Effective Communication of Bushfire Risk in the Urban-Parkland Interface

A Case Study of Bushfire Communication in the Community Surrounding the Blackburn Lake Sanctuary

By:

James Everett

Stephen Kocienski

Nataniel Lobel

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Submitted to:

    Project Advisors:

        Prof. Kristen Billiar, WPI

        Prof. Ryan Madan, WPI

    Project Liaison:

        Mr. Sam Carroll-Bell, Research Co-ordinator of the Centre for Sustainable Organisations and Work at RMIT University

Submitted by:

    James Everett

    Stephen Kocienski

    Nataniel Lobel

ABSTRACT

Australia is one of the most bushfire-prone areas in the world. Initial reports by fire authorities show communities around urban parklands are unaware of the bushfire risk they face. This project was commissioned by the Bushfire CRC to serve as a pilot program for the study of bushfire communication in communities within the urban-parkland interface. Through literature review and interviews with community members and officials in Blackburn, we found current communication campaigns to be ineffective. We generated a series of recommendations to improve the effectiveness of communication around the City of Whitehorse with specific goals for communication in Blackburn.

EXECUTIVE SUMMARY

Bushfires[1] are among the most devastating and common disasters in Australia. Since the Black Saturday fires of 2009, which claimed 173 lives, there has been a large increase in research into bushfire communication across Australia. The Bushfire Cooperative Research Centre (CRC), in Melbourne, Australia, has been at the forefront of these research efforts with a multitude of projects focusing on understanding, communicating, and managing the bushfire threat. One of the most ambitious projects is "Effective Communication: Communities and Bushfire;" a three-year study on the interaction and organization of communities and their relation to bushfires. The goal of the Effective Communication project is utilizing this understanding of community to develop a "model for improving community communication strategies" leading to higher community awareness, engagement, and resilience on the subject of bushfires (Bushfire CRC, 2012).

Currently the Effective Communication project targets only the wildland and wildland-urban interface areas. This project serves as a pilot case study on communities in the currently under-researched urban-parkland interface. The goal of this project was to provide recommendations for improving the effectiveness of bushfire awareness campaigns in the areas surrounding parkland in the City of Whitehorse. Through a case study of bushfire awareness campaigns in the community surrounding the Blackburn Lake Sanctuary, this project aimed to develop a series of recommendations to improve the communication strategy in the City of Whitehorse.

Two of the major pathways in which bushfire preparedness in enacted throughout the community are the top-down and bottom-up approach. The top-down approach involves information being sent out by an authority to the community to increase their awareness. The bottom-up approach focuses on the community being self-motivated and creating awareness programs for themselves. These forms of communication usually coexist within communities that have an increased bushfire risk. Though there are some elements of bottom-up bushfire preparedness communications in Blackburn, the majority of these messages follow the top down approach.

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[1] Bushfires may also be known as wildfires or forest fires

Our first objective was analyzing current awareness and education campaigns. We broke this objective down into two research tasks. The first task was to collect, categorize, and review current and previous awareness campaigns from throughout Australia. Our second task was a content and policy review with local fire authorities and city council members. We collected data for the first task by reviewing the major bushfire awareness packet from each state, as well as a selection of smaller pamphlets and other literature. For the second task, we conducted semi-structured interviews with the local MFB Commander of Community Resilience and two Whitehorse City Council members.

Our second objective was evaluating the community response to the bushfire awareness campaigns targeted towards Blackburn. We broke this objective down into three research tasks. The first research task was to measure community exposure to and knowledge of current awareness and education campaigns. Our second task was to determine the willingness of community members to implement bushfire safety recommendations. The third task was to assess the community structure around the Blackburn Lake Sanctuary. To complete these tasks we conducted semi-structured interviews with community members. We chose semi-structured interviews because they gave us enough common data between interviews to find patterns, while still allowing us the flexibility to investigate specific topics of interest that would arise in each interview.

Review of current awareness campaigns from across the country revealed that they all followed the "Prepare. Act. Survive." framework. They all also have their state's version of the Fire Danger Rating (FDR). The FDR varies between Victoria, where the highest danger rating is code red, and other states, where the highest rating is catastrophic. Other findings revealed that three out of the seven packets we reviewed had publication dates on them and only one packet contained extensive information on how to recognize if a property was at high bushfire risk. The current state packets emphasize community preparation with less focus on promoting awareness.

Currently the MFB sends out a bushfire safety pamphlet to all houses that it considers to be in the "urban fringe areas of Melbourne." The Whitehorse City Council puts approximately 2,500 pamphlets across the city into the mailboxes of residents that are believed to be at high bushfire risk. The Council also runs advertisements in newspapers to promote awareness. Each year, the Council and MFB collectively hold a bushfire preparedness meeting in Whitehorse.

Though the MFB and City Council are invested in bushfire awareness campaigns, time and resources remain limiting factors when creating bushfire awareness communication strategies.

When we interviewed members of the community, they all acknowledged that they had received information from the MFB and the Council. We also discovered that they understood that there was a bushfire threat in the park. However, few of them had actually personalized the risk. When we asked residents how they felt the communication literature could be improved, many said they wanted a more concise and instructional pamphlet.

Interviews also uncovered a wide variety in the residents' willingness to enact bushfire preparedness recommendations. One resident had gone as far as to have large buckets of water on his property to put out spot fires. Other residents had not made any preparations because they were unwilling to lose the amenity of living near the bush. When walking along the edge of the park with a city official, we observed multiple houses that engaged in bushfire preparation, as well as houses with visible bushfire risks. Further investigation revealed that this pattern of variation in bushfire preparedness was consistent throughout the community.

When analyzing the community structure around Blackburn, it was revealed that there is a very strong sense of community on a street by street basis. Residents on a street near the park synchronized vacation plans so that enough of them would be in the neighborhood in the event of a bushfire. It was also found that the community was willing to join together in the face of adversity. After the 1997 fire, residents of one street neighboring the park joined together to write a series of recommendations of actions that could be taken in the park. There are multiple community groups, such as the Blackburn Lake Sanctuary Advisory Committee and the local Neighborhood Watch, which had previously run well-attended bushfire safety meetings.

After reviewing the communication strategies in the community surrounding the Blackburn Lake Sanctuary, we found that the bushfire awareness communication was ineffective. While aware of a general bushfire threat in the park, residents had failed to personalize the risk. We also found that general bushfire communication techniques used in higher risk areas across the country would not be effective. One of the main reasons is that in an urban-parkland environment, the risk is much less recognizable than in the wildlands. It is difficult for urban residents to understand they could be at risk because they do not associate bushfires with urban areas.

Through analysis of previous campaigns from throughout Australia as well as a case study of the communication targeting the Blackburn Lake Sanctuary, we have developed the following list of general recommendations for increasing the effectiveness of bushfire communication in urban-parkland areas:

1. Develop literature with area specific titles and graphics

2. Ensure all media messages by fire authorities and local officials are consistent

3. Determine community expectations of communication literature

4. Label all bushfire communication with its publication date and edition number

5. Maintain an up-to-date database of distributed bushfire communication

6. Appropriately communicate actions taken by local authorities and officials

7. Provide a forum for discussion of bushfire mitigation procedures

8. Determine community structure to identify possible existing communication tools

9. Keep communication strategy in balance with current technology while targeting the community

10. Implement a plan for periodic review of communication effectiveness

We then applied these recommendations to the community surrounding the Blackburn Lake Sanctuary. These recommendations were presented to MFB officials and Whitehorse City Council members to improve their bushfire communication and increase awareness within Blackburn. Since some of the factors that are contributing to Blackburn's lack of awareness and preparedness are prevalent in other urban-parkland areas, we believe our recommendations would also be effective in such areas. However, we cannot be sure that our recommendations would have the same magnitude of impact in other areas as they will have in Blackburn.

One main limitation for this project is the inability to investigate the effectiveness of the implementation of our recommendations. For future projects, we recommend investigating the reaction to these new bushfire media ideas by the public. We also recommend conducting case studies in other suburban communities of Melbourne or even other metropolitan areas across Australia. As our project has laid the groundwork for studies of this nature, continuing research in other areas would provide valuable information on what aspects and recommendations could

be implemented to urban-parkland interfaces nationwide without any further research and what recommendations would need a similar in-depth analysis to be effective.

ACKNOWLEDGEMENTS

AUTHORSHIP

Due to the nature of this report, which included several revisions and editions, our group found success implementing a collaborative writing process. One member would take the lead on drafting an individual section, which was followed by review and comments by another member, and finalized with a group review in which all members were present. We feel that our strong group dynamic and our collaborative writing process led each member of the group to contribute equally to the production of this report as well as the project's overall completion, which includes but is not limited to the collection, processing, and analysis of data and information. Outlined below are the sections that each group member had a lead role in.

James Everett: **Introduction**, **Background** (The Emerging Problems of Bushfires, Conflict between Fire Authorities and Conservationists, Forms of Bushfire Communication), **Results** (Measurement of Community Awareness and Exposure, Determination of Community's Willingness, Assessment of Community Structure Surrounding Blackburn Lake Sanctuary), **Recommendations**, **Executive Summary**.

Stephen Kocienski: **Introduction**, **Background** (Significance of Bushfires, Plans for the Public, Blackburn Lake Sanctuary), **Methodology (**Evaluate Community Response to Bushfire Awareness Campaigns), **Results** (Review of Blackburn Official Policies), **Conclusion**

Nataniel Lobel: **Introduction**, **Background** (Bushfire Dynamics, Bushfire Prevention and Fire Fighting, Bushfire Research Initiatives), **Methodology** (Analyze Previous and Current Awareness and Communication Campaigns) **Results** (Previous Campaign Research and Analysis)

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AFAC	Australian Fire Authorities Council
CFA	Country Fire Authority
CM #	Community Member, for interview reference
CRC	Cooperative Research Centre
FDR	Fire Danger Rating
FESA	Fire and Emergency Services Authority
MFB	Metropolitan Fire and Emergency Services Board
	Commonly known as the Metropolitan Fire Brigade
NFPA	National Fire Protection Agency
TFS	Tasmania Fire Services
UPI	Urban-Parkland Interface
WUI	Wildland Urban Interface also known as Wildland Rural

CHAPTER 1 INTRODUCTION

Over the past few decades, bushfires, also known as forest fires, have been threatening many lives and properties around the globe. In the US state of California, 75% of the largest forest fires have occurred in the past twenty-five years (CalFire, 2009). Additionally in 1997 and 1998, a forest fire in Indonesia ravaged the country for over a year, destroying 20 million acres, or 8 million hectares, of forest and peat bog (Rawlings, 2011).Climate changes associated with global warming are expected to cause an increase in droughts, raising the fire risk, and floods, which can increase vegetation, in several areas as well as extreme variations in climate in others (Smith, 2009). These effects will cause bushfires to occur more often, spread more rapidly, and burn more intensely than before. As the fires grow in size and magnitude, they also pose an increased potential for damage and loss of life as they are frequently spreading into urban regions.

The effects of bushfires in an urban environment can be seen prominently in Melbourne, Australia. In 2009, Australia suffered from its worst bushfire disaster in history, called the Black Saturday fires. These fires claimed 173 lives, injured over 5,000 people and destroyed over 2,000 homes (ABC, 2009). They spread extremely fast through the wildland and even affected some urban areas, which had been considered low-risk zones. The intensity of these fires was due to the extreme climactic conditions faced by Melbourne in 2009. The water reserves of Melbourne had dropped to a dangerous level of approximately 30% of reservoir capacity. Melbourne also recorded a record high temperature of 46 °C (115 °F) around the city on the day of the fire (Bushfire CRC Research Taskforce, October 2009). A large factor contributing to the fire deaths in these areas was that residents, specifically those in more populated areas, were poorly educated about how to react to a bushfire threat leading them to be unprepared and make decisions that put them in more danger during the fire. Though the past two years have brought rain and increased the water levels of Melbourne to 65% in early 2012, the bushfire risk remains high due to the vegetation growth (Melbourne Water, 2012). Under the current weather patterns and expectations of climate change, the elevated bushfire danger in urban areas of Melbourne is expected to last into the foreseeable future (Smith, 2009). In order to prevent future deaths and damages, it is necessary for bushfire action plans to be revaluated in order to improve community awareness on the topic of bushfires.

Since the tragic losses in the Black Saturday fires, many new research projects have begun focusing on how to prevent another catastrophic event like this from happening again. The Bushfire Cooperative Research Centre (CRC), in Melbourne, has worked closely with universities, federal, state, and local agencies on a series research projects with the goal of understanding the effects of bushfires on communities, what makes communities more resilient, and how communities can best respond to bushfires. One of their projects, "Effective Communications: Communities and Bushfire," is focused on researching effective communication methods in communities to avoid repeating the breakdown of communication that occurred on Black Saturday. Research for this is being done at twelve sites in four states and looks at the interactions between local communities and fire agencies in order to determine how communities respond to bushfire communication messages and to identify the best way to spread these messages.

Research by the Bushfire CRC has always had a main focus on wildlands and wildand areas bordering rural communities. Significant research has yet to begin on fires that affect the urban and suburban areas, specifically areas that experience a bushfire risk posed by city parks and bushland reserves. Preliminary reports show that bushfire threat communication with properties in urban areas bordering parkland remains ineffective and many residents are still unaware of the danger they face (MFB, 2012). Thousands of bushfire informational pamphlets and messages are sent out by fire authorities to urban-parkland areas every year. However, fire authorities and city officials have not assessed why these campaigns are less effective than anticipated or how they can be improved. Data are needed for these urban-parkland interface areas to see if communications in these areas can be approached similarly to those in other areas, or if these areas require unique communication strategies. These strategies are essential to increasing community awareness which is necessary to reduce the risk to lives and property.

The aim of this project is to provide recommendations for improving the effectiveness of bushfire awareness campaigns in the areas surrounding parkland in the City of Whitehorse. Through a case study of bushfire awareness campaigns in the community surrounding the Blackburn Lake Sanctuary, we have developed a series of recommendations to improve the communication strategy in the City of Whitehorse. Improvements to communication strategies will increase community awareness. Research was conducted at the Royal Melbourne Institute of Technology and involved a review of previous bushfire awareness campaigns as well as

interviews with community members, local officials, and fire authorities. This research was designed to achieve an understanding of existing community structure, the current effectiveness of communication plans and to identify areas for improvement.

CHAPTER 2 BACKGROUND

Bushfires, also known as wildfires or forest fires, pose a serious threat to both man-made and natural environments throughout the world. Each year fires cause millions of dollars of damage as well as take hundreds of lives (Haight, Cleland, Hammer, Radeloff, & Rupp, 2004). Even as fire science and methods of firefighting are becoming an increasingly popular topic in research centers and universities, uncharacteristically hot and dry climates continue to plague Australia, increasing the threat posed by bushfires. Until recently, most research and firefighting efforts have been focused on two types of bushfires: wildland bushfires and bushfires in the wildland-urban interface (WUI). Wildland bushfires are categorized as any uncontrolled, non-structural fire burning in a grass, scrub, bush or forested area. With wildland fires, the threat is primarily to forests and ecosystems. A fire is characterized as a wildland-urban interface fire if it begins to threaten human lives or infrastructure which borders the wildlands. The main factor in this characterization is that it is the wildland that is surrounding the urban areas.

With Australian climate conditions prime for bushfire ignition, a third type of bushfire is emerging. This new class of bushfire is defined by a specific area; the urban-parkland interface (UPI). These are different than the wildland-urban interface fires in respect to the fact that now the urban area is surrounding the potential bushfire area. This is a new topic and little research has been centered on bushfires that threaten the urban-parkland boundaries. While these patches of parkland in urban areas have an aesthetic value, they also pose a fire risk. This risk has been increasing due to climate change as well as growing populations leading to larger urban-parkland interfaces (Hughes, 2009). In order to assess and evaluate the risk at the urban-parkland interface, we must first understand it. This chapter will cover a variety of topics beginning with the history of bushfires in Australia and throughout the world and the basics of bushfire dynamics. It also includes the evolving bushfire problem, covering the management and mitigation of bushfires as they relate to the wildland, wildland-urban and urban-parkland interfaces. In addition, we will introduce the Bushfire CRC, their research topics and objectives, as well a background of the Blackburn Lake Sanctuary.

2.1 Significance of Bushfires

2.1.1 Impact of Bushfires around the World

Bushfires have always and will always pose a danger to communities around the world. From 1997 to 1998 a massive wildfire broke out in Indonesia which burned for almost a year. It

has been estimated that this series of fires consumed 20 million acres (8 million hectares) of Indonesian wildland, making it, by many estimates, the largest in recorded history (Rawlings, 2011). Luckily this fire did not reach any densely populated areas and did not directly cause any human deaths. However, there was still extensive damage as the smoke from the fire did spread to the nearby countries severely polluting the air in these regions, causing health problems.

In 2007, a series of wildfires occurred across Southern California. Over a span of twenty days, around half a million acres of land were burned and over fifteen hundred homes were destroyed. In total these fires caused fourteen deaths and eighty-five injuries. In addition, approximately one million people evacuated their homes during the event (The Economist, 2007). These fires were escalated by the high winds and lack of rain in the area and have been considered one of the largest natural disasters to ever affect the United States.

2.1.2 Impact of Australian Bushfires

Australia is considered by many to be the most fire prone country in the world. Bushfires have played a major role in the history of Australia. In 1939, the Black Friday fires occurred in Victoria, Australia, and burned a total of five million acres of land. These fires were due to several consecutive dry seasons which lead to many plants drying up, creating an ideal situation for a fire to develop. These fires caused seventy-one deaths and were the deadliest recorded bushfires in Australia until the 1980s. Currently, it is the third deadliest bushfire in recorded history in Australia. The events of Black Friday lead to many changes in forest management around Australia; such as areas beginning to implement fire mitigation procedures, such as fuel reduction (Handmer, 2005).

Another notable series of bushfires swept through Victoria in 1983. These fires destroyed over half a million acres of land and killed seventy-five people. They also caused nearly four hundred million Australian dollars of damage to South Eastern Australia (Bacon, 1983). This was the deadliest fire in Australia until the 21st century; the high death rate was due to the intense speed of which these fires spread. Local resident, Andrew Bacon, describes in his journal entry the rate at which the fires spread when he states "It swept down across beautiful tree covered valleys, up through an area called Harkaway, on through Upper Beaconsfield, and down again, crossing the principle highway leaving the city. In just those three hours it had covered a distance of 25 kilometers" (Bacon, 1983). The speed of these fires made it very

difficult for residents to be able to evacuate before the fire surrounded them. These events forced Australia to search for a better bushfire warning system for rural and urban communities to warn people sooner so that they can have an opportunity to escape (Collins, 2009).

Australia's deadliest series of fires was the Black Saturday fires of February 7th, 2009. These fires killed one hundred seventy-three people and destroyed over one million acres of land. This damage was caused by many small simultaneous bushfires across Victoria. A cause of one of the largest fires that day was unpredicted wind speeds that enabled a prescribed burn to grow out of control. Other fires that day were caused by arson, spontaneous heating, and machinery (ABC, 2009). These fires were intensified by the extended drought and extremely high temperatures affecting Victoria. These droughts lead to dry bushland which ignited very easily allowing multiple ignitions in one day.

As a result of the 2009 fires, Australia began to re-focus their goals on bushfire safety. While bushfire awareness had increased after the 1983 fires, there was still a lack of effective change in some parts of Australia. One such example is that of the community around Coombs Road outside of Melbourne. The community had been complaining to the city council of how the road could become a hazard in the case of an emergency. It was the only entrance and exit to the community and if it was to become blocked, the community would be doomed. These premonitions were proved correct, "on the day of the bushfires, flames came up the open northern end of Coombs Road, leaving residents like "rats in a tube," trapping them as the fire approached" (Kissane, 2009). This shows how some areas were still not properly prepared for the case of a large scale bushfire, even after the initiatives created in response to the 1983 bushfire.

Another major lesson learned by communities throughout Victoria after the Black Saturday fires, was that they needed to look at their information distribution system. They found that not only did some people not receive proper notification, but that the notification did not arrive quickly enough. Due to the speed at which the fires moved through the countryside, people would see smoke and then a few minutes later the fire would be upon them. The speed at which the fire was capable of spreading was extremely surprising and had not been accounted for by local authorities (Gardiner & Packham, 2009). Afterwards, new safety plans began to focus more on being preventative instead of reactive. The goal was to get people to make a decision

and stand by it; because once a fire occurred, it would be too dangerous to change plans. Key components in making an educated decision about bushfire prevention and action plans include understanding the risks that bushfires pose and understanding the dynamics of a bushfire. It is important to be conscious of how the environment around your home can lead to or foster bushfire ignition and spread.

2.2 Bushfire Dynamics

2.2.1 Ignition of Bushfires
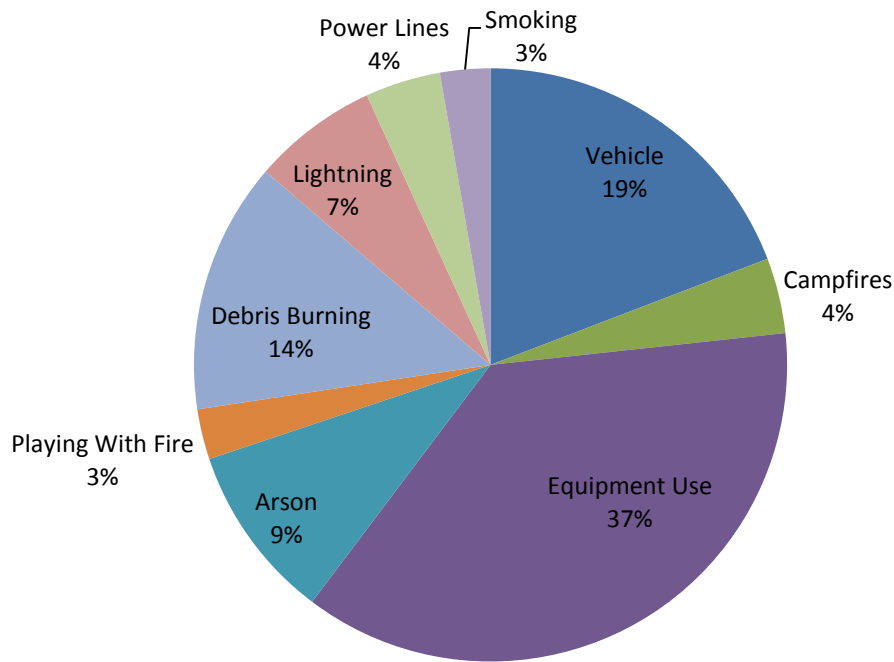
Figure 2-1: Causes of California Wildfires Excluding Miscellaneous and Undetermined (Data re-plotted from (CDF, 2005))

Bushfires have many different methods of ignition including both natural and human sources. Some of the possible ignitions sources from human causes include campfires, equipment use/malfunctions, smoking materials, outdoor waste burning, power lines, and arson (Corbitt-Dipierro, 2012). As shown in Figure 2-1, from 2000 to 2005, of forest fires in California with a determined non-miscellaneous cause, 93% were ignited by humans or human activity intentionally or unintentionally (CDF, 2005). The most common natural causes of fires are lightning strikes and spontaneous heating of piles of natural debris. However in urban-parkland

environments where human activity is higher than in the wildlands a fire is much more likely to be ignited by human causes.

Once ignited, the initial phase of a bushfire can be very short or drawn out over multiple days. Often the person who causes an unintentional bushfire does so unknowingly because a fire source may smolder for several days before growing into a flaming bushfire. For instance a camper may think they properly extinguished a campfire and move on from their campsite, but in reality the embers could still be hot and may eventually lead to a bushfire. Lightning strikes are a natural cause of bushfires and are also known to smolder "undetected for as long as several days and/or weeks… before transitioning to an active wildfire." (NWGC, 2005). Quick igniting sources move past the ignition phase and into the growth phase almost immediately. These are more often considered examples of intentional fires or fires unintentionally caused by other fire sources i.e. outdoor waste burning or controlled burns.

2.2.2 Growth/Spreading of Bushfires
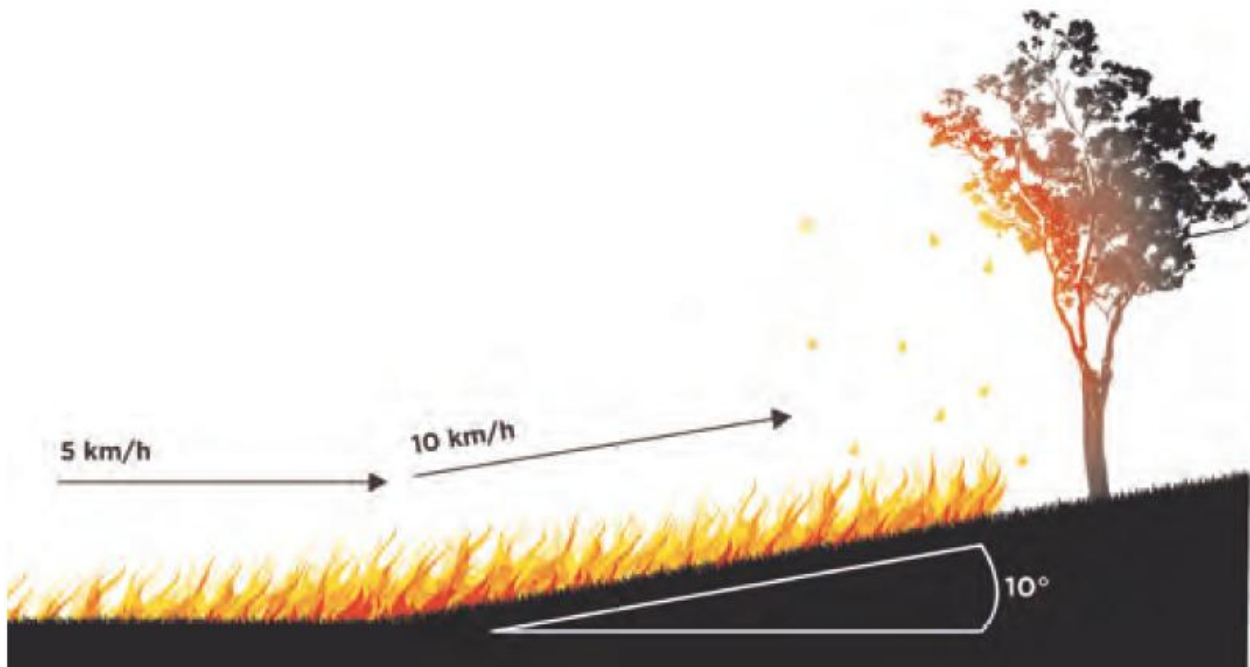
Figure 2-2: Slope effect on flame speed from Bushfire (Country Fire Authority, 2011)

The growth of a bushfire is influenced by many factors such as topography, weather, fuel moisture, and fuel type (Corbitt-Dipierro, 2012; NWGC, 2005). Topography plays a large role in

the movement and growth of a fire. Bushfires will burn uphill much faster than downhill, and steep terrain will cause a "chimney effect" in which the fire progresses rapidly uphill, this effect is shown in Figure 2-2. One such instance was in Sipnate Canyon in Vrulje Bay, Croatia where a fire was recorded spreading uphill at a rate of 14.8 km/h (9.2 mph) (Viegas, 2009). The most influential weather factors are wind, temperature, and relative humidity. Wind can arguably be the most dangerous factor that affects a bushfire and is capable of taking a slow growing bushfire and turning it into a firestorm. Strong winds can cause a fire to spread much faster than usual, or to jump over an area of no fuel (i.e. a fuel break or gorge) to continue burning. Temperature plays a large factor in how fast a fire will initially start and how new fuel will ignite. For example, fuel preheated from a very hot day will ignite faster than colder fuels. Relative humidity greatly affects a fire's ability to grow; high humidity levels and the possibility of precipitation will slow down the progress of a fire, and even help extinguish it. Meanwhile lower humidity levels will not just raise the intensity of a bushfire, but will also increase the chance of bushfire ignition.

2.2.3 Spreading of Bushfires in the Urban-Parkland Interface

Bushfires taking place in parklands are largely dependent on the characteristics of the parkland, such as the size of the park, the fuel load in the park, and how dense the surrounding urban area is. Urban-parkland interfaces tend to have multiple roads and physical dividers already in place that can act as fuel breaks. Though roads in urban parklands are not designed as fuel breaks, in the event of a fire they may act as one and limit the spread of a bushfire. Fuel breaks are very effective at preventing fire spread through direct flame contact or radiant heat, but do little to limit another cause of bushfire spread; ember throw. Embers generated by burning vegetation can be gusted through the air and into areas nearby or multiple kilometers away igniting new fires (Maranghides, 2012). Though not all embers necessarily start new fires, drier conditions in recent years have increased the chances of ember ignited fires in nearby gutters, on nearby roofs, or even in other strips of bushland.

2.3 The Emerging Problem of Bushfires

2.3.1 Australian Climate Effects

In recent years, much of Australia has experienced a long drought, reducing water supplies and drying out bush areas across the country. Some experts believe that climate change has caused a change in the rain patterns around the Indian Ocean, resulting in reduction of

rainfall in parts of Australia (Drollette, 2005). While global warming appears to be increasing rainfall in some areas, it seems as though it is making Australia drier. The lack of rain causes plant life to die and become easily ignitable fuel for bushfires. This greatly increases the chance of a small fire having the ability to quickly become uncontrollable and turn into a bushfire.

2.3.2 Bushfires in the Wildland-Urban Interface

The recent droughts have caused an increase in ignitable fuel in the wildlands surrounding cities like Melbourne. The combination of large amounts of fuel from the wildlands and high concentrations of people and property in the urban setting put these areas at high risk for damage from a bushfire.

One of the main reasons this is an emerging problem is because before the drought, there were not many areas with a high mix of fuel and inhabitants. The article "Assessing Fire Risk in the Wildland-Urban Interface" from the Journal of Forestry states that in 2004, nearly 90% of the high risk areas of the wildland-urban interface have a low population density (Haight et al., 2004). However, due to the increased population density in these areas, more and more people are moving into the risk zone. Due to the drought, bushfire risk has increased all across southern Australia, which includes large areas of wildland-urban interface. Australian government authorities have been collecting data on the wildland-urban interface with the hope of being able to protect the increasing number of residents in these areas against the bushfire threat.

2.3.3 Bushfire in the Urban-Parkland Interface

Even though the bushfire risk in these areas is still high, the urban-parkland interface, unlike the wildland-urban interface has not been researched. The recent droughts have caused undergrowth in urban parks to dry and become easily ignitable fuel. Many common activities in parks, such as open fire cooking and even smoking, greatly increase the chances of ignition of this fuel. In 2011, Houston, Texas banned smoking in public parks to prevent fires after it was discovered that many of the fires in the city parks were caused by improperly discarded cigarettes (Moran & Glenn, 2011). The new rule was created to hopefully reduce the number of ignition sources in city parks. Melbourne is fighting this increased risk with similar tactics. There are seasonal bans on open cooking flames as well as controlled burns to reduce the amount of fuel in the parks themselves (Parks Victoria, 2012).

A major factor affecting both people's willingness and ability to prepare for bushfires is how long they have lived in one community. People who have recently moved into new areas may not know the dangers that are present in that area. They also can lack contacts in their new community that could explain to them these dangers and how to adequately prepare (Bushfire CRC Research Taskforce, October 2009). Recent data from the Australian Bureau of Statistics shows that the suburban areas around Melbourne have some of the largest population increases in the state (Australian Bureau of Statistics, 2011). This population change around Melbourne increases the difficulty in getting a community prepared. The increase in new members in these suburban regions puts the area at a greater risk than ever before.

Another factor that makes bushfires in urban parklands a threat to the surrounding community is the resident's reluctance to accept that there is a bushfire threat in their area. It is common for people, even long-term residents, to not even realize that they are in a high bushfire risk area (MFB, 2012). This can cause people to not properly prepare their homes against various threats such as ember attack. Another issue is due to the high expectations of urban fire authorities. Residents have become overly reliant on these fire services. They can feel as though if there is a fire, the local fire authorities will be able extinguish the fire before there is any real threat to their home or property. However the reality is, on high fire risk days, there could be many different fires occurring around the state, which could cause fire authorities to be unable to respond to a fire in the park before it becomes a threat to the surrounding community.

2.4 Bushfire Prevention and Fire Fighting

Fighting bushfires is almost never about extinguishing the flames with hoses, as fire fighters would do with a house fire; rather it is about containment and prevention. Some of the most effective methods to both preventing a bushfire and keeping a future one contained are burn offs and fuel breaks created using controlled burns. Burn offs and controlled burns are generally the same thing, with the former being the general term used in Australia for a large scale controlled burn. In order to limit the possibility of a fire in the wildland-urban interface, fire fighters manually or chemically clear a perimeter of fuel around a large section of wildland and then proceed to burn that section of wildland. This lowers the fuel build up in that area and can act as a buffer zone from a future bushfire. Performing a burn off can be risky if the fire gets out of control. If done properly, burn offs can slow or even prevent the growth and movement of a

bushfire. In the wildland-urban interface there is generally enough spacing between the burn off zone and the community to safely set such a large fire (Maranghides, 2012).

Unfortunately complete burn offs are not an option for the urban-parkland environments due to direct exposure to the urban areas that surround the parkland as well as for preserving the visual appeal of the park. Instead park managers of urban-parkland environments may perform a smaller scale controlled burn in order to reduce the amount of fuel without seriously endangering the surrounding communities. Another preventative measure is a fuel break, which is generally a five meter wide tract of land that is devoid of fuel. Though the fuel can be manually removed to create such breaks, the most effective method of creating a fuel break is to use small scale controlled burns to completely clear the area. After this initial clearing, it is easier to manually remove overgrowth to maintain the fuel break. If a bushfire later comes through the area it will hit the fuel break and without any fuel to burn, only heavy winds or other extreme conditions would be able to push the fire past the break.

Active methods of fighting bushfires are very much dependent on the location of the fires, nearby resources, and the spread conditions including weather and topography. In the case of trying to stop a fire's progression, the areas assigned for fuel reduction are strategically determined to head off the fire's progress as soon as possible. Fuel reduction can be done by emergency burn offs, often called back burns, chemical treatments, or mechanical/manual clearing. Fires in the wildland-urban interface are mainly contained through these fuel reduction methods and, when necessary and possible, water or suppressive chemicals may be applied by fire engines, aerial tanker planes or helicopters. During urban-parkland bushfires fire fighters are more likely to have access to a flowing water supply and can use hydrant flows to suppress and contain fires. However, once a bushfire reaches a certain magnitude or danger level, fire fighter operations become less focused on immediate extinguishment and more focused on containment and loss prevention (Goodson & Murnane, 2008). The best way for firefighters and fire authorities to limit loss of life during fires is to properly and promptly inform the public of the danger and what actions community members at risk should be taking before a fire even begins, as well as performing and completing any necessary controlled burns and fuel reduction.

2.5 Conflict between Fire Authorities and Conservationists

Bushfire prevention techniques are a constant point of contention between fire authorities and conservationists. Conservationists believe that prevention techniques, such as controlled burns and brush removal, cause too much damage to the ecosystem. Their belief is that it is paramount to protect the environment, even if that means sacrificing a few houses. There are also people who move out of the city because they want to live in the bush. They do not want to clear their land because they feel like that would make their house feel less like it was in the wild. Some people decide to accept the fact that their homes have a high chance of being damaged in a fire and if there is a serious bushfire threat they will leave their home instead of defending it.

Throughout most of Australia, fire authorities work with conservationists to compromise on what are acceptable preparations for a bushfire. As a result, fire authorities focus on creating prevention plans that find the most effective areas to reduce fuel while having a minimum environmental impact. Their hope is to find a good balance between saving the environment and protecting communities. This is very difficult and does not always work out as well as it is planned. In 2009, the amount of prescribed burns that were actually completed was much less than the number that was initially planned. Some believe that this is one factor that enabled the Black Saturday fires to engulf and destroy such vast areas (Devine, 2009). However, the counter argument to fuel reduction is that removing too much fuel can hurt surrounding ecosystems and cause unnecessary damage to native species. While no perfect solution exists for either side, there has been a balance that allows fire authorities and conservationists to be able to create environments with both beauty and protection.

A new system to facilitate coexistence between the groups is trying to use fuel reduction as both a prevention technique and a way to help support local vegetation. The New South Wales government has started the Hotspot Fire Project to try and determine how to increase protection from fires, but through environmentally sustainable methods. One case study they have completed is "Fire Planning Makes Good Sense" which describes how people are using controlled burns to reduce fuel as well as helping the environment. Many plants that live in the bush actually need fire in order to properly reproduce (Pfitzner, 2011). Some residents have started carefully planning controlled burns around these plants, which is allowing them to reduce fuel and promote local wildlife. It is these types of plans that both fire officials and conservationists are researching to be able to both achieve their goals. However, even with this

balance the best tool for loss prevention during a fire is a well informed and prepared community.

2.6 Forms of Bushfire Communication

Most bushfire communications can be broken up into two major categories; top-down and bottom-up communication. Most awareness campaigns across Australia involve both top-down and bottom-up aspects in the bushfire communication.

2.6.1 Bottom-Up Communication

The general bottom-up organizational approach involves developing skills to aid individuals, organizations, and the community (Phillips et al., 2011). Specifically a bottom-up approach to bushfire communication effort involves focusing on the community members, developing their understanding of a bushfire threat, and then acting upon that to create a preparedness program for themselves. The motivation of a bottom-up approach could be from the government or the people reacting to past experiences. This method involves very little government involvement and focuses on the community as the main provider of bushfire communication.

2.6.2 Top-Down Approaches

"A top-down organisational approach recognises the importance of organisational capacity and the primary concern, in this context, is the infrastructure of an organisation. Within this approach, building capacity is achieved through restructuring the organisation"(Phillips et al., 2011). Top-down communication is focused around the government's education programs. The government sends information programs into their respective communities, with expectations that the community will use this literature to become more aware. "This approach recognises the important role of institutions and that their effectiveness and efficiency can be improved by strengthening links with and listening to the communities they seek to serve" (Phillips et al., 2011). The top-down strategy is also greatly by affected how well the programs are adjusted to fit the communities they are communicating with.

2.7 Plans for the Public

Reducing the risks associated with fires is done on many levels before, during, and after bushfires. Arguably the most important risk mitigation method is properly planning and preparing for possible bushfires. This preparation begins with the distribution of bushfire safety

information to the community, an example of a top down approach. It is then the community's responsibility to act on these recommendations to make their homes safer.

2.7.1 Bushfire Preparedness Initiatives in the United States

The United States of America is one of the many countries working continuously to improve bushfire awareness and preparedness. Some of the first organized steps towards bushfire management and prevention took place in 1896, with the establishment of the National Fire Protection Agency (NFPA). This non-profit organization's mission is to reduce the burden of fire and other natural hazards in America, on the quality of life by providing and advocating codes and standards, research, training, and education. The NFPA is responsible for over three hundred codes and standards, which establish criteria for building, processing, designing, servicing, and installing buildings and structures. Today, this program continues to produce regular publications of journals, magazines, and news briefs and has spread worldwide, having 70,000 members in almost 100 nations across the globe (NFPA, 2012).

In 1986, preventative plans specifically for bushfires started to gain support in the United States. This was a result of the Florida Palm Coast fires of 1985. Before the Palm Coast fires, there had been other large recorded wildfires; however the Palm Coast Fires were the first to directly impact people in the wildland-urban interface, destroying two hundred fifty homes. (St. Johns County, 2012). As a result of these fires, the United States Department of Agriculture Forest Service, the United States Department of the Interior, and the National Association of State Foresters joined forces with the National Fire Protection Agency, to develop a program entitled FIREWISE. Over the past 30 years since the founding of FIREWISE, a main focus has been placed on campaigns that stress active fire prevention as well as developing a sense of overall community awareness.

The mission of the FIREWISE program is to encourage local solutions for wildfire safety by involving homeowners, community leaders, planners, developers, firefighters, and others in the effort to protect people and property from the growing problem of bushfire risks at the wildland-urban interface (Firewise, 2012). The FIREWISE Community Program helps communities in the wildland-urban interface lower their risks through proper planning, design, and maintenance of homes and nearby landscape. For instance FIREWISE has instituted a best

practice of treating fuel[2] within various zones at a certain radius from the home and has developed different danger rating scales for the individual zones. Figure 2-3 shows these zones as well as portrays several important aspects of how homeowners can prepare their property so that it conforms to a FIREWISE Community Action Plan. An important criterion of a FIREWISE Community is the development and implementation of a local bushfire action plan. This plan includes aspects such as what to do and what not to do on your property with respect to bushfire risk as well as planning evacuation routes and procedures. This program allows a community to work as a whole and establish zones on a large scale basis rather than a home by home basis leading to more effective safety practices.
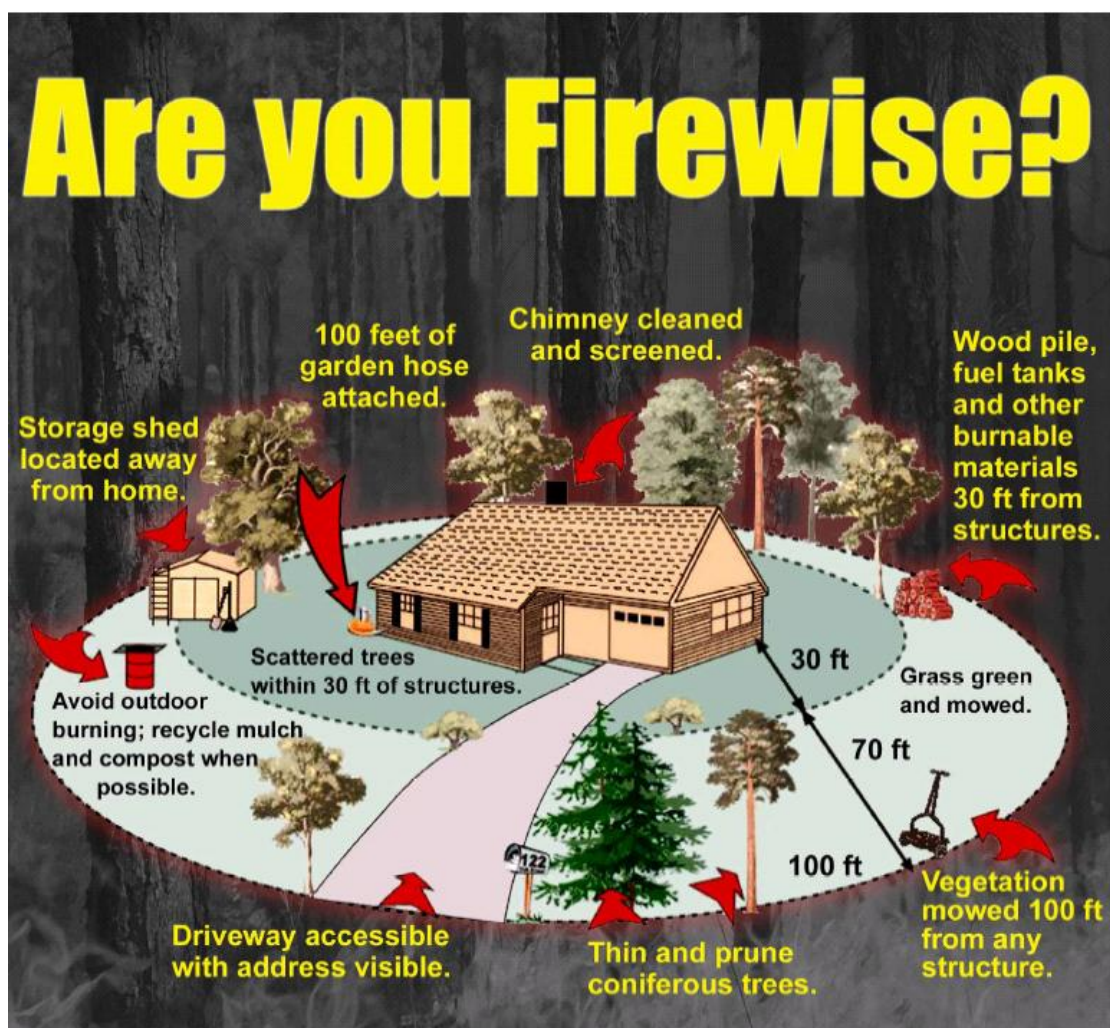
Figure 2-3: FIREWISE Model Home (Firewise, 2012)

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[2] Treating fuel is the process of removing, destroying, and/or reducing fuel

2.7.2 Australia's "Stay or Go" Policy

Natural disasters such as a wildfires, floods, or hurricanes cannot always be prevented or avoided nevertheless they definitely must be prepared for. In Australia, the focus is more on personal responsibility instead of government responsibility to protect homes and businesses. The government sends out information on how a person can make their property safer; however the government will not take responsibility for protecting property during a large bushfire. One policy in place during the pre-Black Saturday era was the "Stay or Go" policy. This "Stay or Go" policy was put into place in the early 1990s and was embraced by local officials and fire authorities. Its major focus was on the individual level. It took power away from a centralized authority and allowed the individual residents to make their own decision on whether to evacuate or not when they are exposed to a major threat (Johnson, Johnson, & Sutherland, 2012).

The policy was developed on the basis of historical evidence that there had been a higher rate of survival for those who remained in their homes as opposed to those who had attempted to evacuate at the last minute. They found that the survival rate of houses was more than doubled when the house was occupied, and that if the people present were able-bodied, the survival rate was 90%. This plan received a lot of support and was backed by several fire emergency organizations such as the Australian Fire Authorities Council (AFAC). AFAC even adopted the slogan – houses protect people and people protect houses. Their message was that the best chance of survival consisted of staying and defending (Handmer, 2005). However this was a biased statistic. The supporting evidence had only included reports from residents who had actively defended their homes during the fire (Handmer, 2005). Had the residents stayed but not been active defenders, the majority of their houses would have been destroyed as well. This is due to the fact that houses destroyed in wildfires are often the results of embers becoming lodged in cracks and starting small fires which then accumulate and grow to engulf the entire structure, residents who actively defend would extinguish these embers.

Under the "Stay or Go" plan there was confusion in the message that was conveyed to the public. Since the title, "Stay or Go" implies either evacuation or staying in your house, the confusion was that as in reactions to other natural disasters the people would simply stay in their houses and feel as though they are protected. Because it was called "Stay or Go" the second part of the AFAC's slogan, that people protect houses, was not as well received by the general public. This led to serious issues, such as in the Black Saturday fires of 2009, when numerous lives were

lost due to people burning alive in their own homes due to not actively defending their property. Unfortunately it was not until after all those deaths that the policy was publically criticized due to the fact that it provided insufficient emphasis on the risks associated with staying and defending during a major fire such as the ones that occurred that day. (Johnson et al., 2012)

2.7.3 The "Prepare. Act. Survive." Policy

Although "Stay or Go" plans can be effective at lowering fire deaths, they are often misinterpreted and misused which can lead to an increased loss of life. If a family initially chooses to stay and later decides to leave, their delay in action may force them to drive through dangerously low visibility conditions or possibly cause them to drive unknowingly towards the fire rather than away. Even though there were many supporters of the "Stay or Go" policy, this practice proved to be insufficient after February of 2009. This criticism was one of the factors that led to the development of a new policy, which was entitled, "Prepare. Act. Survive." The final report of the Victorian Bushfires Royal Commission, which was created in response to the Black Saturday fires, entails many recommendations. The first recommendation was, "The State revise its bushfire safety policy. While adopting the national "Prepare. Act. Survive." framework in Victoria." (Victorian Bushfires Royal Commission, 2010).This new policy and slogan were part of an attempt to unify the message of bushfire safety and awareness throughout all of Australia. It is now adopted in principle by numerous organizations all across Australia including the Country Fire Authority (CFA) in rural Victoria, the Metropolitan Fire and Emergency Services Board (MFB) in Melbourne, the Tasmanian Fire Services (TFS), the Rural Fire Services in Queensland, the Fire and Emergency Services Authority (FESA) in Western Australia, the New South Wales Rural Fire Services, and many smaller local organizations.

The "Prepare. Act. Survive." policy retains the effective components of the old policies, while augmenting and improving them in several areas. This policy still left the choice to leave or not up to the residents, however it provides an action plan for those who decide to stay. This plan does not just include plans of action when a fire is approaching, but includes a yearly maintenance plan for one's house and property to ensure bushfire safety and prevention. It even includes several home and property checklists so residents can self-evaluate and improve their preparedness and awareness plans. An example of a checklist is shown below in Figure 2-4. This includes action items such as; preparing a bushfire action plan for your family, creating a twenty meter circle of safety around your home, regularly removing leaves and debris from your gutters,

and even developing a plan of action regarding any family pets or livestock (FESA, 2005). These plans and ideas had existed before the 2009 fires; however under the old policies they were not effectively communicated.

Stay and Defend

Action Checklist

What to do on the day that a bush fire threatens

Have you maintained the required level of preparation around your property? If no, Go Early.

Before the fire front arrives:

Inside

- ❏ Implement your Bush Fire Action Plan.
- ❏ Safely relocate young children and elderly family members.
- ❏ Family members remaining should dress in protective clothing.
- ❏ Bring pets inside.
- ❏ Close all doors, windows and shutters.
- ❏ Fill basins, sinks, bath, troughs and buckets with water and locate mops and other equipment.
- ❏ Soak towels and rugs in water and lay along the inside of external doorways.
- ❏ Soak blankets and keep them handy for protection against radiant heat.
- ❏ Use a moistened mask or cotton cloth to help protect against ash.
- ❏ Place a ladder and torch close to the manhole and regularly check the ceiling space for embers.
- ❏ Keep electricity on but maintain awareness of electrical safety at all times.

Outside

- ❏ Move large animals and livestock to a safe location (as identified in your Bush Fire Action Plan).
- ❏ Check your water supplies around the house—fill any additional containers that might be available.
- ❏ Bring outdoor furniture, mats and any other loose items inside.
- ❏ Wet down the side of the house and surrounding garden area that is facing the fire. Leave reticulation running (if installed).
- ❏ If possible, block downpipes and fill gutters with water.
- ❏ Regularly patrol for spot fires around your home and put them out.
- ❏ Turn off the mains gas supply to the house and any LP gas cylinders.

As the fire front approaches and during the fire:

- ❏ Take all hoses, hose fittings (including plastic tap attachments) and equipment inside.
- ❏ Move yourself and any other remaining members of the family into the house prior to it becoming too hot and smoky to stay outside.
- ❏ Frequently check the roof cavity (through the manhole inside the house) for any spot fires.
- ❏ Stay inside the house while the fire front passes by, keeping watch for any spot fires inside the house.

- ❏ Drink plenty of water to avoid becoming dehydrated.
- ❏ Tune into ABC Radio for reports of the fire.

After the fire front has passed:

- ❏ Ensure all family members continue to wear protective clothing.
- ❏ Check the house thoroughly for spot fires both inside and outside when it is safe to do so.
- ❏ Check for embers or signs of smoke in places such as the roof cavity, under house spaces, and around verandas, wooden decking, stairs, window sills and doorways. Also check sheds, carports and fences.
- ❏ Patrol your home for several hours after the fire for small fires and burning embers.
- ❏ Should your house catch fire in the course of the fire front passing and you are unable to extinguish it, **leave immediately after the fire front has passed.**
  - • **Call the fire service on 000.**
  - • **Move onto a fuel-free area such as a driveway, lawn or onto already burnt ground.**
  - • **Beware of any hazards such as burning logs or materials.**
  - • **Do not return inside the house for any reason.**

Figure 2-4: Prepare and Defend Checklist (FESA, 2005)

An important addendum that is included in the new "Prepare. Act. Survive." policy is the warning of people to only try to stay and defend if they are completely prepared, and if they are mentally and physically able. This new plan clearly conveys that if you feel that you are not able to prepare your property or actively defend it, you should make plans to leave and leave early (Victorian Bushfires Royal Commission, 2010).

Public policy plans can only advance as much as the flow of information to policy makers progresses. This has created a constant demand for information from ever growing and evolving research studies into bushfires.

2.8 Bushfire Research Initiatives

2.8.1 Bushfire Cooperative Research Centre Background

      The Bushfire Cooperative Research Centre was created in 2003 through a grant from the Australian government. The agency has members from many prominent fire research centers in Australia and New Zealand. The goal of Bushfire CRC's research is to be a center with a focus on gathering and increasing knowledge about bushfires. This information will then be used to improve the response to bushfires from both the government and the general population (Dennis, 2002). Over the last 8 years, the Bushfire CRC has conducted many different research programs focusing on the effects of bushfires. The topics of research have ranged greatly including focuses such as fire modeling, fire fighter safety, and risk management. The Bushfire CRC hopes that this research will be used in the future to create a safer and more effective response to bushfires from both the government and the local populace (Bushfire CRC, 2012).

2.8.2 Current Bushfire CRC Research

      Due to the recommendations of the 2009 Victorian Bushfires Royal Commission, which stated that more research must be completed on the subject of bushfires, the Bushfire CRC has begun research on three programs: Understanding Risk, Communicating Risk, and Managing the Threat. Each of these three programs is divided into multiple groups which then include either single or multiple projects (Bushfire CRC, 2012). Our project is a pilot project under the Effective Communication: Communities and Bushfire group, which is part of the Communicating Risk program. The main project in that group is the "Effective Communication: Communities and Bushfire," which is run out of the Royal Melbourne Institute of Technology's Centre for Sustainable Organisations and Work. It is a three year[3] project that consists of twelve case studies across four states. Each state will contain three case studies with sites chosen based on specific requirements. The areas are chosen so that the study will cover one "traditional farming/rural community," one "tree change/sea change/tourism community," and one "rural/urban interface" community within each state. In all areas, interviews are being done on a state government, local government and community member level. Though these types of communities which are chosen for the case studies will provide a level of community diversity, none will provide insight into more urban communities such as those within urban-parkland

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[3] This project runs through to 2013

interfaces. Our project is the pilot research venture into bushfire awareness and communication in the urban-parkland interface. It provides new insight into how communities in urban-parkland regions interact with and respond to different bushfire awareness communication tools.

While our research serves as a pilot into the urban-parkland interface, we utilize previous works sponsored by and published by the Bushfire CRC which relate to bushfire communication. One such piece is the paper "Community Adaptation to Bushfire in a Changing Climate" authored by Susan Chaplin and Peter Fairbrother. This paper, published in January of 2012, investigates the issues affecting the communication of bushfire awareness in Tasmania. Rural Tasmanian communities are experiencing rapid demographic and socioeconomic changes which are increasing the amount of people in the urban-rural[4] interface areas and therefore increasing the amount of people at risk (Chaplin & Fairbrother, 2012). This paper focuses on how to use community engagement to increase awareness in the difficult to reach rural community groups. One result of this research was a toolkit of community engagement techniques for local governments to utilize.

2.9 Blackburn Lake Sanctuary

2.9.1 Blackburn Lake Sanctuary Background

This project focuses on the community surrounding the Blackburn Lake Sanctuary. This area is located in the City of Whitehorse, east of central Melbourne. The park itself is a natural, 75 acre ($303,450 \text{ m}^2$), bushland reserve surrounding a man-made lake. This lake was created in 1889 by the damming of Gardiner's Creek. The area contains a diverse and sensitive ecosystem with over 80 species of birds and many indigenous and native plants growing throughout the park. This tract of land is the largest area of natural bushland park in the City of Whitehorse and one of the few remaining areas of natural bushland in the greater Melbourne area. Through the area's history, what stands today as the Blackburn Lake Sanctuary has gone through many changes in ownership and is currently owned by the city of Whitehorse (Blackburn Lake Sanctuary, 2012).

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[4] Urban-rural interface is an Australian equivalent for wildland-urban interface, for this project the two may be used interchangeably
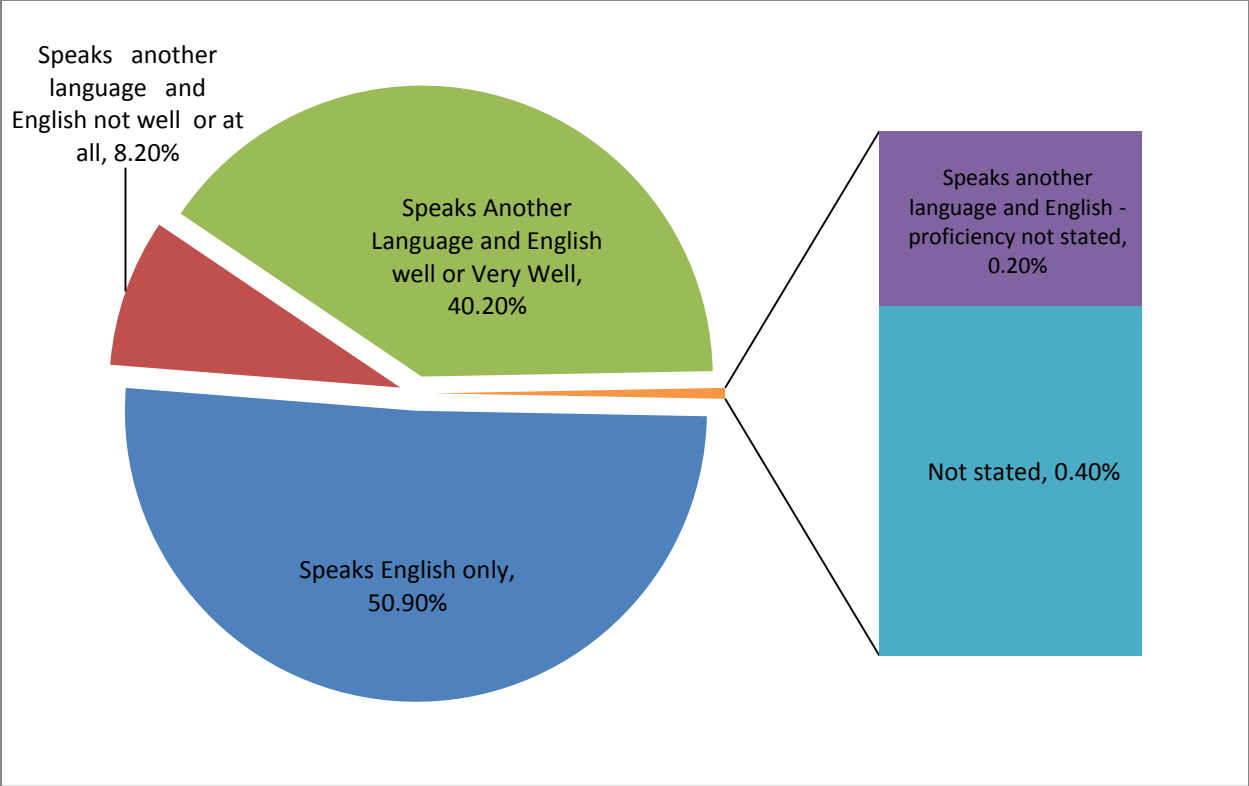
Figure 2-5: English Proficiency Blackburn 2006 (Data re-plotted from (Whitehorse, 2006))

The sanctuary is located in Blackburn, a suburb of Whitehorse. Cultural diversity in Blackburn has been increasing for the last ten years. The 2006 census recorded that 21.4% of the residents of the city of Whitehorse were born outside of Australia. Also, 77.9% of the people not born in Australia were born in a non-English speaking country. As shown in Figure 2-5 above, 8.2% of the residents of Blackburn did not speak English well or at all. This number increases to 13.3% when including all of Whitehorse. Mandarin and Cantonese are the two top non-English languages that are spoken at home according to the 2006 census. These languages also had two of the top three increases of population from 2001 to 2006. Similarly to the wide varieties of ethnicities, the age distribution in Blackburn is quite varied. The population is fairly evenly distributed throughout the different age groups. As shown below in Figure 2-6 the largest age group is 35-49 years old, with 23.2% of the city. Also, 21.6% of the residents are over the age of 60 (Whitehorse, 2006).
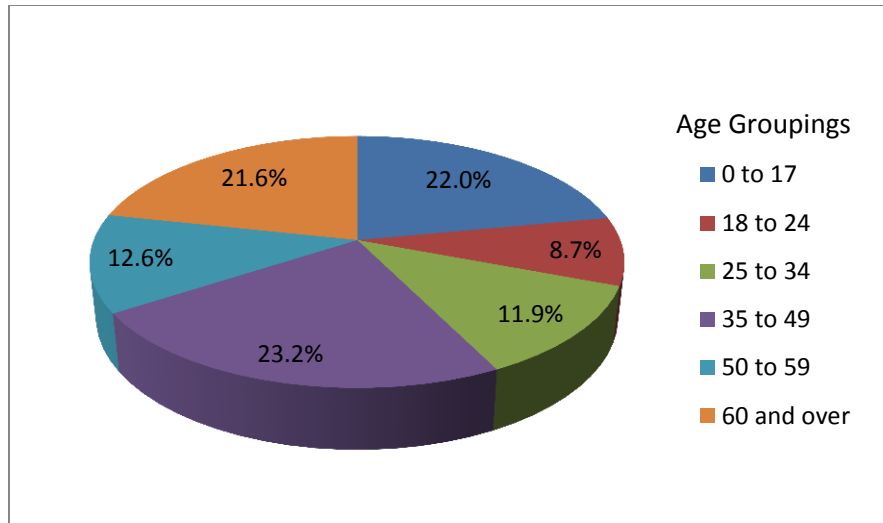
Figure 2-6: Age of Blackburn Residents (Data Re-plotted from (Whitehorse, 2006))

The diverse spread of language can have a large impact on the effectiveness of awareness campaigns as most often media is only distributed in English, crippling the ability of non-English speakers or readers to absorb information on the dangers of bushfires. Also with 21.6% of the residents being over 60 years of age, even if they receive and understand the campaigns they may be physically unable to properly prepare their homes.

2.9.2 Fire History of the Blackburn Lake Sanctuary

Over the last 30 years there have been three significant fires in the Blackburn Lake Sanctuary. Fires occurred in 1987, 1994, and 1997. The causes of these three fires were suspected to be arson related; however the causes were never officially determined (Blackburn Lake Sanctuary, 2012). These fires all occurred in the eastern sections of the park and burned right to the park border; luckily they did very little damage to the surrounding community. Some damage from the 1997 fire included burnt trees and a fence in the backyard of a house bordering the park. Also, the roof of a house bordering the south-eastern corner of the park was lit on fire due to ember throw. Fortunately, due to fast response the fire was quickly put out without complete destruction of the roof (Incoll, 2010).

2.9.3 Current Fire Risk in the Blackburn Lake Sanctuary

The Blackburn Lake Sanctuary, show in Figure 2-7 below, is a prime example of an urban-parkland interface. The dense bushland of the Sanctuary itself is surrounded by the

populated urban community of Blackburn. Today the bushfire risk in the Blackburn Lake Sanctuary remains high. There are large amounts of thick bush throughout the park that could quickly ignite under the right circumstances. Park Officials organize annual undergrowth removal in areas around the park, as well as fuel reduction burns to reduce the amount of fuel in parts of the park. An area of focus for fuel removal is the southeastern corner of the park shown in the bottom right hand corner of Figure 2-7 below**.** There is an access road along the eastern edge of the park that is maintained as a fuel break in case of a bushfire (Incoll, 2010). The main threat to the surrounding houses is ember attack and not ignition from direct flame contact. This is due to the differences between a parkland bushfire and a wildland bushfire. The Blackburn Lake Sanctuary contains much less fuel than a wildland-urban interface. This is why a bushfire that is likely to occur in this park would be smaller than a fire that could occur in the wildland-urban interface. Though there is still a threat of ignition through direct contact and radiant heat, it is likely that the fires will never grow quite large enough for these to become significant factors due to the reduced amount of fuel along the edges of the park boundary however, the threat posed by ember attack remains high.
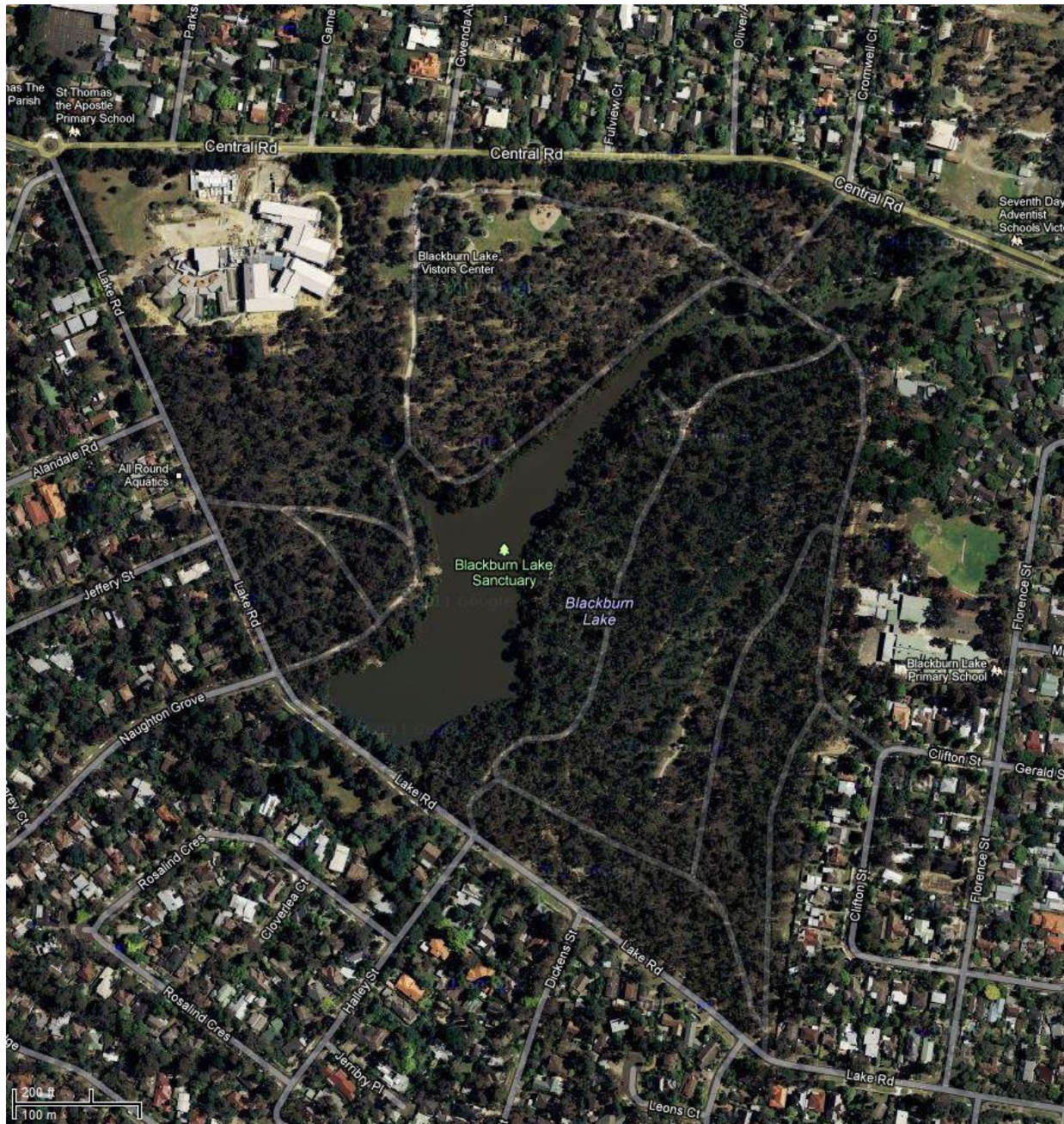
Figure 2-7: Map of the Blackburn Lake Sanctuary and the surrounding community (Google Earth, 2012)

Since the prevailing winds in the area usually blow out of the northwest, if a fire was ignited within the sanctuary, winds would spread the embers in a southeasterly direction. These embers could then ignite vegetation surrounding houses or even the houses themselves if they are not properly prepared. Fire authorities consider the southeast corner and the surrounding community to be in the most danger (MFB, 2012). This area includes parts of Lake Road, Clifton

Street, and Florence Street. The MFB and Whitehorse City Council focus on these areas for their bushfire awareness campaigns. These campaigns include pamphlets, newspaper ads, and community meetings. However, it is believed that many residents in this area still remain unaware of the bushfire risk they face (MFB, 2012).

CHAPTER 3 METHODOLOGY

The aim of this project is to provide recommendations for improving the effectiveness of bushfire awareness campaigns in the areas surrounding parkland in the City of Whitehorse. Through a case study of bushfire awareness campaigns in the community surrounding the Blackburn Lake Sanctuary, we have developed a series of recommendations to improve the communication strategy in the City of Whitehorse.

Work on this project was completed from March 13th, 2012 through May 2nd, 2012. However, we expect that the actual implementation of our recommendations will continue to influence the Whitehorse City Council and the Metropolitan Fire and Emergency Services Board of Melbourne after our departure. Our work for the Bushfire CRC will also serve as a pilot program providing indispensable insight into bushfire communications in the urban-parkland interface.

In order to achieve our goal of developing beneficial recommendations for raising community awareness, the study was grouped into two objectives. The first was to analyze previous and current education and awareness campaigns while the second was to evaluate community response to bushfire awareness campaigns. Due to the complexity of these objectives, they were further divided into a set research tasks, where completion of the tasks would result in fulfillment of the objective. This breakdown into objectives and tasks is outlined below in Figure 3-1. Completion of these research tasks and consequently our objectives, allowed us to gather the necessary data and information to make realistic and meaningful recommendations for changes and improvement to the current campaigns
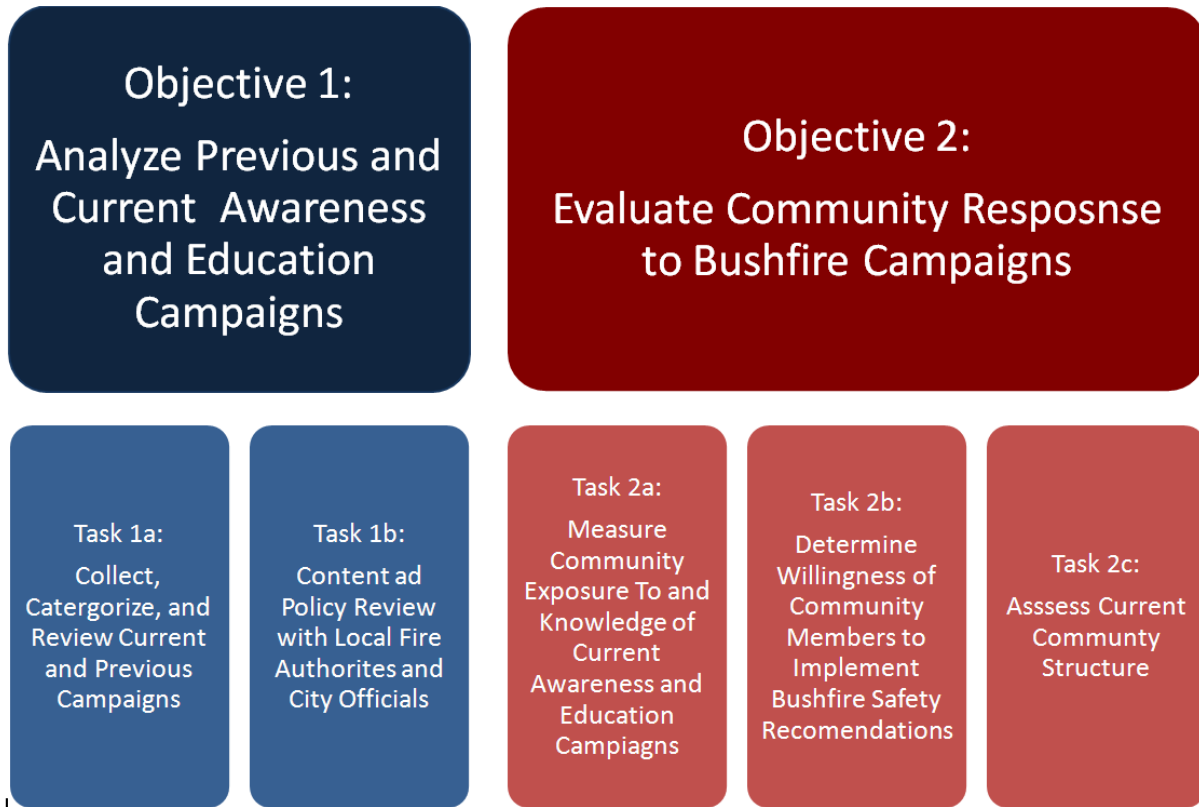
Figure 3-1: Breakdown of Project Objectives and Research Tasks

3.1 Analyze Previous and Current Awareness and Communication Campaigns

The first objective was to complete a comparative analysis of both current and previous bushfire communication campaigns that have been targeted towards Blackburn as well as the rest of Australia. To fully comprehend these campaigns, we analyzed the campaigns themselves as well as interviewed the officials in charge of overseeing their production and distribution.

3.1.1 Collect, Categorize, and Review Current and Previous Campaign Media

We focused our research on both the previous and current bushfire campaigns that target the area around the Blackburn Lake Sanctuary as well as informational media that was targeted towards other areas of Australia. This mass collection and analysis of media served several purposes. Collection of the media that had been targeted towards Blackburn was a way to establish a starting point for our community member data collection. Obtaining the information that is or was presented to the community members allowed us to target specific measures and pieces of information when gauging the Blackburn community's awareness and preparedness.

This data also served as a baseline for us to begin our recommendations. Acquiring informational packets and media releases from all around Australia was a way to strengthen our background knowledge in the area of bushfire communication. Using these previous campaigns we sought data on the information and messages that these publications presented. In addition, we noted the methods with which the publications were distributed.

To accomplish this task we utilized the Bushfire CRC's database and discussed the topic of bushfire literature with Bushfire CRC researchers, who have previous experience in researching communication campaigns. These discussions focused on current bushfire literature as well as the research methods used for data collection and analysis. The expansive Bushfire CRC database allowed us easily sample previous literature for analysis. We decided to use the major information packet from each state and the Australian Capital Territory as well as a supplemental sample such as a smaller pamphlet or other form of communication from each state. This enabled us to gain a diverse basis for our campaign study.

3.1.2 Content and Policy Review with Local Fire Authorities and City Officials

In order to analyze bushfire communications, we researched the 'behind the scenes' factors of their development. These included the rules, regulations, and policies that serve as guidelines for the campaigns' development as well as both the limitations and viewpoints of the developers, manufacturers, and distributors. This provided a baseline for us to make recommendations that contained content that could be officially supported and readily implemented by the MFB and the Whitehorse City Council. While we had begun our research with informal discussions with both Council members and MFB officials, we decided to schedule individual interviews after we began the rest of our research to acquire official statements and to be able to ask any logistical question that had surfaced. Our fire official interview was with Mark Milaszewicz, MFB, Commander of Community Resilience of the Eastern District – South East Metro Region, which includes Blackburn. His responsibilities include anything relating to community safety initiatives, programs, enabling communities to be more prepared and recover faster, as well as interacting with local government agencies.

Our method of choice for this research task was semi-structured interviews. Semi-structured interviews are when "the interviewer has some discretion about the order in which questions are asked, but the questions are standardized, and probes may be provided to ensure

that the researcher covers the correct material" (Harrell & Bradley, 2009). The format of semi-structured interviews was also effective due to both our limited background on the officials and the wide range of topics that we sought clarification on (Harrell & Bradley, 2009). These interviews allowed for the personal contact and informal interaction that was needed to explore this topic and obtain the perspective of officials and authorities on current policies and future initiatives.

The interview outlines for Council members varied slightly from the MFB's due to their different backgrounds and the nature of their positions. However, both outlines included several questions for clarification on issues that were presented during research and data collection. We discussed their organization's role in Blackburn, their organization's part in the Blackburn bushfire communication, their view of the bushfire threat in Blackburn, and their view on the preparedness and awareness levels of the community surrounding the Blackburn Lake Sanctuary. These interview outlines, the Project Information Sheet handed to interviewees, and the Participation and Statement of Rights Form can be found in the Appendix.

3.2 Evaluate Community Response to Bushfire Awareness Campaigns

Our second objective was to evaluate the response of the community around the Blackburn Lake Sanctuary to current awareness campaigns. Through community interaction, we collected information on the community's bushfire knowledge, their willingness to implement suggestions, as well as developed a community profile. Understanding these aspects of the current response to the bushfire campaigns has allowed us to tailor effective suggestions suited for the area surrounding the Blackburn Lake Sanctuary.

3.2.1 Measure Community Exposure to and Knowledge of Current Awareness and Education Campaigns

To accurately measure a resident's exposure to and absorption of the knowledge in current awareness and preparedness campaigns, we developed general research questions:

- Do the residents acknowledge/remember they received a pamphlet?

- Do residents read/remember content of the media they received?

- Are the residents aware of the bushfire threat in Blackburn?

- What information do the residents feel should be presented?

By setting our target population as residents within the area designated for distribution of the fire awareness pamphlets, we knew they received a pamphlet from the Council and the MFB in their mailboxes. This allowed us to directly inquire about any fire awareness media they had received. By determining if the residents acknowledge receiving the pamphlets we were able to figure out if the pamphlets themselves, regardless of content, were a weakness in the chain of communication.

Knowing a resident received a pamphlet is not enough to know whether or not a resident is aware of a bushfire threat. This led to the questioning of the residents about their awareness of the bushfire threat in Blackburn. This approach was previously implemented and successful in other research by the Bushfire CRC (Bushfire CRC, 2012). Interacting with the residents on a personal level and asking their point of view, was a way to determine exactly what the community would like to see presented in the communications by the Council and the MFB, as well as to get a basis for which methods they feel would be best to convey that information to them and their fellow community members. This allowed us to gain a general understanding of the community's awareness, which resulted in a better understanding of the effectiveness of the current campaigns. In addition, our interview questions also included ones asking the residents to give their input on what they believed the pamphlets should contain.

3.2.2 Determine Willingness of Community Members to Implement Bushfire Safety Recommendations

To evaluate the community's willingness to implement bushfire safety recommendations, we developed these main research questions:

- What kind of preparations have community members already made?

- What are some factors that prevent community members from performing the suggested and required prevention and safety measures?

- Who do the people feel is responsible for preventing and preparing for a bushfire?

The main difficulty with evaluating people's willingness to engage in bushfire safety is that everyone has different opinions on what is adequate preparation. There were also many different reasons why a person may or may not have made any preparations. To overcome this challenge, we focused on collecting the views of a wide spectrum of people, which provided us with multiple perspectives.

In order to deepen our understanding of the community's bushfire response we focused our questions to first learn whether or not the individual has developed a bushfire action plan or made physical bushfire preparations as well as the reasoning for their action. Questions were then focused either on what were the driving factors that led to their preparations or what could possibly motivate them or others to take preventative action. Due to the limited amount of time for our data collection and community interaction, it was not possible to interview every community member. To overcome this challenge we utilized our interviewees requesting for them to provide input on their fellow community members. Questions were also focused towards the physical preparedness of their neighbors and street mates as well as the overall willingness of the community to prepare for a bushfire. Obtaining the attitudes of and ideas from several community members enabled our analysis of the community's willingness to enact bushfire safety tips and facilitated the development of recommendations to the local officials on how to improve the content and portrayal of bushfire campaigns.

3.2.3 Assess Current Community Structure in Blackburn

Information flows through communities in both formal and informal networks which are an integral part of community structure. In order to gain insight into the existing structure and communication pathways of Blackburn the following research questions were answered:

- How is information communicated throughout the community?

- How often do neighbors collaborate or share their ideas and concerns?

- Are there any existing community communication methods that could be utilized in the Blackburn area?

To formulate an accurate perception of the community structure of Blackburn, community member interaction was augmented with the data from the previously described Whitehorse City Council member interviews[5]. The combination of data on community structure based on person to person views, with the overall community views provided by council members allowed us to see the community through multiple viewports. Communities often contain strong and complex existing social structures that should be analyzed from several different perspectives (Phillips et al., 2011). A thorough investigation into the community

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[5] See Section 3.1.2 for more information

structure of Blackburn and the existing sources of information flow enabled us to identify and recommend communication tools which would prove especially effective in the Blackburn community.

3.2.4 Community Member Interviews

To collect data for Objective 2, we used semi-structured interviews of community members. While there are multiple forms of interviews that involve asking questions and getting answers from participants in a study, "The semi-structured interview guide provides a clear set of instructions for interviewers and can provide reliable, comparable, qualitative data" (Cohen & Crabtree, 2006). This form of qualitative interviews enabled us to obtain the greatest insight into community members and provided us with the most insight into personal perspectives possible. This allowed us to acquire data that accurately represented the depth and complex nature of community engagement. During our interviews, we focused on following the same pattern for all interviewees. This was crucial, for when performing qualitative research, the use of proper techniques is required to ensure that qualitative data are collected in a scientific and consistent manner (Harrell & Bradley, 2009).

The Qualitative Research Guidelines Project (Cohen & Crabtree, 2006) defines semi-structured interviews as having three main characteristics. The characteristics are as follows:

1. *The interviewer and respondents engage in a formal interview.*
2. *The interviewer develops and uses an 'interview guide.' This is a list of questions and topics that need to be covered during the conversation, usually in a particular order.*
3. *The interviewer follows the guide, but is able to follow topical trajectories in the conversation that may stray from the guide when he or she feels this is appropriate.*

The development of an interview guide was a critical part of the preparation for our interviews. The Qualitative Research Guidelines Project (Cohen & Crabtree, 2006) also defines four focus questions to consider when developing an interview guide. Consideration of these four focus questions led to the development of our interview outlines which can be found in Appendix B: Interview Outlines**.** These steps are as follows:

1. *What is the focus of your inquiry (research question)?*
2. *What you want to learn from the person you're speaking with?*
3. *How much time you have and the kind of access you have?*

4. *How much you already know about your question, and how to manage this knowledge?*

In total we spoke with nine community members that live in the area surrounding the Blackburn Lake Sanctuary. In order to ensure validity in our results, we were sure to sample a diverse group of community members. Our sample included residents living on all sides of the park, living there for a range six to forty-four years, as well as a mix of age groupings and genders. These community members were all open and happy to speak with us on the topic of bushfires and communication and interviews typically lasted forty-five minutes.

The residents selected for an interview were chosen based off a snowball chain. Using community officials to gain an initial contact in the area, we asked each person we spoke with to ask their friends and neighbors if they would be able to give us the time for an interview on the subject of communities and bushfires. Using this snowball method for selecting interviews, we were able to find local community members who would be willing to talk to us in the quickest way possible.

CHAPTER 4 RESULTS AND ANALYSIS

4.1 Previous Campaign Research and Analysis

Our analysis of the bushfire communication strategy in Blackburn showed that it was ineffective and that residents were still not aware of the bushfire risk they faced. The communication literature did not help the residents personalize the risk, effectively communicate actions that should be taken by residents, or accurately target specific regions of Whitehorse. We also discovered many community assets that have the potential to be used for future communication but have not yet been utilized.

4.1.1 Campaigns Throughout Australia

The contents and arrangement of awareness programs varies greatly depending on the geographical region, demographical make up, and fire threat levels. Most of the bushfire awareness programs are targeted towards and distributed to communities in rural areas with high bushland density. There are currently very few campaigns targeting residents in more urban environments despite the present risk.

The "Prepare. Act. Survive." policy was officially adopted by the State of Victoria after the Victorian Bushfires Royal Commission's Final Report in 2009. This policy has recently been adopted by every Australian state. Fire and emergency services agencies throughout Australia have published many of their own booklets, pamphlets, and flyers using the "Prepare. Act. Survive." policy framework. Error! Reference source not found. below contains a summary of analysis of what we believe to be the most current primary bushfire communication booklet/packet for each state.

Table 4-1: Summary of Campaign Analysis

State/Territory *Fire Authorities*	Title	Length (pages)	Included Fire Danger Rating (FDR)	Presentation of Bushfire Myths	Inclusion of Burn Treatment or First Aid	Date of Publication or Effectiveness Displayed?
Victoria *Country Fire Authority* *Metropolitan Fire Brigade*	Prepare. Act. Survive. Fire Ready Kit	76	Yes	No	No	No
Australian Capital Territory *Emergency Services Authority*	Bush Fire Survival Plan	15	Yes	Yes	No	No
New South Wales *New South Wales Rural Fire Service* *New South Wales Fire Brigades*	Bush Fire Survival Plan	24	Yes	Yes	No	No
Queensland *Rural Fire Service* *Queensland Fire & Rescue Services*	Bushfire Survival Plan	17	Yes	Yes	No	No
Southern Australia *South Australian Metropolitan Fire Service* *Country Fire Service*	Your Guide to Bushfire Safety	32+Fact Sheets (approx. 106)	Yes	No	Yes	Yes 2011-2012
Tasmania *Tasmania Fire Service*	Bushfire Prepare to Survive	24	Yes	No	No	Yes 2010-2012
Western Australia *Fire & Emergency Services Authority*	Your Guide to Preparing for and Surviving the Bushfire Season	19	Yes	No	No	Yes September 2011
Northern Territory	The Northern Territory was excluded from our data collection due to the fact that we were not able to obtain informational packets.					

All but one of the states around Australia sends out a main information pamphlet to high risk areas. These pamphlets average thirty pages in length and contain a wide variety of information on bushfire safety. All of these have an explanation of the Fire Danger Rating and what actions should be taken for each rating. The statewide packets are more focused on how residents should react to a bushfire threat instead of convincing them of the bushfire threat. Only one packet contains sections describing how residents can determine if they are at risk. All of the packets also explained necessary preparations that residents should take if they planned on defending their house.

One of the most common flaws among the reviewed packets, and various brochures was the lack of identification numbers. Only three of the seven packets reviewed contain any sort of date or edition number. One of the three that do possess a date is marked for a two year period, rather than a one year period. Due to the lack of dates it is possible for someone who has two sources from different years not to know which is more recent. This could lead to a dangerous situation in which a person is preparing for a bushfire using wrong or outdated information. Also, without identification of when they were produced, the possibility that outdated information may be distributed is very real.

Only three of the seven packets contained a section specifically addressing bushfire myths such as the thought that fire trucks will always come during a bushfire, living a few streets away from the bush means you're safe, or that brick houses don't burn, all of which are false. In addition only two packets mentioned the emotional and mental impacts of returning home, and only one included any sort of overview of first aid treatment for burns. There was no single packet that possessed first aid, emotional impacts, a myth section, and a date. However all of the packets did contain the "Prepare. Act. Survive." framework, checklists, and their state's Fire Danger Ratings.

In addition to printable packets or packet mailings some states have been found to use other forms of media, most notably radio ads and DVDs. In both New South Wales and the Australian Capital Territory radio ads have been used. The four radio ads found in New South Wales focus on fire danger ratings, alert levels, knowing neighborhood safer places, and having a bushfire survival plan. When the "Prepare. Act. Survive." policy first was adapted radio interviews were done in the Australian Capital Territory to explain what the new policy is, why

the change needed to be made, and new fire danger ratings. Lastly in Western Australia the Fire and Emergency Services Authority uses DVDs to help spread the bushfire awareness message.

4.1.2 Current Suburban Melbourne Campaigns

The communication in Blackburn, as well as the rest of Whitehorse, is run by both the Whitehorse City Council and the MFB. These two organizations both create their own campaign literature. Current literature in Blackburn focuses mainly on a top down approach of communication with the authorities sending information to the residents of Blackburn. The publication employed by the MFB is titled "Urban Fringe Summer Fire Safety 2011/12." This booklet is also based on the "Prepare. Act. Survive." framework but is focused more towards residents that live on the fringe of urban areas, specifically in bushfire prone areas of Melbourne. The booklets sent there are eighteen half pages and are broken up into three sections: Prepare, Act, and Survive. This pamphlet contains specific information on topics ranging from how to prepare one's house for a bushfire to what should be included in a bushfire action plan.

The Whitehorse City Council pamphlet is a one-page, two-fold pamphlet. This pamphlet includes information on how to prepare a house at risk of bushfires, a brief overview of the Council's fire strategy, and Council actions. This pamphlet focuses on how residents can "contribute" to the Councils efforts to make the area safe. In the pamphlet there is also a link for a much more detailed description of the City of Whitehorse's bushfire management plan. This sixty page document contains information covering all aspects of the Council's actions relating to bushfire risk and preparedness in parks around Whitehorse.

The Council and the MFB attempt to engage community members in other methods as well. Each year a one hour information session is run in partnership with the MFB, the Council and sometimes the Country Fire Authority. This is usually held near one of the parks in Whitehorse and covers information for all of the parks in the city. In addition, bushfire education campaigns are run in the local schools near city parks. The Blackburn Lake Primary School undertakes in bushfire prevention and awareness activities throughout the year as well as special participation in the yearly Fire Action Week. The Council will also run newspaper articles during the fire season. These articles contain information on what the council is doing, as well as what residents can do to prepare. These articles also focus on showing how the community can work with the Council.

4.2 Review of Blackburn Official Policies

The Metropolitan Fire Brigade (MFB) and the Whitehorse City Council understand the importance of community resilience in preparing for, and recovering from bushfires or any other disasters. Actions by these organizations are taken individually as well as in collaboration in order to improve community resilience.

4.2.1 Metropolitan Fire Brigade and Community Bushfire Preparedness

The Metropolitan Fire Brigade takes many actions each year to maintain and increase bushfire preparedness of its members and the communities in its response areas. This begins with the recent implementation of bushfire training for all MFB fire fighters even though the large majority of fires they respond to are urban-structural fires. During a bushfire in an urban-parkland area this recent training change can play a large role, as Blackburn community members were last affected by a bushfire before this training and believed the MFB fire fighters were unprepared for a bushfire. During our community member interviews[6] some community members mentioned that during the previous bushfires in the Blackburn Lake Sanctuary the MFB consumed too much time laying hose down the street and around the fence in order to begin containment operations, however Commander Milaszewicz informed us that this was the incident commander's decision at the time. The standard operating procedures of the MFB in an urban-parkland bushfire are now to take the quickest path, regardless of fences, and as such hydrants, access points, and at risk properties are marked on recently developed MFB bushfire response maps for areas of increased bushfire risk, like the Blackburn Lake Sanctuary.

In addition to taking actions to improve their response methods and training, the MFB is essential in communicating the bushfire preparedness message. They develop and distribute bushfire safety pamphlets to the at risk 'urban fringe' areas of Melbourne such as the Blackburn Lake Sanctuary community. In addition they are heavily invested in bushfire awareness meetings, attending all meetings when possible and even taking a major part in planning as described by the MFB Community Resilience Officer, *"I attend quite a few of them… I certainly organise them all - and if I don't attend I'll get one of the operations' commanders to go."*

An important aspect of the bushfire campaign is the attempt to get fire authorities and community members on the same page when it comes to bushfire preparedness and responses if

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[6] See Sections 4.3 to 4.5 for community member interview results

a fire were to occur. When asked what the MFB would like to see the people do in terms of action and preparation, Milaszewicz's response was quite simple. *"I'd like them to be more educated about what the actual risk is and the risk exposure. I'd like them to be able to make an assessment of what their strategy is going to be. I'd like them to prepare for that strategy and implement it when things go wrong."* He explained how in most communities there are a significant number of people, an estimated amount of about 75% of the population, who are not aware of the fire threat and who, in the case of a bushfire, would wait to be told how to react. Bushfires in the recent history have proven that this type of response could prove to be fatal and as the quote above shows that is not what the fire authorities want people to do. They want the residents to recognize that there is a risk of fire and for the resident to develop a plan that will keep them safe if a fire were to occur.

4.2.2 The Whitehorse City Council and Community Bushfire Preparedness

As a local government Whitehorse City Council places a large emphasis on community interactions in all facets of their government, including community safety. The largest bushfire threat in the City of Whitehorse is the Blackburn Lake Sanctuary area (Incoll, 2010). The Whitehorse City Council has developed their own bushfire pamphlet, which is letterboxed[7] every year before the fire season to approximately 2,500 properties in Whitehorse identified as being at risk due to their proximity to parks and bushland reserves. In addition to these pamphlets, which provide information for community members to act upon, the Whitehorse City Council has developed their own action plan, "Bushland Reserves Fire Management Strategy." Though the Council has provided residents with the opportunity to review and comment on their fire management strategy, during its periodic eight year review cycle, they have received no feedback as stated by City Official #2. The Council is constantly working to meet fuel reduction goals through the manual removal of brush as well as contracting companies in order to complete prescribed burns.

4.2.3 Collaboration Between Metropolitan Fire Brigade and Whitehorse City Council

A common thread between the Metropolitan Fire Brigade and the Whitehorse City Council is that they believe it is important to for local governments to have a strong working relationship with emergency management and response organizations. Basically they believe that

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[7] Letterboxing is when the city or a volunteer physically places the object of interest in the resident's mailbox

it is important that they have a strong relationship with each other. Interviews with both organizations yielded results that concluded the existence of an effective relationship. When asked about his position, Milaszewicz replied with, *"Establishing and developing those relationships with local government and Parks Victoria, establishing and developing relationships with the local community and in partnership with those organizations. The communication side that is where we work together to deliver a consistent common message."*

This relationship is not just something that is on paper. It is evident in the numerous actions and events that take place due to Council and MFB collaboration. At the beginning of the summer or "Fire Season" both organizations team up to deliver both of their informational packets. As shown in the paragraph above, the MFB shows a strong support for the community events that the Council puts on every year. In addition to community communication, the MFB and the City Council work together when developing and completing the necessary bushfire mitigation and planning procedures. This is shown in City Official #2's response to their relationship with the MFB. *"So for instance, we've inspected with the MFB, the fire authority and [determined] the following lists of works are required to be done for the coming year. But also too, when we review documentation we will go to them for comment as well, so review of the strategy or review of specific fire plans, fire plans for sites."*

4.2.4 Community Challenges

There are many challenges that the Whitehorse City Council and the MFB face when creating bushfire information pamphlets. The first challenge is the geographical location of Blackburn itself. Since the situation in Blackburn involves suburban area surrounding parkland, only a few streets will actually display the physical characteristics and therefore risks associated with being an urban-parkland interface. Due to the urban area being larger and surrounding the parkland, nearby streets that do not border the parkland direct would not display these risk characteristics. This makes it very difficult to convince people in these streets, where there is no bush that they could be in danger. In addition to the strong sense of protection due to the environment, City Official #1 explained how people are uninterested in bushfires in Blackburn due to the limited number of previous occurrences. *"We haven't had a significant fire in Whitehorse since '97, so we're talking 15 plus years. It's very hard to justify emergency management planning activities, et cetera, where there hasn't been a real threat."*

Fire and City officials also face the challenge of conservationists around the park. As stated in the background[8], throughout Australia there is a constant conflict between conservationists and fire authorities and Blackburn is no different. Both City Officials stated that there were compromises with local conservationists when their development plans were created. When asked if they had found a happy medium, City Official #2 responded that there was no such thing as a 'happy' medium but that the balance between conservation and protections shifts based on the fire threat and he feels as though they are doing what they can to make all parties involved happy (City Official #2).

Another challenge faced is the diversity of the community around Blackburn. As shown in section 2.9.1, Blackburn has a very diverse community with nearly 10% of the residents not speaking English at all or well. One method that the City Council has used is putting ads in cultural newspapers. *"We put information about fire preparedness in local newspapers. We put it in the Chinese newspapers and we provide links certainly on our websites to the fire authorities, CFA, MFB on more appropriate information, because they're the experts"* (City Official #1).

4.2.5 Government Limitations

There are many factors that limit the options for communications methods based on the capabilities of the Council itself. The Council is mainly limited by money, man power, and time. Both of the City Officials stated money as a major factor to what their options were. All bushfire media costs money to make, from designing to printing to buying space in newspapers. In our interview with the first official, he mentioned that one of the reasons that the city did not run television ads was due to the high cost.

There is also a limited amount of people and time to accomplish tasks. One example of this was given by the City Official #2 in reference to notifying residents on the day of a prescribed burn. *"Yeah and letter-boxing people - you can't door knock 600 people on the morning to say, yes, it looks like it's on. It's just not going to work."* These officials also have many responsibilities outside of bushfire-related activities. The MFB Commander we interviewed stated how he also had many other projects to attend to and both City Council members had several responsibilities that did not relate to bushfire at all.

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[8] See Section 2.5 Conflict Between Fire Authorities and Conservationists

4.3 Measurement of Community Awareness and Exposure

4.3.1 Reception of Bushfire Awareness Material

The community around the Blackburn Lake Sanctuary is consistently sent between two and three bushfire safety pamphlets every year. Through discussions about bushfire safety literature with local residents, every resident interviewed acknowledged receiving these pamphlets and were aware of the general messages that they contained. A few of them had even gone as far as to have kept all of the communications they received in an organized folder. However, it was noted by some residents that the message, or even the front cover, has not changed in recent years and that they have stopped reading these information pamphlets as closely as before. *"Every year the council sends out a folding flyer thing that is really a repeat of the one of the year before and there is no improvement or - it's just got a different date on it that's all"* (CM 6). Nonetheless, when asked if they received any bushfire education pamphlets, all of them said they received at least one information packet. This is not surprising that they would say one since both the MFB and Whitehorse City Council information packets are delivered preceding the fire season.

Review of bushfire communication methods other than letterboxed pamphlets used by the Whitehorse City Council has shown that the community seemed to be either unaware of or uninterested in them. One specific example was observed while conducting research in Blackburn. During that time, there was a prescribed burn scheduled to take in place in the park. Few of the residents seemed to know that the burn was taking place and the few who did, did not know of a specific date when the burn would take place. The only information, regarding the burn, we found placed in the park was a warning written in letter form. This sign is shown below in Figure 4-1. When looking at this sign, there was no indication that would grab a reader's attention to the fact that it described anything fire related until completely read. Also, the sign only limited the date of the burn to any day in a month's span.
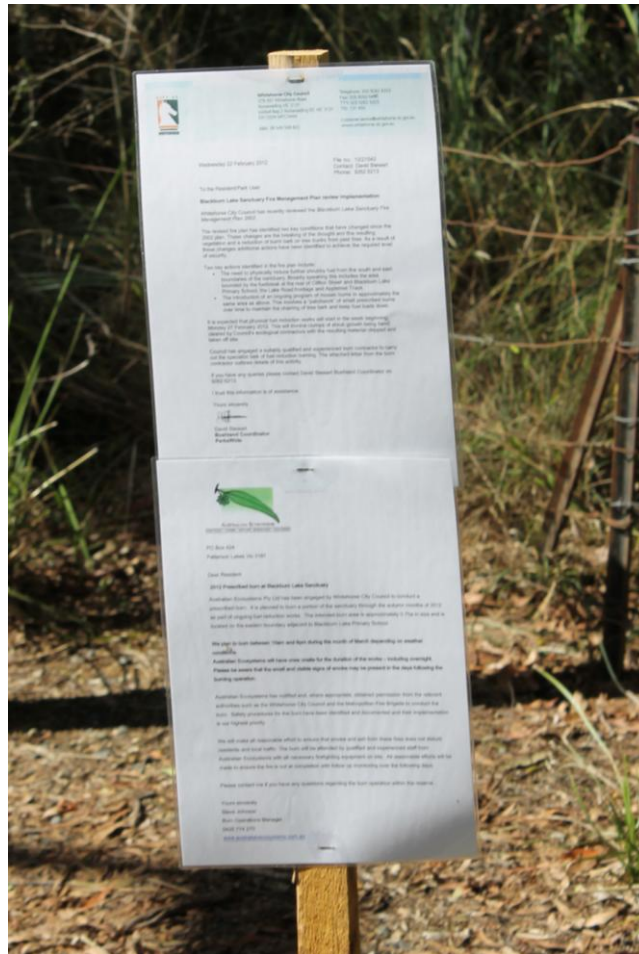
Figure 4-1: Prescribed Burn at the Blackburn Lake Sanctuary Notification Sign

Other forms of communication by the Council have been met with similar results. Each year Whitehorse City Officials have open bushfire safety meetings before the fire season. However, few of the residents seem to be interested. One resident stated that she could only think of a few people from the entire neighborhood that might have gone. However, when the Blackburn Lake Sanctuary Advisory Committee had a member of the Country Fire Authority (CFA) come talk to residents of the area surrounding the Blackburn Lake Sanctuary, many more people turned out to listen and discuss bushfire safety. The Whitehorse City Council also has put advertisements and articles in the local newspapers. It seems as though these have not been effective as none of the residents we interviewed recounted these advertisements when mentioning bushfire awareness literature they remembered.

While talking to community members about what methods they feel would be the best form of communication for the Blackburn area, we found they are satisfied with the current forms of communication (i.e. mailings and community meetings). Community member recommendations for the awareness campaigns consisted of suggestions for content rather than methods. A common theme was simplified informational packets. "*People these days just like to be told the truth. Black or white. No grey area. That's how it is. That's what you should do.*"(CM 3) Some suggestions did include augmenting the communication strategy with modern forms of technology. However, the suggestions also warned for the Council and the MFB to be sure to account for the age demographic that the campaign would be targeting. "*...some of the residents in the street may not have the availability of the mobile phone and/or email because of the age difference.*" (CM 3) While some specific limitations exist in Blackburn, this support for integrating new technology into bushfire communications shows that in other areas with a younger age concentration, modern technology could be an excellent method for communicating bushfire risk.

4.3.2 Awareness of the Bushfire Threat in Blackburn

Study of the awareness of the residents surrounding the Blackburn Lake Sanctuary shows that they acknowledge the bushfire threat but are unable to personalize. For the context of this project awareness is defined as being capable to understand and personalize the bushfire threat to one self and one's own property. All of the residents we interviews agreed that there was at least some risk of a bushfire occurring in the park and that, if a fire occurred; it could affect the surrounding community. They also seem to understand what preparations are recommended by the MFB. However, many of the residents felt that the information was not specific enough to Blackburn Lake Sanctuary and felt that many of the recommendations were not applicable to their situation which demonstrates their inability to personalize the bushfire risk. "*I think we hear day after day the state [bushfire communications] for the rural areas and people think that's not us*" (CM 1).

The only residents found to be aware of the risk, as per our definition, were found near the southeastern corner of the park, the area of greatest danger. These residents only became aware due to personal bushfire experience from previous fires[9] in the Blackburn Lake Sanctuary,

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[9] For history of fires in the Blackburn Lake Sanctuary refer to Section 2.9.2

and only make up a small portion of those in this high risk area and an even more miniscule portion of the overall community surrounding the Blackburn Lake Sanctuary. The personal experience from the previous fires has led to many community based initiatives to stay bushfire aware. Some of the older members of the community will talk to newer community members about the bushfire risk in the area. However, they do so hesitantly because they do not want to scare the new residents. "*I don't like to scare the young mothers with their children who move in to explain how terrifying and totally destructive the fire was*" (CM 3).

4.3.3 Residents Reaction to Bushfire Awareness Campaigns

People we interviewed had mixed opinions on the information campaigns that have been sent out by the Whitehorse City Council. Residents' main complaint against the information they receive is that it does not specify Blackburn residents as its target audience. They feel that the information is just general MFB prevention techniques that are not applicable to their area. When asked what information they would like to see in the information packets, many residents said that they would like to see a Blackburn specific packet. A Blackburn specific packet could motivate people who do not believe that they are at risk to embody the true bushfire threat.

Another recommendation from local residents was improving communication between the City Council and the community. Specifically residents would like the city to tell them what actions are being taken in the park to protect the surrounding community, such as with the controlled burns stated earlier. Many residents are unsure of what the city has done to prepare the park for a bushfire threat. There is a publication from the City Council with their plans; however, it contains too much technical information on bushfire dynamics according to the residents. Community members have stated they want a short concise information packet on what is being done as well as what they can do to keep their houses safe. Some residents believe that this discussion could help influence people to become more prepared as they see how both residents and officials need to take actions to keep houses safe.

One community member recommended including a part in information campaigns showing the possible outcomes of an unprepared house. They suggested basing the warning campaign around the anti-smoking campaigns in Victoria. "*If you smoke you're going to suffer, you're going to suffer terribly if you get lung cancer. That should be the same with the bushfires. If you get caught in a bushfire, they - show people in a hospital bed wrapped up in bandages*"

(CM5). The hope is by showing people what could happen if they don't prepare, they will be motivated to prevent such an outcome. This was also voiced by a City Official #2 who talked about some of the most effective methods; pictures of flames arching over a street from the Blackburn Lake Sanctuary into nearby neighborhoods. That picture not only showed what can happen when people aren't prepared for a bushfire, but it directly relates to residents of the community surrounding the Blackburn Lake Sanctuary.

4.4 Determination of the Community's Willingness

4.4.1 Current Community Preparedness Actions

In the areas surrounding the Blackburn Lake Sanctuary, many residents have enacted basic bushfire preparations around their property. The most common response follows along with the suggestions given in the information pamphlets letterboxed by the Whitehorse City Council. It is common to find residents who are consistently keeping their yard clear of dead grass and branches as well as regularly cleaning their gutters. For the majority of the people, the feeling is that this is the most preparation that needs to be done. Asking people to do any more than this could backfire and result in residents paying less attention to these recommendations.

In Blackburn, there were some extreme cases of community member bushfire preparation. One member was extremely prepared for a fire to occur. He had bought large water containers to put in his yard on days of high fire risk. This was an attempt to have water available to put out spot fires, which were a common occurrence in previous bushfires (CM 3). On the opposite end of the spectrum there were residents who had not made any preparations. One community member's property contains a group of four houses had been completely overgrown, and has been to known to consciously not prepare for a bushfire. Other residents that we interviewed had actively decided that they were not going to make any preparations to their house because they did not feel it was necessary. These extreme forms of unpreparedness were not common throughout the community; however, they should still be a focus for recommendations due to the fact that each resident's safety is affected by their neighbor's preparations. Out of the nine community members we interviewed, seven clearly stated that they believe their preparation affects their neighbors' safety.

4.4.2 Reasons Why Community Members are Not Prepared

After talking with local residents, we learned of multiple reasons why people had decided to not make any major bushfire preparations. "*So we can have a totally concrete backyard and it won't go on fire, but we live in this area because of the bush, and we want to keep everything green*" (CM 2). The main opinion was that people didn't like losing the amenities of living near the bush. While they are willing to engage in some prevention techniques, such as removing leaves from gutters, they are opposed to serious plant removal. For these people new strategies are needed to better communicate the risk they are facing. While it is possible that some people will not change, better education may still lead to improvements, as small as they may be, they will still aid in increasing the overall safety of the community

Another reason that was brought up in our interviews was that people believe that their preparations are not effective. They understand the risk of bushfire, but they either believe that there is not a significant enough threat to make serious preparations, or that the recommended preparation will not make them any safer if a bushfire occurs. These feelings were not isolated, but also expressed by residents who did do the basic preparations for bushfire preparedness.

Many of the residents believed that the most important preparation that needed to be done was park management. Residents that lived next to the park stated that they would like to see more fuel reduction and improvements to the fuel break along the eastern edge of the park. This seems to follow along with the problem of residents having difficulty personalizing the risk that was also discovered in Susan Chaplin's research in Tasmania[10]. In her studies she found that residents could identify and report hazards that are viewed as the responsibility of city councils or other agencies; however they struggle to identify or personalize the risks that are present in the immediate areas around their homes or properties (Chaplin & Fairbrother, 2012).

On the other side of the spectrum, there are members of the community who believe that the park should reduce the amount of fuel reduction they do. Around Blackburn, there are many people who want to preserve the natural environment of the park itself. One of the residents we interviewed was worried that current bushfire prevention plans cause too much damage. It is important to note that this resident does not live in a house that is considered to be in the very high danger area, nor had this house been affected by the previous Blackburn bushfires.

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[10] See background section 2.8.2 for more information

The community feels that there is also a lack of communication between the Whitehorse City Council and themselves. Out of the nine community members we interviewed, four specifically talked about the fuel break in the park. Two of these residents also stated specific dimensions they believed the fuel break was supposed to be maintained to. Both of these residents mentioned a different dimension they believed the fuel break was meant to be maintained at. However, our interview with City Official #1 revealed both sets of dimensions to be inaccurate and that the fuel break is maintained a manner different than what residents believe. This lack of communication can potentially lead to a feeling of distrust between the City Council and community members. This has caused some residents to gain a mindset of "if the Council doesn't do anything to prepare, why should I?"

4.4.3 Community Member Bushfire Communication Recommendations

Many residents we interviewed stated that they wanted more communication between the Council and community members to better explain the specific risk of bushfires to the Blackburn Lake Sanctuary. By explaining to people how they are personally affected, they may feel that bushfire preparations are more important. Also, by increasing communication of council bushfire actions, the potential for community action will increase due to a sense of community and council cooperation.

4.5 Assessment of Community Structure Surrounding the Blackburn Lake Sanctuary

4.5.1 Community Structure on a Personal Level

The community surrounding the Blackburn Lake Sanctuary is a very unique community. In our interviews with community members we asked them how well they knew their neighbors and how often they talked to them. The responses showed an overwhelming sense of community. All of the residents interviewed, stated that they spoke with their neighbors multiples times every week. There was also a street bordering the park that was an extremely close-knit community. Residents on this street have a system set in place where they would look after one another's house if they went away during the fire season. "*So if three or four of us were all away together, one of us would change our plans to be home, because we're that paranoid about fires*" (CM 2). While this is only one specific street with a tight knit inter-member connection, interviews with community members from other streets also portrayed a significant sense of community. Seven

out of the nine community members described a strong sense of community relationships in their area.

4.5.2 Community Organizations and their Roles in Bushfire Awareness

There are many different organizations in Blackburn. The community members we interviews stated that they were involved in groups such as church groups, walking clubs, and local provost clubs. However, when asked how involved other community members were in these clubs we received mixed results. Some residents believed that the other community members were very active in these groups, while other residents stated that most people were not very active. Our interviews concluded that there was a mixture of both; some members being very active while others were not. Six out of the nine community members stated that they were currently involved in community activities. One of the members stated that he had been active in community activities but he is no longer due to his age.

One group that played an active role in bushfire awareness was the Blackburn Lake Sanctuary Advisory Committee. This is a group of citizens who volunteer their time to help the Blackburn Lake Sanctuary by doing things such as running the visitors center. They help promote bushfire awareness through posting information on their main bulletin board; this information is mainly focused on preventing fires in the park. The last three major park fires were caused by arson related activities; therefore most of the prevention literature is aimed at reporting suspicious behavior and suspected arson. They also have run awareness meetings where they have a bushfire expert come in and speak to the local community. While this has not been done recently, it has been effective in the past.

Another organization that has played an active role in bushfire awareness is the local Neighborhood Watch. In previous years they have had a similar program to the Advisory Committee's, where they invite a bushfire expert to come speak. These meetings have also had significant success in the community. These types of methods could be supported by the Whitehorse City Council to improve bushfire preparedness in the Blackburn area. If these presenters could give some Blackburn specific information, it could help engage the community and have a large effect on how the community prepares.

4.5.3 Community Response to Previous Threats

When interviewing community members we asked them about how the public reacted to large threats. We were looking to see if the community would come together to solve a problem as a whole, or if it would be individuals fighting the problem. What we found was that for large problems, a community wide response would not be uncommon, especially for bushfires. We heard of multiple stories of certain streets banning together to respond to a bushfire threat.

The most significant example of this would be the response from a street surrounding the Blackburn Lake Sanctuary after the 1997 bushfire that swept through the park. The community joined together to write a discussion paper, including a list of recommended actions that they would like the City of Whitehorse to implement to prevent another "catastrophe." This list contained recommendations on topics such as fuel removal, improving access for the MFB, and other topics as well. This report was officially submitted to the City of Whitehorse in 1997. While this is an extreme response to a bushfire, it does show that if there is a big enough threat, people in close communities are more than willing to join together.

Smaller examples of community wide responses were also seen from the same street. There is a house where the owner refuses to clear his land, which results in severe overgrowth. The community has responded by both in asking him to clear his land, as well as petitioning the City Council to take action. "*We have endeavored to try, with authorities. I have been nominated in the street often to do things about it, write in, and the council say his excuse is that he's renovating*" (CM 2). This seemed to be a more typical example of a community reaction that could be expected. The main idea we saw here is that these forms of response would be on a street by street basis, instead of an overarching community approach. This also represents the streets close to the Blackburn Lake Sanctuary may not be representative of other areas in Whitehorse.

4.5.4 Community Communication Methods

There are many forms of communication in the community. A major method is resident to resident communication. Since most people in these communities often speak to each other, by reaching one member of a community, a campaign can effectively reach multiple members in that community. There were examples that a street may only have one member which would go to a bushfire talk run by the Council. But, that person would then return to their street and tell

their neighbors what they learned and spread the knowledge. *"They've sent a number of letters out making residents aware that there are council meetings which we can attend, not that I've been to all of them. But another one of our neighbors goes on a regular basis and keeps us up to speed with what's going on."* (CM 3) This is an interesting phenomenon because it shows that, even though an information session doesn't have many attendants, this doesn't always mean that the information is not reaching a large number of people.

This is a form of communication that is very similar to the bottom-up approach. Many of these residents have become bushfire aware due to the fact that they have experienced past fires. This has resulted in residents being self-motivated to become bushfire prepared. One example is described earlier in the quote by Community Member #2, found in section 4.5.3. Residents on some streets around the Blackburn Lake Sanctuary have taken the initiative to create their own bushfire preparedness plans and their own communication methods. While this is not official bushfire communication, community based initiatives such as this play a large role in residents' bushfire preparedness.

The other main form of community communication we found was through the community wide groups such as the Blackburn Lake Sanctuary Advisory Committee and the Neighborhood Watch. If these programs could be supported by the Whitehorse City Council, they could become very effective ways of communicating bushfire information to community members. If the information given at these meeting could be made Blackburn specific, it could show members the personal dangers they face and how they could prepare their homes. It would also be an excellent situation to allow City Officials to explain what their plans are so that local residents would understand what to expect from authorities.

CHAPTER 5 CONCLUSION AND RECOMMENDATIONS

After reviewing the communication strategies in the community surrounding the Blackburn Lake Sanctuary, we found that the bushfire awareness communications were ineffective. Accordingly, we created a series of recommendations to improve bushfire media and community engagement activities in Whitehorse. While aware of a general bushfire threat in the park, residents had failed to personalize the risk. This lack of personalization has had a negative effect on the preparedness of the community as four out of the nine residents we interviewed had not taken any preparatory actions for a bushfire. We also found many community tools already present in Blackburn which had not been utilized. There were multiple community groups that have run informal bushfire meetings as well as provide personal connections within the community, which have not been approached by the council to engage in the formal bushfire communication network.

We also found that general bushfire communication techniques used in higher risk areas across the country would not be effective in Blackburn. One of the main causes is that in an urban-parkland environment, the risk is much less recognizable than in the wildlands. It is difficult for urban residents to understand they could be at risk because they do not associate bushfires with the urban areas. In addition, the factors affecting what can be considered reasonable preparedness are very different in the urban areas than the wildland areas.

5.1 List of General Bushfire Communication Recommendations

Through analysis of previous campaigns from throughout Australia as well as a case study of the communication targeting the Blackburn Lake Sanctuary, we have developed the following list of general recommendations for increasing the effectiveness of bushfire communication in urban-parkland areas:

1. Develop literature with area specific titles and graphics

2. Ensure all media messages by fire authorities and local officials are consistent

3. Determine community expectations of communication literature

4. Label all bushfire communication with its publication date and edition number

5. Maintain an up-to-date database of distributed bushfire communication

6. Appropriately communicate actions taken by local authorities and officials

7. Provide a forum for discussion of bushfire mitigation procedures

8. Determine community structure to identify possible existing communication tools

9. Keep communication strategy in balance with current technology while targeting the community

10. Implement a plan for periodic review of communication effectiveness

Since some of the factors that are contributing to Blackburn's lack of awareness and preparedness are prevalent in other urban-parkland areas, we believe our recommendations would be effective in such areas. However, we cannot be sure that our recommendation would have the same magnitude of impact in other areas as they will have in Blackburn.

Recommendations for the community-specific pamphlets, putting dates on literature, and creating a database of previous bushfire communications are all recommendations that can be readily implemented by city officials across Whitehorse and possibly the greater Melbourne area, as they are simple changes that our research has shown to be a problem across the country. However, the remaining recommendations require research into the specific communities they are targeting before they can be implemented. The research needed for these recommendations would be similar to the research we have conducted in Blackburn.

5.2 Recommendations for Improving Bushfire Campaigns around the Blackburn Lake Sanctuary

Extensive background research on the content and structure of bushfire campaigns from throughout Australia has been combined with analysis of the current campaigns targeting the Blackburn Lake Sanctuary and the community's responses to those campaigns. This compilation of data has led us to develop the following recommendations for the Whitehorse City Council and the MFB that will increase the effectiveness of the communication targeted towards the community surrounding the Blackburn Lake Sanctuary.

5.2.1 Develop literature with area specific titles and graphics

It is very difficult for Blackburn residents to personalize the risk and they often brush aside bushfire campaigns because they do not feel that the campaigns pertain to their area. Our recommendation for the Whitehorse City Council is to **create packets with Blackburn in the title and a local map or picture of a previous fire on the front as well**. Community members

that we interviewed stated that if residents were given Blackburn specific information, they would be more aware of the threat and be more willing to engage in preparedness actions.

5.2.2 Ensure all media messages by fire authorities and local officials are consistent

MFB Commander Milaszewicz has clearly stated that the main goal of the MFB campaign was for residents to have a plan in the event a bushfire occurs in the park. However, though present in the MFB packet, there was no message of this in the communication packet from the Whitehorse City Council. To ensure consistency, we recommend that the Whitehorse City Council **incorporates explanations of bushfire preparedness plans in their packets**. In order for these messages to be effective, it is important that they are reiterated throughout all forms of communication regardless of publisher.

5.2.3 Determine community expectations of communication literature

In Blackburn we discovered that many people wanted short concise packets on what they needed to do in order to prepare for a bushfire threat. In order to accommodate this desire, we recommend that Whitehorse City Council and the MFB **create a short, concise pamphlet that contains only the necessary information for what residents needed to do to prepare for a bushfire**. Community members have indicated that they feel this can be an effective way to communicate the bushfire risk in Blackburn.

5.2.4 Label all bushfire communication with its publication date and edition number

In Blackburn we found that the information packet sent out by the MFB did have a publication date while the pamphlet sent by the Whitehorse City Council did not include a date. We recommend that **all information packets that are sent to Blackburn include the date of publication**. Even though this was not an issue raised by Blackburn residents, studies in other areas have shown this to be a problem[11]. It is important for the Whitehorse City Council to include dates on the information pamphlets they are sending out so residents will not accidentally use outdated information when preparing for bushfires.

5.2.5 Maintain an up-to-date database of distributed bushfire communication

Throughout Australia there are very few official records of what bushfire awareness literature has been sent to the public. This lack of data makes it very difficult for fire authorities

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[11] See Results section 4.1.1

to track what they have sent out in the past and what information the public currently possesses. We recommend that **a database be created of all communications that have been sent to Blackburn, both from the Council and from the MFB**. This database can serve as a reference for both the MFB and the Whitehorse City Council when they are planning future campaigns and designing new information pamphlets.

5.2.6 Appropriately communicate actions taken by local authorities and officials

In Blackburn we learned through interviews that there is confusion about actions that are being taken by the City Council and MFB. We recommend that the Whitehorse City Council and MFB **be more transparent with their actions with respect to bushfires**. Showing numeric data, such as the amount of fuel removed from the park, could be an effective way to show people what the council is doing to help keep them safe. We also recommend that the bushfire literature that is sent out **focuses on explaining how residents help make their properties safe by doing their part to augment the actions of the council and MFB**. This is important to avoid residents believing that the council or fire authorities are doing so much work that they do not need to take their own actions.

5.2.7 Provide a forum for discussion of bushfire mitigation procedures

In Blackburn, multiple residents stated opinions about what they felt should be done. We recommend the Whitehorse City Council **provide forums where residents can discuss mitigation procedures with city officials**. By providing a forum for discussion with local residents, the City Council can help foster communication with local residents. These discussions would both educate residents about actions being taken by the council and give residents a chance to voice their opinions of what they feel should be done.

5.2.8 Determine community structure to identify possible existing communication tools

In Blackburn we analyzed the community structure and found that there were many community organizations that could play a role in community engagement. The Whitehorse City Council can **engage local community groups such as the Neighborhood Watch and the Blackburn Lake Sanctuary Advisory Committee** to increase community engagement. People in Blackburn have been responsive to previous meetings held by these groups due to the fact that they are local. These meetings would be an excellent place to present area specific information which would make people more likely to engage in bushfire preparedness.

<u>5.2.9 Keep communication strategy in balance with current technology while targeting community</u>

  As technology advances many new methods of communication have become avaliable. We recommend that the Whitehorse City Council and the MFB **ensure their communication strategy involves all available methods of communication**. New forms of communication will give local government new ways of reaching different areas of the community. Also, we recommend that the City Council **create an email list of concerned citizens through which they can electronically distribute information**. It is also important that the council communications continue to include traditional methods such as pamphlets, in order to reach the residents who do not have access to new technology.

<u>5.2.10 Implement plan for periodic review of communication effectiveness</u>

  One of the biggest challenges facing bushfire communication is that both community structure and bushfire threat are dynamic in nature. Bushfire messages and beliefs on what proper preparation actions are changing frequently. In the last five years, the messages of the campaigns have completely changed from "Stay or Go" to "Prepare. Act. Survive." This change in overall policy had caused changes in all bushfire awareness campaign messages. We recommend that the MFB and the Whitehorse City Council **implement a plan for periodic review of their communication strategy** to make sure it is still effectively communicating bushfire risk to the community. Similar case studies to this one can be used to evaluate communication campaigns and ensure they are still effectively targeting residents.

5.3 Implementation of Recommendations

  Recommendations of putting dates on campaign literature, communicating with local community groups, and providing a forum for community discussion are simple goals that can be accomplished immediately. These recommendations no not require large amounts of capital nor large amounts of time to initiate. Recommendations for the development of the community pamphlets cannot be completed immediately due to their nature. However, if given proper attentions, these goals can be completed in the near future. Building a database of bushfire communications, becoming more transparent with council actions, and implementing periodic reviews are long term goals that will take time to complete once they have begun.

5.4 Recommendations for Future Projects

One main limitation for this project is the inability to investigate the effectiveness of the implementation of our recommendations. For future projects, we recommend investigating the reaction to these new bushfire media ideas by the public. Due to the limited amount of time allotted for this project, we were restricted on specific research into each recommendation. This applies specifically to communication of prevention plans in the park. If too much information is presented then people will feel less inclined to make their own preparations and put the responsibility on the local officials. A future project could investigate this idea of shared responsibility for future recommendations for how the City Council could communicate their actions.

We recommend conducting case studies in other suburbs of Melbourne or even suburbs of other cities across Australia. As our project has laid the groundwork for studies of this nature, continuing research in other areas would provide valuable information on what aspects and recommendations could be implemented to urban-parkland interfaces nationwide without any further research and what recommendations would need a similar in-depth study to be effective. Once these reviews of other urban-parkland interfaces have been completed, the compiled results can be discussed with results from the Bushfire CRC's "Effective Communication: Communities and Bushfire" project. These discussions can then be used to determine if new approaches to bushfire communication are needed for the parkland urban interface or if current methods used in other interfaces can be effective.

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APPENDIX A: ETHICS DOCUMENTS

A.1 Project Information Sheet

WPI

bushfire CRC

Project Information Sheet

Communication of Bushfire Risk in the Urban Parkland Interface

You are invited to participate in a research project being conducted by students from Worcester Polytechnic Institute (WPI) in Massachusetts (USA) on behalf of the Bushfire Cooperative Research Centre (CRC) and in partnership with the Royal Melbourne Institute of Technology (RMIT). Please read this sheet carefully so that you may understand this project before deciding whether or not you wish to take part in it.

Who is involved in this project?

The research is being conducted by James Everett, Stephen Kocienski, and Nataniel Lobel from Worcester Polytechnic Institute in Worcester, Massachusetts, USA, working under the Bushfire CRC and in conjunction with RMIT University.

Why and where?

This research is being conducted on the subject of community engagement and awareness of bushfire threats in urban areas surrounding parkland environments. Specifically this research will focus on the community surrounding Blackburn Lake Sanctuary Park in order to identify and understand the most effective communication methods for the diverse community in this area.

If I agree to participate, what will I be expected to do?

If you agree, you may be asked to take part in a face-to-face interview, telephone interview, or a group discussion that will be at an appropriately arranged time and place. The interview may last an hour and with your consent will be recorded.

The following topics may be discussed:

- Your experiences with bushfire awareness and education and the agencies which distribute it
- Your relationship within your community and among its members, as well as between you and your community and local fire agencies
- Your involvement in local community networks and groups

What will happen with information I provide?

With your permission we will record the interview or group discussion, as well as possibly take notes during the interview or discussion. The recording will be transcribed and the transcript will be checked for accuracy. You will not be identified by name in any written documents or at any stage in the research. Your confidentiality will remain in any reports or publications produced. Unidentifiable, anonymous information may be shared with other universities involved in Bushfire CRC projects.

What are my rights as a participant?

- You may withdraw your participation at anytime
- You do not have to answer any questions you are uncomfortable with
- You may ask questions at anytime
- You may request the audio recording to be stopped at anytime

What are the risks associated with participation?

We do not believe there are any risks associated with participation in this project apart from the risks of normal day to day activities. However, if you become concerned about your involvement in this study please contact one of the researchers below.

What are the benefits of participation?

Your participation in this study will contribute to our understanding of effective communication of bushfire awareness to communities and individuals. Specifically this research will help guide future communication efforts to increase community engagement on the subject of bushfire awareness in urban areas surrounding parkland environments.

This research is being conducted by:

Ryan Madan	Faculty Advisor	ryanmadan@wpi.edu
Kristen Billiar	Faculty Advisor	kbilliar@wpi.edu
James Everett	Investigator	jeverett@wpi.edu
Nataniel Lobel	Investigator	nlobel@wpi.edu
Stephen Kocienski	Investigator	skocienski@wpi.edu

Approved by WPI IRB
From: 3/21/2012
To: 3/20/2013

This project has been approved by the Worcester Polytechnic Institute Institutional Review Board. For any complaints please contact irb@wpi.edu You may also contact the chair of the WPI Institutional Review Board (Prof. Kent Rissmiller, Tel. 508-831-5019, Email: kjr@wpi.edu)or WPI's University Compliance Officer (Michael J. Curley, Tel. 508-831-6919).

A.2 Consent Form

Participation Form and Statement of Rights

We are students at Worcester Polytechnic Institute in Worcester, Massachusetts (USA). We are conducting a research project on behalf of the Bushfire Cooperative Research Center (CRC) and in partnership with the Royal Melbourne Institute of Technology (RMIT) to determine community awareness and engagement on the subject of bushfire threats. As part of this project we are conducting a series of interviews with key individuals. We have asked you to participate because we believe you have unique knowledge of these issues that will be valuable to the project.

Before we begin, we would like to thank you for taking the time to participate in the interview which will last about 45 minutes. Your participation is entirely voluntary. You may refuse to discuss any question or terminate the interview at any time. With your permission we would like to record the interview. The tapes, notes, and subsequent transcripts of the interview will be kept confidential, and will be accessible by only the members of the team and our immediate faculty advisors. Your name will not be used in any subsequent report or publication without your permission.

You may be assured of complete confidentiality (within legal limits) if you volunteer to participate in this project. While some demographic data may be identified, you as an individual will not be identified in any manner in any publications that arise from this research. After completion of the project all documentation relating to the identity of the participating individuals will be destroyed.

We would be most happy to answer any questions you may have about this project. If you have any queries or would like to be informed of the aggregate research findings, please contact Bushfired12@wpi.edu

If you consent to be interviewed at this time, we would ask that you indicate your agreement below.

I agree to participate in the interview

_____ _____
Interviewee Signature   Date

_____
Interviewee Name

Please initial for permission to record

_____
Interviewee Initials

| Approved by WPI IRB |
| From: 3/21/2012 |
| To: 3/20/2013 |

_____ _____
Interviewer signature   Date

This project has been approved by the Worcester Polytechnic Institute Institutional Review Board. For any complaints please contact irb@wpi.edu You may also contact the chair of the WPI Institutional Review Board (Prof. Kent Rissmiller, Tel. 508-831-5019, Email: kjr@wpi.edu)or WPI's University Compliance Officer (Michael J. Curley, Tel. 508-831-6919).

Note: Consent was given by Commander Mark Milaszewicz to use his identity

APPENDIX B: INTERVIEW OUTLINES

B.1Community Member Interview Questions

Community Interview Questions

About your role in the community

1. How long have you lived in Blackburn?

2. Are you a member of any community organisation?

    a. What is that organisation's role in the community?

    b. Do you have a role in that organization?

3. Do you have any specific fire training? (eg. fire fighter, fire researcher, etc.)

Community Communication

4. How often do you talk with your neighbours or other local community members?

5. Have there been any changes in the community recently?

6. How active are residents in community activities?

Community Organisations

7. Are there any community organisations around Blackburn?

    a. What roles do they play in the community?

8. In your personal experience, has the community come together as a group to solve a problem?

    a. Do they prefer to handle problems by themselves?

Bushfire Communications

9. Have you ever received any information from the local fire authorities about bushfires?

    a. How frequently?

10. What forms of communication from government officials do you feel are most effective?

    a. (For example: Community Days, Letters, Newspaper ads, etc.)

11. Have you ever talked with anyone in your community about bushfire preparedness?

    a. Who initiated the conversation?

12. Do you feel you have enough and appropriate information to prepare for a bushfire?

13. What would you like to see in information packets?

      a. What information? How much?

14. Have you made any preparations for a bushfire? (Survival plans, Preparation Packages with important documents and equipment)

Bushfire in Your Community

15. How would you characterize the bushfire risk in Blackburn?

16. Do you think the community is prepared for a bushfire?

17. Do you foresee any specific issues facing the community that influence how it could prepare for a bushfire?

Shared Responsibilities

18. What are your expectations of the state authorities in terms of bushfire preparation?

19. Do you think a person's bushfire preparedness affects their neighbour's safety as well?

20. Even those who do take responsibilities seriously and know what to do to prepare for bushfire often don't prepare their homes or write up plans. What do you think would motivate these people to act?

Final Comments

21. What suggestions could you make about informing and educating the community to improve people's understanding of bushfire?

22. Do you know anyone else that would be interested in talking with us about these topics?

B.2 Council Official Interview Questions

Whitehorse Officials Questions

Specific Questions and Areas of Interest

1. How often does the council issue abatement notices
   a. Do you feel like this is an effective measure to get people to clean their yards?
2. What can a person do to prevent an abatement notice from being issued even if their property remains under bad conditions?
3. Do you have a bushfire management plan specifically for the Blackburn Lake Sanctuary where items such as fuel reduction and fuel break specification are defined?
4. How do you define the areas that receive bushfire awareness packets?
5. How long has the current type of pamphlet been in circulation?
   a. How often is the data reviewed
6. Would it be feasible to create packets specific for each area of threat? Such as pamphlets with the word Blackburn Lake Sanctuary on the top?
7. Are council actions such as fuel management, controlled burns, or fuel break maintenance communicated to the residents either before, during, after or any combination?
   a. How is that communicated?

The Council's Role in the Community

1. Can you please describe your position?
   a. Specifically related to bushfires?
   b. Is this the only position you hold? If not, what are your other positions?
2. Does your role involve working with other organizations?
   a. If yes, could you describe the key working relationships you have?
3. Do you feel like the people are happy with the Council in General?

City Council Bushfire Communication

4. What is your role in communicating bushfire messages?

    a. Is your role focused on education, preparedness, incident based?

5. Do you send out any bushfire threat literature, such as pamphlets?

    a. How often?

6. How often do you hold bushfire awareness community meetings or other events for open discussion?

    a. How large are the turnouts?

7. Can you identify the main challenges you face when trying to communicate messages about bushfires?

8. Does your communication involve any aspect of community engagement?

    a. How do you engage the community?

    b. Do you work with local organizations?

Blackburn and Bushfires

9. How would you characterize the bushfire risk in Blackburn?

10. How would you characterize the relationship between your organization and the community?

11. Do you feel like the community surrounding Blackburn Lake Sanctuary is representative of populations near other parks around Whitehorse?

Official Bushfire Prevention and Response

12. If a fire were to occur in one of the parks in Whitehorse what would your reactions as a council be?

13. Do you feel like the city is doing all they can do with respect to bushfire awareness and preparedness?

    a. Are the people happy with the Council's bushfire actions?

14. Do you feel like there are factors that prevent the council and authorities from accomplishing what they should with respect to bushfire preparedness and awareness?

15. What is your view on the Blackburn Lake Advisory Committee?

16. Do you feel like the people of Blackburn are happy with/pleased with the actions that the committee takes?

17. Do you feel like abatement notices are an effective method for getting people to clean up their yards?

Ending

18. Is there anything that you would like to add about what we have discussed today?

B.3 Fire Authority Interview Outline

Fire Authority Questions

Specific Questions and Areas of Interest

1. Under what conditions are you allowed to pass through a resident's property in order to access a fire?

2. Is there a way for property owners to identify or declare that in the case of a fire they are okay with damaging their fence/property to protect their property or other nearby homes?

3. Do you ever drive through the fuel breaks at Blackburn Lake Sanctuary Park or others to make sure they actually are cleared widely enough and have adequate accessibility?

4. On days such as Black Saturday, did you send trucks to help with the bushfires in CFA areas, and if so are some left back, or are there reserve stations/trucks

5. Are Bushfire prone areas specified on the MFB response maps?

6. What actions, precautions, or measures is the MFB taking in order to mitigate or prevent bushfire risk?

   a. Do you inform the community of the steps that MFB is taking to prevent or prepare for bushfires?

   b. What would be the best way to inform them of these actions?

7. What can the community members do as preventative and reactionary measures in order to aid the MFB in the event of a bushfire in Blackburn?

8. One resident mentioned that the MFB surveyed the land around the Sanctuary and gave sections a Fire Danger Rating. Did this rating actually occur?

MFB's Role in the Community

9. How would you characterize the communities trust in the MFB?

10. Can you please describe your position?

   a. Specifically related to bushfires?

MFB's Bushfire Communication

11. What is your role in communicating bushfire messages?

   a. Is your role focused on education, preparedness, incident based?

12. Do you send out any bushfire threat literature, such as pamphlets?

   a. How often? Where do you send it to?

13. What information do you feel is important to put in the pamphlets?

14. Do you plan or attend bushfire awareness community meetings?

   a. How large are the turnouts?

15. Can you identify the main challenges you face when trying to communicate messages about bushfires?

16. Does your communication involve any aspect of community engagement?

   a. How do you engage the community?

   b. Do you work with local organizations?

Blackburn and Bushfires

17. How would you characterize the bushfire risk n Blackburn Lake Sanctuary?

18. How would you characterize the relationship between your organization and the community of Blackburn?

   a. Is this different than any other community?

Official View of Awareness and Preparedness in Blackburn Community

19. Are residents living near Blackburn Lake Sanctuary actively aware of the bushfire threat?

20. How much preparing would you say residents near Blackburn Lake Sanctuary do for bushfires?

   a. Physical clearing of property?

   b. Bushfire plans?

21. How do you communicate bushfire preparation plans with the public?

   a. For example plans in the park?

22. Are there any open forums for community discussion for what preparations they feel
   should be done in the park?

Ending

23. Is there anything else you would like to add about what we have discussed today?

APPENDIX C: SELECTED COMMUNITY MEMBER QUOTES

These are selections of quotes from our interviews sorted by which major research question they answered.

Full interview transcripts will be kept by the Bushfire CRC for five years after completion of this project.

Do the residents acknowledge/remember they received a pamphlet?

"We generally get the general one for the whole of Victoria and we also get one for Whitehorse." CM 1

"So communication wise it's always been via mail. As I said, that's improved dramatically. Whether it be via email or text message or whatever, again, some of the residents in the street may not have the availability of the mobile phone and/or email because of the age difference. So as I said mainly the correspondence has been by mail. " CM 3

"But as I said, since the last fire, the communication from the council has improved dramatically." CM 3

"Certainly after our, was it, Black Saturday bushfire. After that we have received bushfire information. We know we all should have a plan" CM 8

"Maybe once a bit, yeah, not often though. But I think we have had one recently since the Black Saturday bushfires" CM 8

Do residents read/remember content of the media they received?

"the council have upped the ante and sent information to us at the start of every summer, saying, you know, have you got your fire plan ready or do you know what to do" CM 3

"We had the CFA and MFB talk at that time and we did get quite a group of people and they talked about how they approach a fire. Like well, first of all what they did with the council before summer and then how they would approach such a thing and that was quite - I thought that quite well received and quite good." CM 1

"So there is a lot of information comes out, people may not, may have a little difficulty in relating it to their own situation because it talks a lot these days about having your fire plans and

leaving before it's too late and all that kind of thing which is really not relevant in the city. But there is quite a bit of publicity." CM 1

"Yeah, I think we did, yes. I think received a colourful pack of information maybe at the start of this summer. Certainly after our, was it, Black Saturday bushfire. After that we have received bushfire information. We know we all should have a plan. We don't have a plan. Get out." CM 8

"There's a pamphlet - like a bushfire awareness. In it there's things like make sure your gutters are clean and remove any combustible material from around the house - close to the house - and just be aware that you're not feeding a fire if you've got rubbish in your backyard and it's up against the house." CM 5

Are the residents aware of the bushfire threat in Blackburn?

"One of the problems is that people are not - they don't seem to take concern or don't seem to get concerned until it happens or about to happen" CM 1

"Yes, I guess you could call it low, certainly not zero. It's not something you - you don't go out sniffing for smoke every day or anything like that. But it's there" CM 9

"Yeah, I would guess probably not, because I think my impression would be that most people don't take the threat of bushfire in our area seriously at all" CM 7

"Facilitator: How about the threat that it poses to the community?
Interviewee: I'd say that that was high too, yeah. Some of the community don't realise how high it is because of the - they don't recognise the ash" CM 6

What information do the residents feel should be presented?

"I mean, even with the rural areas, people are advised to have fire plans and all that kind of thing. Not that that is the kind of thing you'd go to here necessarily, but things like making sure that you haven't got rubbish piled up against the fence next to the Sanctuary would be number one thing in my view." CM 1

"It's hard to know because if you add further explanation to it it's too much for people to read. I think perhaps over the last three or four years they've sent out virtually the same document and covering letter. Maybe there's an opportunity for getting something a bit more explanatory of

what people should do, how they should behave without making it as though - well, tomorrow there's going to be a fire so you'd better be ready." CM 1

"Maybe having the public meetings perhaps instead of - like for this year, they had one, it might have been two for the whole city and there are 14 bushland parks. This is the probably equal biggest anyway and that was held in one of the other parks at eastern end of the city. A few more people attended that but - and half of them were from this area, including committee members and some of our neighbours. Yeah so I think perhaps a more local meeting might encourage people to come, make it a bit easier for people to come." CM 1

"I think people should be advised as to really what the threat is and how that is assessed and probably what kind of weather that's likely to happen in and what they should do to minimise a threat to their own place by cleaning, by being aware, which I think is probably the main thing." CM 1

"The information regarding the packages or information package, I think English and other languages would be helpful because we're multicultural. We're finding now that a lot of Asians are coming into the area, which is fine. So maybe multicultural, spreading the word re language barrier. Making it reasonably simple to read and understand, again because the demographics are that there are a lot of elderly people living in the area. There's a good mix of young people coming in, which is great. I'm sure that happens in a lot of suburbs. Just making it easier for people to probably read" CM 3

"preparation type information as in terms of preparing the property, so whether it's clearing vegetation, cleaning gutters of leaves or things and anything else in terms of flammable material type tidying up around the property. Suggestions for key things that need to be in the fire plan, in terms of how you're going to get out of the house." CM 7

"I think it's to get the people to talk about it with their family and make up a plan and so think about it. It may be something that you may do only once, but to get it in people's heads that should the time come, you need to do something right then" CM 9

"Probably practice a fire emergency, because the severity might vary. Maybe practice low risk and high risk or something. But certainly getting out of the area must be - people must be very aware or very prepared to actually do that. We've learned from certainly the experiences of the

latest bushfires around here, that a lot of people left their - should I say their - opportunity to leave too late. That's got to be understood, because in many cases you don't get a second chance if it's a really severe bushfire, particularly if your house is in a very bushy area. But yeah, I think a practise; make it a family activity or something" CM 9

What kind of preparations have community members already made?

"I'd be thinking to leave in the case of a bushfire; I wouldn't be doing anything actively in that bushfire, I'd be leaving" CM 8

"Like for example, a major part of our plan is if there's really a fire threat for us to leave" CM 9

"Okay. What we do, spouting's are cleaned regularly. We're probably a little bit fortunate here. We haven't got a lot of trees actually big enough on the property to be a concern… CM 5

"That's the plan today - out the front. Get out. No property is worth any sort of a risk at all." CM 5

What are some factors that prevent community members from performing the suggested and required prevention and safety measures?

"Well ignorance would be the first thing for people that could be in there and the other one would be people who believe that they should have a parkland type situation and there's no risk of fire." CM 6

"We have to mulch, but the mulch, when we had the bad fires, ignited. So we can have a totally concrete backyard and it won't go on fire, but we live in this area because of the bush, and we want to keep everything green. What are you supposed to put on your garden without it igniting?" CM 2

"Yes. We're all old or getting on and we know friends in our 50s onwards who get up the ladder and they fall, and it's an expensive thing, like $300 or more to get my gutters cleaned. But we choose to live in the area, so we take that risk. A lot of people do get their gutters cleaned around here. I've priced it to get the gutter guards, the metal things, and it was over $3,000. I couldn't cop it at that time because things were tight." CM 2

"They see it as a problem for areas much further out of town. Places up in the Dandenongs and the mountains or Warrandyte Eltham areas" CM 7

"People are not fearful and therefore they're not willing to go out and learn more about it" CM 8

"When we saw this place, with the park at the back, it sort of gave us all the advantages that we had up in Tacoma without all the really associated risk. We didn't see this - even though there have been fires in here before we hadn't identified that as a high risk environment." CM 5

"For all the information that went out, you've still got that small percentage of people who have already pre made up their mind of what they're going to do. They're going to fight the fire; they're not going to leave their home." CM 5

Who do the people feel is responsible for preventing and preparing for a bushfire?

"So that's the kind of thing people need to take responsibility as well by if it is a likely fire danger day, then just to be a bit more aware and watch out for themselves and for their neighbours. If they do see or smell fire or smoke then to don't delay but call the fire brigade, triple 0. Whereas people think oh yeah, someone else will do it or - [laughs] but I think if the fire that we did have then in the late '90s, maybe if that was noticed and acted upon - or it probably was noticed but if it had been acted upon by people in the vicinity, it wouldn't have been so bad" CM 1

The council probably should be a little bit more diligent as in maintaining the parkland to a reasonable level of undergrowth. There are a lot of dead trees out there, either upright or parallel, which we feel they probably should control. But again, we get back to one of your initial questions. We're on one side of the fence. The Sanctuary Lake advisory committee is on the other side. So again, the people in the middle are the council. CM 3

"I'd certainly be expecting that they would making a strong effort to notify people in all the adjoining areas and we don't - because we're not a CFA suburb, we don't have the - a fire alarm or anything as far as I know, so they would have to be perhaps running police or fire brigade vehicles around with their sirens running to get people's attention and making PA announcements for people" CM9

"I'd be expecting the fire to be contained within the sanctuary by the authorities really, not by the community" CM8

"Yeah, you trust them. The fire brigade will be there and other emergency services will be onto it. They'd be well aware that there are particular places, which because of accessibility, that you need extra people and watching it a lot more carefully. You might need all of a sudden five fire trucks to the sanctuary or whatever and they'd have to - they'd be well versed in what their access is. In fact, there is there is a fire access gate, in fact, it's on - what do they call it - firebreak trail" CM9

"Now, us leaving it's - what I'm saying is the individual - the neighbours need to make their own decisions and if it's looking like people need to leave then really it's probably best that they get out of the place too" CM 9

"Burning off, controlling the undergrowth and all that sort of thing is a product of council and the State Government in every park anywhere in the state." CM 5

How is information communicated throughout the community?

"But another one of our neighbours goes on a regular basis and keeps us up to speed with what's going on." CM 3

Yes, we all know each other by a first name basis and regularly update with each news of things happening. Yes, we're very close." CM 2

We have street parties every Christmas. We're very, very close. We've had a couple of funerals this year, and everybody from the street attends. We go into each other's houses. It's good." CM 2

"We're too scared to go on holidays without knowing there's someone home in the area for doing all the fire precaution spotting. So if three or four of us were all away together, one of us would change our plans to be home, because we're that paranoid about fires. Although we do trust the MFB." CM 2

"A lot of the people in this street are reasonably close, because as I said it's a reasonably tight little community. If there's an issue within the street, where neighbours are informed, they will

rally to that, whether it be a health issue, a personal issue, financial problems to a limited degree." CM 3

"But certainly go through the school. I think the school groups do it as a subject, they talk about it and they get down low and go, go, go. I think even at Scouts they occasionally go to fire stations as an evening activity" CM 9

"Normally we see it in the newspaper, like smoke alarms, change your smoke alarm batteries, we see that. This was separate information that came about the bushfires; it was a separate pamphlet or brochure" CM 8

"They did have a fire awareness night or something like that. I don't know that it was very well attended" CM 8

How often do neighbors collaborate or share their ideas and concerns?

"Oh in general, we would speak to our neighbours probably two or three times a week, if not more, very close-knit little community. I'd say, yeah, three or four times a week, if not more." CM 3

"There's a couple of rental houses down one end of the street. But those people have been here for a number of years. They don't necessarily communicate to a lot of the rest of the street. They tend to keep to themselves" CM 3

All the time. We're all very friendly. We all help each other. If you go on holidays, I'll go and check your windows and doors, collect your mail, put your rubbish bins out, and he does the same and we'll help one another. It's good…. we have a street party every Christmas" CM 4

"A little, but more in the context of yes, we've got a lot of trees around here and just sort of in the midst of the conversation about fire somewhere else, people might have been saying, you know, if we had a fire here it could spread up there a bit amongst all these trees and go from house to house" CM 7

"Oh in general, we would speak to our neighbours probably two or three times a week, if not more, very close-knit little community. I'd say, yeah, three or four times a week, if not more." CM 3

Are there any existing community communication methods that could be utilized in the Blackburn area?

".A lot of the people in this street are reasonably close, because as I said it's a reasonably tigh little community. If there's an issue within the street, where neighbours are informed, they will rally to that, whether it be a health issue, a personal issue, financial problems to a limited degree, with regards to the fires out the back, we've been here nearly 20 years and we've had two reasonably big fires. Again, it's a community effort. If no-one - if one of the residents aren't home, the other residents pick up the slack, as in to make sure - they're not just looking after their property, but their neighbour's property, which is good. Also too, when people go away, probably half the street would be aware that that particular house will be vacant for that particular time. " CM 3

"So our immediate area is fairly - well, friendly and communicative. The area of Blackburn itself I've found it is one of the most community minded areas, particularly the main central part of Blackburn and of course other areas are too, they're around but particularly I think if you were to talk to people providing community services and that, they'd say yeah Blackburn is fairly community focused." CM 1

"they're set up and they practice occasionally for emergency procedures in case of a lack of communication they will use their amateur radio facilities to go out and set up remote and provide communications, if necessary, for floods, fire and things like that" CM 8

APPENDIX D: ADDITIONAL AUSTRALIAN CAMPAIGN ANALYSIS

Throughout the Australian states the prepare act survive message is distributed through packets, pamphlets, and other media produced by many different agencies. In Victoria the "Prepare. Act. Survive." policy has taken the form of FireReady kits. The most recent edition of this packet is 76 pages long and easily available on the CFA website. Comparing the version available online, assumed to be the most recent, with a previous printed edition, showed that the CFA has taken steps to improve and simplify their FireReady kits. For instance a previous edition was found to ask home owners to use a protractor and string to precisely measure the angle of the hills on or near their property and use those angles as well as other geographical features and prevailing wind directions in order to define the protection zones for their homes. However, the current edition available on their website has replaced those measurements with a simple explanation of fire behavior on slopes, and how wind can act as a driving factor. In addition to pre-printed packets and printable documents available online, the CFA has made their FireReady kit available via an Audio CD. To maximize exposure, they have also worked with a newspaper, The Herald Sun, to publish a smaller 21 page FireReady kit in a Sunday edition.

The "Bush Fire Survival Plan" published and distributed for the Australian Capital Territory (ACT) and the plan produced by New South Wales (NSW), not only have the same exact name, but also use identical pictures for their cover pages. However, the sections contained within these plans do differ. The ACT's packet begins with explanation of the two highest Fire Danger Ratings (FDR), which are also found in all other packets. It begins by stating that under catastrophic ratings (the highest); the only choice is to leave. Under Extreme conditions (the second highest), the packet offers explanations for choosing to Leave Early or Stay and Defend, breaking down the decision and preparation necessary for either choice into four steps with emphasis on having a backup plan (step 4 in each choice). The remaining portions of the packet contain areas for writing and activating your bushfire plan, checklists for items to have in case of emergency, and finally a section on bushfire myths. The version published in NSW is split into five main sections: Welcome, Prepare, Act, Survive, and additional sections. Unlike the "Bushfire Survival Plan" published in ACT, this one includes a section on understanding risk and defining if a resident is at risk. The piece of this packet that makes it stand out the most from others is the inclusion of a kids section that contains word matching, searching for fire risks in a picture, and choosing items to take with you if you leave early. This shows how the packet is

targeting and preparing the whole family. A unique aspect of the NSW and ACT packets, that only one other state contained, was that both contain a bushfire myth section to help dispel misconceptions about fire dangers.

In South Australia (SA) and Tasmania the most recent bushfire plans are entitled "Your Guide to bushfire safety" and "Bushfire Prepare to Survive," respectively. These represent two of three packets that a date of publication or relevancy. The third, Western Australia, is described in the next paragraph. Both of these packets open with a table of contents and the FDR, however they approach the subject of understanding bushfires differently. SA's packet has a section on bushfire behavior explaining the effects of topography, weather, and vegetation; meanwhile the Tasmanian packet doesn't approach fire science directly. Instead the Tasmanian packet includes a section on how/why houses burn down and people die in bushfires, though this section is also included in the SA packet. The most unique part of the South Australian packet is that it includes a section on returning home but it addresses not just the physical issues of making it safely home as other packets do, but also the emotional and mental issues of facing what may or may not be left of someone's home and also includes a section on first aid for burns, which is not present in any of the other packets. In addition to their packet the South Australia government has also published a series of fact sheets, some of which are referred to in their larger packets, these fact sheets aid in preparation and understanding, and collectively come to a length of 106 pages.

The final two full length packets reviewed were "Your Guide to Preparing for and Surviving the Bushfire Season," published by Fire & Emergency Services Authority in Western Australia (WA) and the "Bushfire Survival Plan," made by a collaboration of fire services and government departments in Queensland (QLD). The WA packet is the third of the three date possessing packets and is the only packet other than SA's to talk about the emotional impact of returning after a fire, however, the piece in the WA packet is much shorter than the section in the SA packet. Both the WA and QLD packets follow the "Prepare. Act. Survive." guideline with WA's packet placing a larger emphasis on property preparation and using more graphics, colors and images to grab a readers' attention versus the large amount of plain text in the QLD packet. However, the QLD packet also includes a section dispelling common bushfire myths and misconceptions which is only found in two other packets, ACT and NSW. The only major region of mainland Australia that was not reviewed was the Northern Territory whom never officially adopted the "Prepare. Act. Survive." campaign.