

# **Ferny Creek Fire Alert Trial**

Author: Norm Free

Shire of Yarra Ranges P.O. Box 105 Lilydale Victoria Australia 3140

[n.free@yarraranges.vic.gov.au](mailto:n.free@yarraranges.vic.gov.au)

**Keywords:** Ferny Creek Fire Alert Trial

## **Abstract**

In 1997 a wildfire at the township of Ferny Creek in Victoria, Australia, decimated the area causing the loss of 33 houses and the lives of three residents. It was estimated that only eight minutes elapsed from the time of ignition to the time the wildfire struck the residents, many of whom were caught unprepared. In response to that community's drive, supported by subsequent comments from the State Coroner, local government (the Shire of Yarra Ranges) initiated the Ferny Creek Fire Alert Trial Committee. Various warning systems were explored but the key factor challenging the committee was the lack of lead-time to provide adequate warning to the affected community therefore an alert system was the only viable solution. A siren system was devised whereby the activation of a fire brigade response to a fire near the township would simultaneously activate sirens in the area thus alerting residents to the imminent threat of wildfire. Intrinsic to the project was a concentrated and carefully orchestrated community communications strategy that raised residents' awareness to their vulnerability to wildfire and assisted them in their personal wildfire survival planning. It was acknowledged that the activation of the siren was only one component of the residents' survival plan. Whilst this particular system is tailored to the specific needs of its community, the processes behind the project have been widely recognised as having much broader applications.

## **Introduction**

The Shire of Yarra Ranges is a municipality located on the eastern metropolitan fringe of the Capital City of Melbourne in Victoria, Australia. With an area of almost 2,500 square kilometres the Shire is the largest of any metropolitan or fringe Council in the State. The Shire has a population currently estimated to be 141,170 people. In terms of population it is the seventh largest municipality in the metropolitan area and the eighth largest in the State of Victoria in terms of population. Approximately 80% of the Shire's population lives in the 10% of the Shire that is classed as urban, while the remaining population is unevenly dispersed in over 50 townships throughout 35% of the municipality. Importantly 55% of the Shire's area is covered by Crown Land that includes National and State Forests controlled by State agencies Parks Victoria and the Department of Natural Resources and Environment (NRE).

Over 3 million tourists visit the Shire each year (over 9,000 each day). They are attracted to the unique landscape and environment, the vineyards and wineries of the Yarra Valley and the townships, tall forests and gardens of the Dandenong Ranges.

The Shire has an extensive history of wildfires. “Black Friday” in 1939 was the most disastrous bushfire ever recorded in Victoria. At Woods Point the whole town was destroyed totaling 143 houses. In Warburton, 16 men were killed, 20 houses were lost and every sawmill in the area was burnt to the ground. The second most destructive fire in Victoria was “Ash Wednesday” in 1983 when at Belgrave Heights and Upper Beaconsfield, 21 people died including 11 Country Fire Authority (CFA) volunteers. Approximately 300 houses were destroyed and 1800 Ha of bushland and pastures burnt out. In Warburton 13 houses were destroyed along with 41,000 Ha of forest. (Murray et al, 1995 p.228)

The Country Fire Authority (CFA) is a State volunteer agency comprising of 63,000 volunteer and 800 full time staff responsible for fire suppression for all areas of the State excluding the Melbourne metropolitan area which is serviced by the Metropolitan Fire Brigade Emergency Service. (CFA Website)

The Dandenong Ranges is recognised as one of the most bushfire prone areas in the world due to its mountainous topography, highly flammable native vegetation and climatic patterns that combine to create severe fire hazard conditions almost every year. The Ranges are located on the western border of the municipality approximately 35 kilometres as the crow flies from the Melbourne Central Business District. The highest point of the Ranges is 633 metres above sea level. Another factor that makes this area particularly hazardous is the combination of forest/urban environments and the number of residents and tourists.

On the 21st of January, 1997, five separate fires were ignited in the Dandenong Ranges. The cause of ignition remains unknown but is considered to have been deliberately lit by person/s with malicious intent. The damage caused by the fires in short totalled a loss of three lives, 41 houses and 400 hectares of State forest. Of the five fires the most significant which attributed to the loss of the three lives occurred at a residential sub division within the township of Ferny Creek.

### **Ferny Creek**

The township Ferny Creek is located on the western side of the Dandenong Ranges and covers an area of 1,093 hectares. It has a population of 1,960 and a total of 680 households (National Census 1996). The specific subdivision of Ferny Creek impacted upon by the 1997 wildfire is located on the north/western aspect of the Dandenong Ranges. The topography relating to this site is unique for a number of reasons. Firstly it faces a north/westerly direction which is vulnerable to the hot and dry summer winds conducive to wildfire. Secondly this specific area comprises of a gully referred to by locals as the “Devils Chimney” which under extreme conditions forms a sub climate that funnels and concentrates the effects of the prevailing winds to support wildfire behaviour. Thirdly and most importantly is the fact the subdivision which abuts the Dandenong Ranges National Park, a heavily treed forest.

Past resident, previous member of the Sassafras-Ferny Creek volunteer Fire Brigade and journalist, John Schauble, identified thirty-five incidents of wildfire in Ferny Creek and surrounds since 1851 (Schauble, 1977 Appendix 2).

The 1997 wildfire at Ferny Creek originated in forest near a roadside approximately 750 metres below the subdivision. It has been estimated that it only took between ten to fifteen minutes from the time of ignition to the point where the fire front reached homes in Ferny Creek. The Police Arson Squad report found: "...This fire progressed into the ...streets without any warning. Most of the residents who were interviewed didn't know that there was a fire in that area until it was burning around their homes. Some criticism has been laid relating to the lack of warning of the impending fire however this fire was burning through Mount View Road well before the arrival of the C.F.A. and police..."(1997 Dandenong Ranges Fires Inquest Report p.15)

### **Coroner's Inquest into the 1997 Ferny Creek Fire**

On the 25<sup>th</sup> of June, 1999, the State Coroner, Mr. Graeme Johnstone, handed down his findings into the 1997 Dandenong Ranges Fires that included inquests into the deaths of Jennifer Louise Lindroth, Graham Kingsley Lindroth and Genevieve Erin at Ferny Creek. He determined that the fire had been deliberately lit and attributed the deaths to the fact that Lindroths and Genevieve took shelter in the Lindroths' garage placing themselves in a position where they could not monitor the progress of the fire and subsequently died as the house caught fire probably from an ember attack after the fire had passed. In the course of his findings the Coroner commented "... clearly Mr and Mrs Lindroth and Miss Erin had insufficient warning of the rapidly developing wild fire." (Ibid p.16)

He also noted that: "Developing a cooperative approach by all agencies (whether public or private) potentially involved in the management of areas of major risk in our community and following a disaster is to be commended. It should be enhanced at all opportunities. The breaking down of all inter agency and organisational barriers on the management of risk and disaster makes sense if the community is to receive the full benefit of all available expertise and resources..." (Ibid p. 24)

Residents of the westerly aspect of Ferny Creek have raised issues regarding the need for a warning system initially requesting an extension to the Sassafras-Ferny Creek Rural Fire Brigade siren used to alert fire fighters to attend the brigade. Many residents on that westerly aspect cannot hear the brigade siren. The brigade siren was not activated for the Ferny Creek Fire in 1997 as the appliances were away responding to another fire.

In 1998 local residents in the fire affected area of Ferny Creek formed two Community Fireguard groups, a community program supported by the Country Fire Authority to increase residents' knowledge of fire and to develop effective personal fire safety strategies.

The Alpine Road Community Fireguard Group members, John Irving (whose residence survived the fire through sprinkler systems and shutters) and Anna-Marie Shew (whose home was destroyed) began lobbying the Country Fire Authority for an additional siren to be installed from the local Brigade and located in a position where it could be heard from the sub-division. In November, 1999, Shire of Yarra Ranges Councillor Robyn Hale moved a motion for the Council to support the residents' efforts.

In response to the issues raised by the Coroner and the concerns voiced by residents of the need for a siren, the Shire of Yarra Ranges initiated correspondence with the CFA who briefed Councillors on the 30<sup>th</sup> of March, 2000.

A formal committee was established with a membership including the Mayor and Emergency Management staff from the Shire of Yarra Ranges, Ferny Creek Residents, The Department of Justice, Country Fire Authority (including both regional and local brigade representation, Victoria Police (including regional and local) and an anthropologist with expertise in human and fire behaviour.

The aim of the Committee was to examine the feasibility of having a suitable fire alert mechanism in place on a trial basis for the 2000 fire season to alert Ferny Creek residents to the eminent threat of bushfire.

The Ferny Creek Fire Alert Trial Committee aimed to achieve the following objectives:

- To initiate and maintain a high degree of local resident participation in the Ferny Creek Fire Alert Trial Project and ascertain the level of need of local residents for a bushfire alert system in the trial area;
- To ascertain the feasibility of a bushfire alert system in the trial area of Ferny Creek ;
- To explore various alert systems available and identify a practical, simple, cost effective and reliable bushfire alert system;
- To achieve the installation and activation of a selected suitable alert system by 1<sup>st</sup> November, 2000;
- To conduct a full review of the effectiveness of the bushfire alert system after the end of the fire season to be completed by the 1<sup>st</sup> of May, 2001.

## **Issues**

From the inception of the committee it was obvious that the key response agencies, namely the Police and Country Fire Authority, faced a dilemma as to their role in the operation of an alert system.

The Country Fire Authority is responsible for fire suppression and community fire awareness. It had previously denied the requests of residents to install an extension of the Brigade siren system as the role of the siren was to activate brigade members to attend the brigade to respond to a call. The Country Fire Authority is not vested with a role to warn residents.

The Victoria Police is responsible for the protection of life and property and is vested with the responsibility of issuing community warnings and undertaking evacuations at the request of the controlling emergency service which in the case of fires is the

Country Fire Authority. The police currently possess a mechanism known as the State Emergency Warning System (SEWS) which involves a distinctive tone being played over television and radio stations to attract attention and then following the tone a message detailing specific information is broadcast. Evidence submitted before the Coroner during the inquest into the 1997 fire indicated that there was insufficient time for a response brigade appliance to attend the scene and evaluate a fire before it had already impacted upon the residents. It follows then that there would be insufficient time to provide adequate and reliable information to warn residents. There was unanimous agreement that a warning system would not meet the requirements of the Trial community.

Hence the term 'alert' and its specific connotations was applied. An alert would provide a minimum of five minutes notice to residents of the threat of an impending fire. It would and could not provide information pertaining to the extent of the threat or provide advice to residents on how to act. The alert would act as a trigger in activating residents who already were in a state of readiness and provide them with sufficient time to activate sprinkler systems, collect children or pets and prepare to defend the property. The key to an appropriate response by residents relied upon their level of awareness and preparedness.

Resident, Anna Marie Shew drew upon an analogy of likening the alert to a piece of a jigsaw puzzle in that it is only one component of the response to the threat of an impending fire. Other components relate to a heightened state of awareness though using the individual's senses in smelling or sighting smoke, seeking further information from a Country Fire Authority radio scanner, the electronic media, the Community Fireguard telephone tree (involving members contacting other members in a systematic manner), through the activation of a Country Fire Authority Pager or by contacting the Country Fire Authority direct.

In its education to residents in high wildfire risk areas the Country Fire Authority promotes a 'leave early or stay and defend strategy'. The strategy is based on the research of fatal bushfires between 1962 and 1998 that showed over half the deaths resulted from people being caught in the open or in vehicles (Krussel et al 1992 p.1-20). The Country Fire Authority endorses that people who are not physically or mentally capable to stay and defend their property in the face of a bushfire should leave early in the day. In the event that a person is capable to stay and defend their property then the Country Fire Authority encourages the adoption of suitable equipment and training to allow them to perform this act more safely and effectively.

A trigger for the decision to leave early in the day is a declaration of a Total Fire Ban Day. A Total Fire Ban Day is determined by the Country Fire Authority and involves a complex analysis of elements including wind speed, air temperature, relative humidity, the number of days since rain and the drought factor. This analysis then determines a Fire Danger Index that ranges from 1 to 100.

Once this index exceeds 50 then there is a strong indication that the conditions are extremely conducive to bushfires. Devices are located across the State of Victoria to capture the relevant information required to determine the Fire Danger Index (Luke et al, 1977 p.116). The Country Fire Authority can declare certain regions or if the situation warrants the entire State of Victoria as a Total Fire Ban Day. It is an offence

to light fires in the open once that declaration has been made. Any breach of this legislation is considered very serious due to the long history of significant bushfires in the State.

Both Police and the Country Fire Authority initially expressed concern as to the implications of this Ferny Creek Fire Alert Trial on the broader community. The committee agreed that the project was to be contained to a specific trial and that it must undergo a stringent rigorous evaluation before any consideration is given to the concept on a broader scale. Ferny Creek is unique in that there is substantial evidence that it is particularly vulnerable due to extremely short notification of an impending bushfire.

A widely recognised benefit of the Ferny Creek Fire Alert Trial Project has been the acknowledgement of all individuals and agencies both at local and corporate levels to work collaboratively and in cooperation towards resolving an identified community need.

## **Methodology**

### **Selection of Trial Area**

The majority of Ferny Creek residents on this westerly face of the Dandenong Ranges cannot hear the local Sassafras-Ferny Creek Rural Fire Brigade siren when it is activated. The committee reached agreement about that the trial area should be restricted to the westerly aspect of Ferny Creek. The area measures approximately 910 metres by 1440 metres) and contains approximately 180 subdivisions.

### **Community Membership on Fire Alert Trial Committee**

In order to encourage a high level of interaction with the local residents within the designated trial area at Ferny Creek, three local residents were appointed to the committee. A letter was sent to all landowners within the trial area advising them of their representatives on the committee and encouraging further input or nominations.

### **Proposed Fire Alert System**

The committee was and remains committed to exploring all viable options for an effective and reliable alert system. Research to date including international queries via the Internet reveal that while there are numerous public warning systems there are no commonly used alert systems which are used for the short time frames intrinsic to this project. Most warning systems involve extensive lead times (at least a number of hours) in which time relevant and accurate information can be disseminated to target communities.

The committee has examined systems ranging from PCCOPS (a simultaneous telephone message service with the capacity to send a recorded message to any telephones within a specific geographical area) and Telecordia (a complex pager based communications system), the use of remote sensing equipment such as scanning infra red cameras to provide earlier detection and reporting of fires to the simplistic siren system. After considerable research and deliberation the Committee agreed that a siren

system was the most viable solution considering the cost, time frame for implementation and reliability.

The issue was raised regarding which individual, group or agency would be responsible for actually activating the system. The resolution to this dilemma is a key to the success of the entire project and demonstrated the capacity of individuals and agencies to work collaboratively in seeking solutions outside the boundaries of their indoctrinated cultures and personalities.

The need to absolve any individual of the responsibility to activate the siren was imperative therefore a systems approach was explored. In order to provide the most timely response providing the optimum alert time focussed the Committee on the Country Fire Authority Communications Centre, referred to as VicFire. Activating the alert system at the earliest report of an impending fire would meet this goal.

The current response by VicFire to the receipt of a fire call via the emergency telephone number 000 is to enter the details of the required location into a computer system and then activating Brigade units appliances which are responsible to respond to the desired location. The computer system automatically selects the appropriate response Brigades according to the location of the fire. Software was developed defining the geographical areas where the presence of fire would threaten the Ferny Creek Trial area. Once a call to a fire was received the computer would then automatically activate the Ferny Creek Fire Alert System simultaneously with the response Brigade/s.

Another problem identified was that the Brigades are more often called out to incidents involving motor car accidents or house fires rather than bushfires. There were concerns that should these calls activate the alert system, residents would become complacent or resentful of the incidence and associated noise. The solution came in programming the computer to only activate the alert system for certain tasks such as grass and scrub fire.

Concerns were also raised that the sirens would be activated by false alarms occurring in conditions when the threat of wild fire was negligible such as during the night when temperatures and humidity are not conducive to wildfire conditions or on a rainy day. Programming was conducted to activate the system only during periods when the Fire Danger Index was extreme. The next stage was to initiate consultation with the broader Trial community and establish its needs.

## **Questionnaire**

On the 10<sup>th</sup> of August, 2000, a questionnaire was posted to the 180 landowners in the trial area to gain further input from the residents. Whilst some properties would be occupied by the registered landowners, others may be holiday homes, vacant lots or leased houses.

The aims of the questionnaire were to check the level of fire awareness and preparedness of residents, to ascertain residents' viewpoints on whether an alert system was needed for the area, and, if an alert system was considered appropriate, to establish which alert option was most preferred.

## **Results of the Questionnaire**

A total of 114 (63%) questionnaires were returned for analysis. A high response rate was anticipated due to the high level of community awareness of bushfires in the area. A total of 96% of respondents use English as their first language thus facilitating communication strategies with this group. The survey attempted to identify respondents who may be more vulnerable due to disabilities or impairments. Responses indicated that six respondents suffer from deafness, five from lack of mobility and one from Multiple Sclerosis, a heart/lung transplant recipient, one with no sense of smell and one with blindness. One respondent listed having two babies to care for as a disability. Obviously an audible alert system is not appropriate for the six deaf respondents. Consideration was given to providing information and assistance to this special needs group to tailor their personal bushfire survival plans to cater for their impairment.

Over 60% of respondents indicated that they were a member of Community Fireguard. The majority of all respondents (86%) advised that they possessed a bushfire survival plan. Approximately 65% of all respondents planned to stay and defend the home in the event of a fire with the remainder either leaving early on a total fire ban day (23%) or a significant number of (12%) who made no response to this question. When asked if there was a need for a dedicated bushfire alert system in their area which might provide only ten minutes notice almost ninety per cent of respondents replied in the affirmative. This result indicated a strong desire by respondents that they would like some advance warning, however short, of an eminent fire.

Respondents were asked to provide their preference of five options for an alert system which included the using an announcement of Total Fire Ban Day as a prompt to put a safety strategy in place and monitor local conditions; a local alert siren in a suitable location activated following a report of fire to the Country Fire Authority Communications Centre via the general emergency telephone number 000; pagers that activate in the same manner as the local brigade siren and which provide details of the incident location and type of call; telephone messages a voice message sent simultaneously to a large group of telephones or mobile phones following a report of fire; or a combination of the systems described.

Over 30% of respondents indicated a primary preference for a siren alert system, whilst a similar response was indicated for the Total Fire Ban Day prompt.

## **Communication Strategy**

The Committee devised a communication strategy to ensure residents in the Ferny Creek Fire Alert Trial Area and other stakeholders had a clear understanding of the alert system, and, to provide them with the tools and advice to develop a personal bushfire survival plan involving the CFA endorsed “leave early” or “stay and defend” principles.

A Shire newsletter titled *On The Alert* was circulated to all residents in the trial area and to local Country Fire Authority Brigades to keep everyone apprised with the progress of the Trial and to provide advice on survival plans. The newsletter was designed in a distinctive manner to attract the interest of residents. The Shire provided the broader community with information pertaining to progress of the trial through local newspapers and radio stations. The media was very supportive of the trial.

Almost 80% of questionnaire respondents indicated that they wished to attend a public meeting. A meeting was held at in Ferny Creek on the 10<sup>th</sup> of November, 2000, to disseminate questionnaire results, stress the need and provide advice on devising personal survival plans, explain the role of the alert system as one component of the personal survival plan and to gain feedback from the community. All participants were registered to identify residents from the trial area who did not attend the meeting. The community meeting provided an excellent platform to present the project to residents, answer any concerns and to provide the Country Fire Authority with an opportunity to market its survival strategies and provide assistance to the community in preparing survival plans. Between the 13<sup>th</sup> and 30<sup>th</sup> November, 2000, Shire staff conducted personal visits to all individual Ferny Creek Fire Alert Trial residences not represented at the meeting and provided an information package with the same information relayed at the meeting. In the event that the resident was not at home an information package was left at the address with a covering letter to contact the Shire and confirm receipt of the information.

## **Installation of the Alert System**

A project manager was appointed by the Shire to manage the development and installation of the alert system. A technical sub-committee was established to assist in providing advice for this task. Various sirens were tested across the trial area to identify the most appropriate device. Three sites were selected across the trial area and nearby residents were canvassed to ensure that they were agreeable. A separate siren system was then mounted on dedicated poles donated and installed by TXU, the electrical utility covering the area. Once the system was operational the residents were advised through a pamphlet drop and Community Fireguard groups that the alert system would be tested to ensure it was operational and then regular tests would be conducted at 10 am on the first Sunday of every month during the fire season which subsequently concluded on the 2<sup>nd</sup> of April, 2001.

## **Evaluation**

A research officer appointed by the Department of Justice is currently completing an objective evaluation of the trial. The evaluation has included personal interviews of all Committee members regarding the process involved in the project, a follow up questionnaire to establish level of change of residents' awareness and survival planning and establish effectiveness/need for alert, and an examination of the incidence of alert activation. Commitment has been made to report the results of evaluation to residents and broader communities/agencies.

Whilst Victoria experienced an unusually hot and dry summer during 2000/01 fire season no actual bushfires occurred in the vicinity of the Ferny Creek Trial Area to test the system and residents' reactions, although there were five instances in which the system was activated. All of these activations occurred prior to the software programming being installed limiting the system to the extreme Fire Danger Index factor. Three of these incidents occurred between 11.20 pm and 8.05 am in relation to calls of a grass and scrub fire, a smoke sighting and a fence fire. Two incidents between 3 pm and 5.40 pm relating to calls of a car fire and a grass and scrub fire. Both incidents also occurred under conditions not conducive to wildfire. Some residents were observed to respond to the activations by going out to the front of their properties and checking their surroundings and then seeking further information to establish the nature of the incident.

Although the evaluation report is currently being compiled a number of issues have already been identified. It has been recognised that the success of the process has been reliant upon the collaboration and mutual cooperation of all stakeholders involved. It has been observed that the municipality has a close interface with the community and that the community will respond to relevant information provided by the municipality. Residents use their local newspaper as a source of information relevant to their area. Residents were generally impressed by the level of effort made by the municipality in the consultation process.

## **References**

- Luke R.H. and McArthur A.G. **Bushfires in Australia** Wile and Company Ltd, Clayton, Victoria 1977
- Murray R. And White K, **State of Fire** Hargreen Publishing Company North Melbourne 1995
- Schauble J. **Fire in the Hills** Dudey Gay Printing, Ferntree Gully, Victoria 1972
- State Coroner **1997 Dandenong Ranges Fires** Coronial Services Centre 1999

## **Authors' Biography**

Norm Free is a Senior Executive Officer appointed to manage the Shire of Yarra Ranges' Emergency and Safety Planning Team. The Team is responsible for administering the Municipal Emergency Management Planning Committee and Municipal Fire Prevention Committee and to conduct research and implement emergency management projects. Norm previously served for over twenty years as an officer with the Victoria Police Force and was awarded the Australian National Medal and Victoria Police Service Medal & 1<sup>st</sup> Clasp Associate. He holds an Associate Diploma of Arts (Police Studies) Monash University.