers from within a 1-2 kilometre radius of the Awarua Wetlands who belong to a local farmers' discussion group. They agreed to devote one of their meetings to fire safety, with the meeting facilitated by one of the researchers and including representatives from the Rural Fire Authority (to provide technical advice) and Environment Southland. The discussion group focused on effective and safe use of fire as a land management tool. It resulted in the development and dissemination of place-based best practice guidelines that reflected the characteristics and conditions of the local area. These can be found in the separate Awarua case study report. . The design of the discussion group event was informed by the Hotspots Fire Project in New South Wales, which is an education and training programme that brings communities and agency representatives together for information sharing, learning and practical training (Woodroffe, 2010).

The farmers participating in the discussion group provided some useful feedback to inform future Rural Fire Authority engagement with farmers throughout Southland. They could see value in revisiting fire safety issues, as raised in the tool trialled in the case study, on a three-yearly cycle to both act as a refresher and to account for new arrivals in the area. They also recommended that the Authority work with other farmers' discussion groups in Southland; they estimated there was around thirty in total. That would mean that the Authority would need to facilitate around ten farmers' discussion groups per year.

Key stakeholder group as agents of change: Local stakeholders suggested that rural women could be effective messengers and that Rural Women New Zealand could be an effective and pre-existing network through which they could be contacted. The organisation expressed interest in the research and agreed to devote some of their next sub-regional meeting to fire safety. Such an approach is consistent with the principles of effective engagement and with Paton's statement (2009) that working with a pre-existing group 'is likely to be more effective in weaving ... preparedness into the fabric of communities, than holding public meetings specifically to discuss bushfire risk and preparation'. Rural Women New Zealand, at the sub-regional level, also expressed interest in devoting time to fire safety issues at its regional gathering several months later.

Women at the sub-regional meeting briefly discussed their fire experiences, fire safety and fire use in land management and took home two things: a two page summary of fire safety messages relating to appropriate planning around the use of fire as a land management tool and a self-complete household fire safety assessment tool. The fire safety assessment tool

is attached in Appendix 1. They were asked to take the safety messages home and encourage discussion and, as appropriate, the identification and adaption of safer behaviours. Feedback was sought several weeks later by way of emails and phone calls. Their feedback was limited. They indicated a preference for giving feedback at their regional gathering a couple of months hence because fire safety was a topic in which they were all interested.

Their preference for saving the discussion until their regional gathering served as a reminder that face-to-face interaction works best. Significant time was allocated for a representative of the Rural Fire Authority to present some research findings and engage in open discussion about fire safety issues. The presentation provided the Southern Rural Fire Authority with an opportunity to establish a good relationship with Rural Women New Zealand as a basis for on-going interaction. The Authority subsequently reported its interest in maintaining working relationships with rural women, which is now recognised as an important stakeholder group and fire safety messenger.

Household fire safety assessment tool: Members of the regional gathering of Rural Women were also given the household fire risk self-assessment tool to increase their awareness of fire safety issues in their own homes. All the women at the gathering indicated they were very aware of the risks they faced, given their isolated locations. Most said they knew they had to take special care because any household fire was likely to result in total loss given the time any response would take. The Southern Rural Fire Authority has now included the self-complete assessment tool on its website and, through an on-going series of articles on fire safety in a local newspaper *Southern Rural Life*, is encouraging rural people to make use of it.

4.4.3 Otatara

Two target groups and events were identified as ideal avenues through which to develop and trial engagement tools that would meet the needs of the community and be consistent with the principles of effective engagement. The tools identified, developed and trialled were:

- A street based planning process
- A school outdoor education event

Street-based planning process: The researchers recognised the need to create an opportunity for people to come together in an at-risk neighbourhood and meet face-to-face. A small number of residents in a particular 'high risk' street were invited to meet in someone's home one evening to discuss fire safety issues, identify the potential hazards in the neighbourhood and the appropriate infrastructure, and to identify any actions that need to be taken. The evening was also marketed as a chance to get together with (and meet) their neighbours, as this was identified as an attractive and motivating reason to come together.

The experience of the County Fire Authority in Victoria (Boura, 1998) showed that bringing small groups together in a neighbour's lounge provides a more effective learning environment than a larger gathering in a cold uncomfortable public hall. Bringing neighbours together to talk face-to-face also enhances community development and brings other social benefits that together mean people are more likely to work with their neighbours during a fire. It is possible to generate a stronger sense of community by fostering householders' reliance on their neighbours, instead of on fire agencies (Prior and Paton, 2008).

The topics covered in the planning meeting included: awareness-raising, fire safety knowledge and skills, and infrastructure assessment and planning. Many of the specific issues covered in the neighbourhood discussion were taken directly from the National Rural

Fire Authority's (2004) manual *'FireSmart: Protecting our Communities from Interface Fires'*¹⁵ and included:

- Providing defensible spaces around homes (e.g. priority zones);
- Making homes fire-safe;
- Causing fires (e.g. weather, fire seasons, fire behaviour);
- Reducing hazards (e.g. fuels and high risk vegetation); and
- Developing appropriate infrastructure (e.g. access routes, driveways, turnarounds, adequate and accessible water supply, street signs, house numbers).

The meeting drew on the principles of the 'facilitated conversation' approach where participants are lead through a series of open-ended questions that take the group from the surface of a topic to its deeper more personal implications (County Fire Authority, 2009). In order to encourage communities to build skills and knowledge and be self-reliant, the facilitator did not provide answers and a lot of information but instead encouraged participants to come up with their own ideas and take responsibility for their collective actions. Two representatives from the fire agencies attended the planning meeting in order to develop face-to-face relationships with at-risk neighbourhoods and also to answer questions and elaborate on issues when asked.

Unlike many of the more prescriptive community planning processes, the proposed actions and next steps in the process were driven by the participants as part of the process of building community self-reliance. For instance, neighbours proposed a neighbourhood walk to identify hazards, a working bee to remove vegetation, and a follow-up larger meeting where the original participants invite another neighbour to come along.

The social benefits associated with this process can make it more likely that neighbours will choose to stay involved (Boura, 1998). It is inevitable that a group process like this will have a limited life but the neighbourhood networks that develop through this process can be very significant if there is a fire at any stage.

School outdoor education event: During the scoping of community needs component of this case study, community members talked about the lack of opportunity for the community to meet together on a social basis. They also talked about the pivotal part the school plays in the community for those families who still have children there. The researchers, working closely with the school, explored the idea of holding an evening community function in the school to which all the community would be invited. That function could both build community spirit and have a fire safety component. That idea evolved into using the Year 5 camping experience, which was part of the school's outdoor education programme, as an opportunity for the fire agencies to meet with the children and their parents as a basis for ongoing interaction.

The event was planned to achieve several important objectives. First, from the fire agencies' perspective, the aim was to establish contact between the school, the children and their parents in a fun situation as a basis for ongoing interaction. Because the Otatara area is characterised as an urban/rural interface, it was important to involve both the Rural Fire Authority and the New Zealand Fire Service in the school event. During the evening event there were plenty of opportunities for children, their families and school staff to interact with staff from both organisations, including over the meal time.

Second, the event was planned to provide opportunities for the Rural Fire Authority to share information and skills with children and their families. The school was consulted to identify

¹⁵ Other programmes reviewed included: *Firewise Communities* USA www.firewise.org ; *FireSmart* Canada www.partnersinprotection.ab.ca ; *Living with Fire* Victoria, Australia www.dse.vic.gov.au .

what the staff wanted out of the visit. Also important to the planning was how the event could meet wider community needs identified as part of the needs assessment. The school indicated they wanted the information sharing and other interactions to be entertaining as the school camp was designed to be fun as well as informative. So, the Rural Fire Authority's visit needed to complement that fun rather than detract from it. The school indicated that they would like the children (and their parents) to learn how to build an effective and safe camp fire for cooking. This focus would also meet identified community needs. Others in the wider community had also commented about loss of opportunity for such skills to be passed on to children. The Rural Fire Authority agreed to help in this skills transfer, assuming there were no fire restrictions on the day. Children's knowledge and adherence to fire regulations, including a possible fire ban, was seen as part of the learning so that, even if the actual fire lighting could not go ahead, learning would take place. As it turned out, the event could proceed. A list of items was given to children and their parents to bring along in preparation for the lesson (stones, kindling, billies, etc). The school provided marshmallows and the Rural Fire Authority brought along tripods, extra kindling, billie tea and other essentials. Children and their parents, working together in small groups, learned about and discussed safety considerations for fire planning (e.g., wind direction, water for suppression, etc) in a social setting. They also learned how to light and manage an efficient and safe fire, and did so. The event was successful, both for the lessons learned and as a community social event. The school has indicated its wish to include this as part of its annual Year 5 camp, with the support of the Rural Fire Authority.

Third, the event was planned for its awareness-raising. A team from the New Zealand Fire Service came to the event with a trailer on which there was a burned-out room. The children were shown a DVD of the room as it burned to demonstrate how quickly a fire started from a candle could destroy a bedroom. This was followed by a discussion about fire safety in the home. The demonstrations allowed the children and families to see, smell and touch the effects of an unintended household fire. This session was also successful, not least because one member of the New Zealand Fire Service team had a special rapport with the children, which they responded to enthusiastically.

The positive feedback from the school, and its enthusiasm for working with both the New Zealand Fire Service and the Rural Fire Authority, shows the potential for the fire agencies to achieve multiple objectives through building working relationships with schools. This is especially the case in rural communities, where the schools play an important role in community life.

4.5 Reflections on the action research case studies

As part of the research cycle of action and reflection, it is important to critically reflect on the effectiveness of the engagement tools and identify areas for improvement. Based on feedback from participants and agencies, and the researchers own reflections, this section outlines some of the lessons from the action research process. Section 5 elaborates on some these issues in more detail as part of the final discussion and conclusion.

- Face-to-face two-way communication is essential to encourage greater community buy-in and ownership of fire safety issues. It is important to provide opportunities for people to talk and be the 'experts'.
- Any presentation should be kept short (up to 15 minutes) and should only focus on a single priority issue.
- Leaving print based information at events for people to pick up does not work. People need to be able to talk and engage with fire safety organisations face-to-face.
- Any surveys and checklists people are asked to complete need to be short and simple.
- Initial face-to-face meetings can mainly focus on building relationships and talking together, for instance over a cup of tea. In these situations, a focus on videos and print

material can be a distraction as people value the opportunity to simply talk with fire authorities and their peers about fire safety.

- Wherever possible it is important to include a social focus to an event, thereby helping to 'build community'. People may not be motivated to attend a discussion about fire safety, but may be motivated to socialise with their neighbours – particularly if there is also food.
- Focus on working with small number of people at any one time – this allows for greater two-way communication and building of community networks and relationships.
- The action research journey has been a catalyst for improving engagement between agencies in three case study communities. It is important that any action research process also focuses on *how* new tools and new ways of working with communities (developed through the research process) will be adopted by agencies after the research has finished.
- In order to build community self-reliance, it is important for fire agencies to maintain contact and support the initiatives that the community wants to progress.
- There is a need to focus on community acceptance of risk before communities will take more ownership of fire safety and develop more self-reliance.
- It is important to link in with existing community networks and activities as :
 - people's lives are getting busier and they are more likely to engage with fire agencies as part of their usual activities;
 - organisations are able to take advantage of existing motivations for people to come together as fire safety is unlikely to be a motivating interest on its own; and
 - organisations can further strengthen community networks by providing extra incentives for people to come together.

5. Discussion and key findings

The following principles of effective community engagement outlined in Section 3 have provided a framework for developing, trialling and reviewing the engagement tools:

- focus on acceptance of risk;
- build relationships;
- use a 'bottom-up' community approach;
- foster well-connected communities;
- empower communities; and
- target communication

Through trialling and evaluating the tools, the researchers have also identified the following lessons that further expand on these principles. These are also essential to any efforts to build resilience and self-reliance in rural communities. These lessons are discussed in more detail below. They include the following:

- take account of changes in rural communities;
- take advantage of social pressure;
- build strong communities;
- take advantage of existing community networks and events;
- take advantage of fire events;
- ensure appropriate resourcing;
- ensure continuity in engagement activities; and
- build community trust.

5.1 Take account of changes in rural communities

Any engagement processes initiated by the New Zealand Fire Service, Rural Fire Authorities and other agencies need to take account of changes rural communities have undergone, and continue to undergo. Rural communities in Southland (as elsewhere in New Zealand) differ from those of the past. There are fewer community networks, fewer community organisations and activities and, therefore, fewer opportunities for people to come together as a community. Together these community processes are often referred to as the social capital of a community. A number of factors are contributing to these changes in Southland.

Changing economic circumstances, leading to people seeking off-farm and urban-based employment, contribute to a loss of community connectedness. Rural communities are becoming more like satellite suburbs as people travel into Invercargill and other centres for work and, increasingly, social and recreational activities and shopping. As a consequence, they spend less time in their rural communities, have more of an urban focus in their day-to-day lives, and are busier. They have less time to participate in local activities and are often reluctant to engage in new events and activities that put further pressure on their time and other resources. To capture people's attention, agencies wanting to engage with communities about fire safety issues need to ensure any activities and events do not put any extra burden on people's lives. Instead, these activities need to reflect and fit with the reality of rural community life.

The on-going transition to dairying and the consequent introduction of new ownership and management arrangements and the recruitment of new settler workers means that rural communities include more transient residents (both farm managers and farm-workers) and are becoming more ethnically diverse. Often people described communities as more divided. One reason is the difficulties newly-arrived farm-workers face becoming integrated into their wider communities. These difficulties arise from factors like their unsociable working hours, housing arrangements, language differences and lack of transport. To effectively engage with these changing rural communities about fire safety issues, the Rural Fire Authority, New

Zealand Fire Service and others will need to understand the changing composition of these communities and ensure that engagement processes reflect the individual needs of increasingly diverse communities.

If the Rural Fire Authority are interested in following up about issues raised around the safety of new immigrant farm-workers, attention might also need to be given to identifying the best access points. Rather than trying to access the workers directly, stakeholders suggested engaging with both landowners and, in the case of absentee landowners, farm managers. Some also suggested contacting agencies responsible for recruiting the workers and those who may be taking more responsibility for worker housing issues.

5.2 Ensure communities acknowledge their risk

Evidence shows that communities need to acknowledge and own their risk as a pathway to self-reliance and before any behavioural change will occur. This truism is as relevant for fire safety agencies as it is for those trying to effect changes to address other areas of risk such as road safety, earthquake preparedness, health outcomes, safety from crime, and environmental protection. The tools trialled in this research included those specifically designed to raise awareness (e.g., the household self assessment tool) and those that included opportunities for community participants to share and talk about their fire experiences (e.g., the neighbourhood mapping event and the presentation at the Rural Women New Zealand regional gathering). Although the awareness-raising component of some of the tools trialled took time, it was time well spent. Only then, could community members acknowledge the reality of the risk and take some ownership over finding ways to reduce that risk. People admitted to a range of risk behaviours and described a range of unintended fire events. Risk behaviours included, for landowners, lacking knowledge of fire seasons and regulations, lighting fires without permits, using accelerants that are potentially dangerous, and lighting fires in inappropriate weather conditions. Householders' lack of preparedness was also evident, for instance with some admitting not having escape plans and/or smoke alarms. People also talked about not knowing the number to call in the case of a vegetation fire. There was also a perception that new settlers did not know the emergency numbers and were unfamiliar with recommended fire response actions. Fire experiences ranged from out of control burn-offs, to loss of farm buildings, to house damage.

5.3 Take advantage of social pressure

People's behaviour (safe and unsafe) is influenced by others in their communities, especially those considered as community leaders or innovative operators. As discussed already, effective communication needs to reflect the diversity of communities and the different needs of individuals. However, there is also value in encouraging wider behavioural changes in communities by identifying community leaders and encouraging their behaviour changes. In the Awarua Wetlands, for instance, focusing engagement activities on the farmers' discussion group is likely to have wider influence. Members of such groups tend to be the innovative farmers that others look to as exemplars of good practice across a range of farming activities. The same is true in focusing on members of Rural Women New Zealand, whose mission is to strengthen rural communities. Given the importance of community strength to community self-reliance and resilience, Rural Woman New Zealand can be important allies in the development of strategies to improve fire safety outcomes in rural communities and its members can act as role models in their communities.

5.4 Build strong communities

It is generally agreed communities with strong social networks are more likely to be self-reliant in fire preparedness, including prevention and response initiatives. Much of the documented evidence comes out of the Australian bush fire experience and shows that

strong communities are better prepared for emergencies and better able to respond appropriately in emergency situations. Preliminary analysis of the recent Christchurch earthquake experience also points to the part that community spirit and social networks are playing in community resilience and the city's capacity to respond appropriately. A number of people, in commenting¹⁶ on factors that contributed to the success of emergency responses to the February 2011 Christchurch earthquake, talked of community self-reliance and the need for collective action. For instance, the Christchurch Mayor, Bob Parker, kept reminding people 'to look after people in [their] street' and, on reflection, concluded that: '[emergency services] cannot respond successfully unless [its] community as individuals are prepared to be engaged and see themselves as part of the greater civil defence framework'. A spokesperson for the New Zealand Fire Service also talked about the role of community and the 'competencies of the people'. He noted the role and value of 'the general public standing side by side [with emergency services] and assisting' and the part that the 'spirit' of the community would play in Christchurch's long term recovery.

Engagement processes that are designed to establish and build rural community networks are as important as those designed to address more specific fire safety outcomes such as awareness-raising and behavioural changes. Activities that create opportunities for communities to come together and for communities and agencies to come together are valuable for their own sake. They contribute to community connectedness and, therefore, its capacity to take more ownership of its fire safety and grow more self-reliant.

5.5 Take advantage of existing community networks and events

Fire safety is generally not a sufficiently motivating topic to capture people's attention on its own. Across the three case study communities, people described other pressing priorities, especially in this period of economic recession, that capture community attention. Issues like earning a living, maintaining land productivity, staying healthy, children's education and a myriad of other day-to-day concerns are on the top of people's minds. People are busy and often over-committed. For these reasons, it is more efficient and effective to tag fire safety activities onto existing events and activities associated with existing groups and community networks. This principle has informed the design and implementation of the tools trialled. The feedback from communities is that they are keen to continue the initiatives put in place during the research as they complement already existing activities and events. - for instance including fire safety as part of a programme of farming best practice, including fire demonstrations in regular school events and devoting time to fire safety matters at rural gatherings.

Because engagement activities are designed around existing community networks and events, programmes of engagement activities and events will necessarily reflect existing community calendars rather than agency calendars. The benefit of working around community calendars is that maintaining community commitment to these activities and events will be more straightforward and the community is likely to take more responsibility for their continuation. For instance, if fire safety demonstrations and other safety activities are tied to regular school events, then responsibility for maintaining continuity in subsequent years can be co-managed between the school and the appropriate fire safety organisations.

5.6 Take advantage of fire events

It stands to reason that people are more aware of fire risk straight after a major fire event. In the Awarua area, for instance, people were more aware of fire risk than in other case study communities because there had been two recent and major fire events in the wetlands. They were also very aware of the recent and well-publicised court case and subsequent fining

¹⁶ On *Insight*, on Radio New Zealand National on 3 April, 2011.

involving a farmer whose careless actions led to a burn-off getting out of control. In the Otatara area, people attributed their awareness of fire risk to house fires in the area, including a recent house fire of an elderly couple and a fatal house fire of around 10 years before. The New Zealand Fire Service also reported the impact on neighbourhoods of allowing people some access to houses that had been burned. They reported that such shock tactics could be very effective tools to motivate people to take action (e.g., install smoke alarms).

Research suggests that the extent to which fire events act as catalysts for others to take positive action unfortunately reduces over time. Paton (2009), working with communities in the wake of Australian bushfires, claims that there is a 12-month opportunity after a significant fire event to capture people's attention, raise their risk awareness and motivate them to take precautionary measures. He found that, even after the major Victorian bush fires, people's acknowledgement of the risk and their preparedness waned after a 12-month period. As one New Zealand Fire Service representative noted, there is value in 'milking' events as much as possible in the short term to get maximum effect.

5.7 Ensure appropriate resourcing

The most important component of any resourcing of engagement processes is personnel, given that face-to-face interaction is core to effective community/agency engagement. Personnel requirements include both skills and dedicated time. Organisations involved in community engagement processes can ensure they have the right people for the job through a combination of recruiting people for their communication and engagement skills, up-skilling those with appropriate qualities and interest, and redeploying those with the appropriate skills to engagement activities. Communication and engagement skills do not need to become part of the core competencies required of all staff. Rather, there is value in some specialisation in the organisation to ensure that the right people are in the right jobs, and that organisations take advantage of the skills, personal qualities and interests of a sub-set of the total workforce.

While there may be short-term resource costs in recruiting and training appropriate personnel and ensuring they have dedicated time for engagement processes, these are likely to be off-set in the medium to long-term by reduced costs elsewhere given improved fire outcomes (e.g., fewer unintended fires, more appropriate response, etc).

Organisations also need to prioritise community engagement outcomes and activities. The appropriate staff members need to have sufficient dedicated time to achieve these outcomes and a prioritising of engagement activities so that they do not get redeployed to other tasks seen as more pressing or valuable. Successful engagement depends on community trust in the organisation. Communities that trust the messenger are more likely to trust the message. It is important for organisations to fulfil community commitments. If scheduled community activities are down-graded, delayed or cancelled because staff and/or resources are redeployed to other operational activities, then community trust diminishes.

There may be some value in a range of organisations working with rural communities to pool resources or collaborate in ways that allow them to maximise face-to-face contact with communities around fire safety and related issues. The range of organisations involved in this research, including the Southern Rural Fire Authority, the New Zealand Fire Service Southland, the Southland District Council, the Department of Conservation, Environment Southland, and Venture Southland, is indication of some commonality of responsibilities and interests.

5.8 Ensure continuity in engagement activities

Community engagement processes such as those trialled in this research project are most effective when they are part of an ongoing programme of activities and events that both build community trust in participating organisations and provide regular opportunities for social networking and community/agency interaction. Both communities and fire safety organisations can devote considerable resources to the establishment and building of relationships and to organising and adapting new and existing events and activities to include fire safety components. To maximise the benefits of these relationships and engagement opportunities, the momentum developed through this research needs to be maintained. Schools, community groups, farmers' discussion groups, neighbourhood groups, rural women's organisations and a number of private and public organisations and agencies have expressed interest in the trialled tools being applied on an on-going basis. The resources and effort required to continue this process are only a fraction of those required to set them up in the first place and to identify and establish alternative activities and events. However, it is not just for resourcing reasons that the momentum needs to be maintained. Just as building community relations and community trust is an essential part of building self-reliant communities, letting relationships go and losing community trust is likely to undermine community self-reliance.

5.9 Build community trust

Community engagement is a two-way process underscored by mutual trust and respect. As research results here and overseas show, communities are more likely to trust the message when they trust the messenger. Trust will also grow when organisations demonstrate their trust in and respect for the communities with which they work. There are plenty of opportunities for organisations such as the Rural Fire Authority and the New Zealand Fire Service to show they trust and value local knowledge. One way is for them to work with communities in ways that facilitate two-way information flows and elicit community ideas for improving fire safety. One-way information flows, such as distributing print-based information (e.g., pamphlets), are less effective and do not provide the basis for on-going and meaningful engagement. Another is engaging in ways that facilitate incorporation of local understanding and knowledge into community actions. These approaches are essential to encouraging community ownership of fire safety. Examples used in this research include developing best practice codes based on community knowledge of risk factors and local conditions; mapping local hazards, access routes and water resources as identified by neighbourhood groups; and providing opportunities for communities and fire authorities to share knowledge and experience.

References

Anthony-Harvey-Beavis, K., A. Rhodes and G. Elsworth, (2006): *Conceptualising household and neighbourhood safety from wildfire in Australasian* Evaluation Society International Conference, Darwin. .

Bones, H. 2005: *Wildfires and Communities: international perspectives*. Ensis, Technical Report No. 162.

Boura, J. 1998: *Community Fireguard: Creating partnerships with the community*. County Fire Authority Occasional Paper No. 2, Victoria.

Reason, P. and H. Bradbury 2001: *Handbook of Action Research: Participative inquiry and practice*. Sage, London.

County Fire Authority, 2003: *Strategic Direction for CFA Community Development*. County Fire Authority, Victoria.

County Fire Authority , 2008: *Living with Fire: A community engagement framework 2008-2012*. County Fire Authority , Victoria.

County Fire Authority, 2009: *Community Fire Guard Facilitator Manual*. County Fire Authority, Victoria.

Graham, R. And E.R. Langer, 2009: *Lessons Learned: Wither Hills Fire, Blenheim December 2000*. Scion.

Jakes, P.J., L. Kelly and E.R. Langer, 2010: An exploration of a fire-affected community undergoing change in New Zealand. *The Australian Journal of Emergency Management*, 25(3), 48-53.

Johnson, P.N. 2005: *Fire in wetlands and scrub vegetation: studies in Southland, Otago, and Westland*. Department of Conservation, Research & Development Series 215, Wellington.

Langer, L and Chamberlain, G. 2007: *Fire danger warning communication in New Zealand: Summary of a pilot study of Rural Fire Authority communications in Canterbury*. Fire Technology Transfer Note 34. Scion and CSIRO.

Mitchell, A., B. C. Galvovic, B. Hutchinson, G. MacDonald, M. Roberts and J. Goodland, 2010: Community-based civil defence emergency management planning in Northland, New Zealand. *The Australasian Journal of Disaster and Trauma Studies*, Vol 1.

Munford, R. and J. Sanders, 2003: Action research. In C. Davidson and M. Tolich (editors) *Social Science Research in New Zealand*. Person Education, Auckland, p263-274.

National Rural Fire Authority, 2004: *FireSmart: Partners in Protection: Protecting our communities from interface fires*. NRFA, Wellington.

Paton, D. 2006: *Promoting household and community preparedness for bushfires: A review of issues that inform the development and delivery of risk communicated strategies*. Bushfire CRC, Australia.

Paton, D. 2008: Risk communication and natural hazard mitigation: how trust influences its effectiveness. *International Journal of Global Environmental Issues*, 8(1), 2-16.

Paton, D. 2009: Witness Statement of Douglas Paton. *2009 Victorian Bushfires Royal Commission*. Royal Commission, Victoria.

Prior, T and D. Paton, 2008: Understanding the context: the value of community engagement in bushfire risk communication and education. *The Australian Journal of Disaster and Trauma Studies*, 2.

Punsellie, L. and L. Langer, 2008: *Human causes of rural fires and their mitigation. A literature review*. Scion, Christchurch.

Shindler, B.A., E. Toman and S.M. McCaffrey, 2009: Public perspectives of fire, fuels and the Forest Service in the Great Lakes Region: a survey of citizen-agency communication and trust. *International Journal of Wildland Fire*, 18, 157-164.

Statistics New Zealand, 2002: *The Measurement of Social Capital in New Zealand*. International Conference on Social Capital Measurement, London.

Sweeney Research, 2009: *A qualitative report on CFA community engagement*. County Fire Authority, Victoria.

Warren, J and Fraser, L. 2009. *A Review of Existing Fire Safety in Homes*, New Zealand Fire Service Commission Research Report Number 88.

Wilson, C. 2007: *Why start wildfires? The motivation behind arsons and accidents*. Department of Conservation, Northland.

Woodroffe, J. 2010: *Hotspots Fire Project. Delivering Hotspots Workshops*. NSW Rural Fire Service, NSW.