

Lessons Learned: Wither Hills Fire, Blenheim, December 2000

Raewyn Graham and E.R. (Lisa) Langer



Client Report No. 16183

Lessons Learned: Wither Hills Fire, Blenheim, December 2000

Raewyn Graham and E.R. (Lisa) Langer

Date: February 2009

Client: Foundation for Research, Science and Technology

Contract No: C04X0403

Disclaimer:

In producing this publication reasonable care has been taken to ensure that all statements represent the best information available. However, the contents are not intended to be a substitute for specific specialist advice on any matter and should not be relied on for that purpose.

SCION and its employees shall not be liable on any ground for any loss, damage, or liability incurred as a direct or indirect result of any reliance by any person upon information contained or opinions expressed in this work.

Executive Summary

Following a 2006 study of fire insurance in New Zealand which focused on the 2000 Wither Hills fire with interviews of firefighters, Civil Defence volunteers and farmers, a second report has been prepared by the same authors to provide an insight into the lessons learned from the fire. The aim of this second report was to highlight some of the major problems that faced the New Zealand Fire Service (NZFS), the Marlborough District Council (MDC) and members of the rural farming community during the 2000 Wither Hills fire. This report describes a number of issues identified in fighting the fire. Issues focused on a lack of resources (i.e. inadequate numbers of firefighters, rural firefighting appliances, firefighting equipment and two-way radios), the absence of a trained volunteer rural fire force, and communication difficulties. The report also shows that there were some positive outcomes as a direct result of the fire as the MDC, in their role as the Rural Fire Authority, such as the purchase of new appliances and equipment, and the subsequent establishment of a volunteer rural fire force.

A significant finding of this study was the perceived difference in the way that urban and rural people respond to fires. The difference in approaches used by urban and rural firefighters, the aftermath of the fire, the issue of blame and the importance of de-briefing meetings are also discussed. A number of recommendations are made following discussion of these issues.

One of the major findings of this report is that at the time of the 2006 study a tension remained between farmers and the MDC and firefighters concerning the role of farmers in fighting fires. A key recommendation is to investigate the opportunity to arrange open meetings between the farmers, the MDC and NZFS managers. This will assist in developing awareness within the community of why fire services and the MDC are reluctant to have inadequately trained people in frontline firefighting positions as well as increasing an understanding of farmers' wishes to protect stock and their properties. This may help resolve some of the tensions that still existed when the study was carried out, six years after the fire.

It is not the intention of this report to suggest that any person or organisation was to blame for the outcome of the Wither Hills fire. Rather it is the authors' intention to detail the differences of opinion on the issues raised in the interviews conducted during the study. It is hoped that this information will assist fire researchers, regional and district councils, and Rural Fire Authorities to improve fire management practices, thereby enhancing the resilience of communities to rural fires.

TABLE OF CONTENTS

1. INTRODUCTION	1
2. RESEARCH APPROACH.....	3
3 FIRE EVENT.....	3
4 FIRE ISSUES	5
4.1 Lack of resources	5
4.2 Volunteer firefighters	6
4.3 Communication problems.....	8
4.4 The Wither Hills Walkway.....	9
5 URBAN/RURAL DIVIDE	10
5.1 Urban versus rural property owners	10
5.2 Rural property owners and firefighters	11
5.3 Urban versus rural firefighters	11
6 AFTERMATH OF THE FIRE.....	12
6.1 Assistance after the fire	12
6.2 De-briefing meetings	13
6.3 Blame	14
7 CONCLUSION AND RECOMMENDATIONS	16
7.1 Recommendations	16
8. ACKNOWLEDGMENTS	18
9. REFERENCES	18

1. INTRODUCTION

It's the volatility, rate of travel, the wind – everything – the mixture was ideal for a damn good fire... the conditions were just one out of the box... those hills were doomed and anything on them was doomed (Firefighter 3, discussing the Wither Hills fire).

On 26 December 2000, Blenheim, a town situated within the Marlborough District in the South Island of New Zealand, experienced one of the hottest and windiest days of that summer. For the Blenheim urban and rural fire services, it was not a matter of 'if' but rather 'when and where' a rural fire was going to occur that day. Their worst fears were realised when a fire broke out early in the day in the Waihopai Valley (20 km from Blenheim), followed by another slightly larger fire in Ward (46 km from Blenheim), before notification was received of the fire in the Wither Hills region at just after 4 p.m. The Wither Hills are located between the Dashwood and Taylor Passes approximately 5 km southeast of the town of Blenheim (see Figures 1 and 2). The Wither Hills fire was the largest grass fire experienced in New Zealand since 1983, and burnt through 6,159 hectares of farming land and destroyed fences, water pipes, livestock and plantation forests on privately owned farms (Darragh et al., 2000). Twenty nine properties, including 19 farms and two lifestyle properties, were damaged in this fire and the Ward fire, with estimated financial losses being between \$3 and \$6 million (Federated Farmers of New Zealand, 2001). The Marlborough District Council's (MDC) Wither Hills farm park, a farming and recreational complex, also sustained damage to fencing, stock and to a plantation forest block. Their insured loss, including loss of rental revenue, was approximately \$1.5 million (Graham and Langer, 2008). It took nearly twenty hours before the fire was contained, and the fire was not officially declared extinguished until 14 March 2001. During this 11 week period there were no other major flare-ups from residual hotspots within the fire area.



Figure 1: Location of the Wither Hills and Ward fires (MapWorld 2000, scale approx. 1:1,125,000).

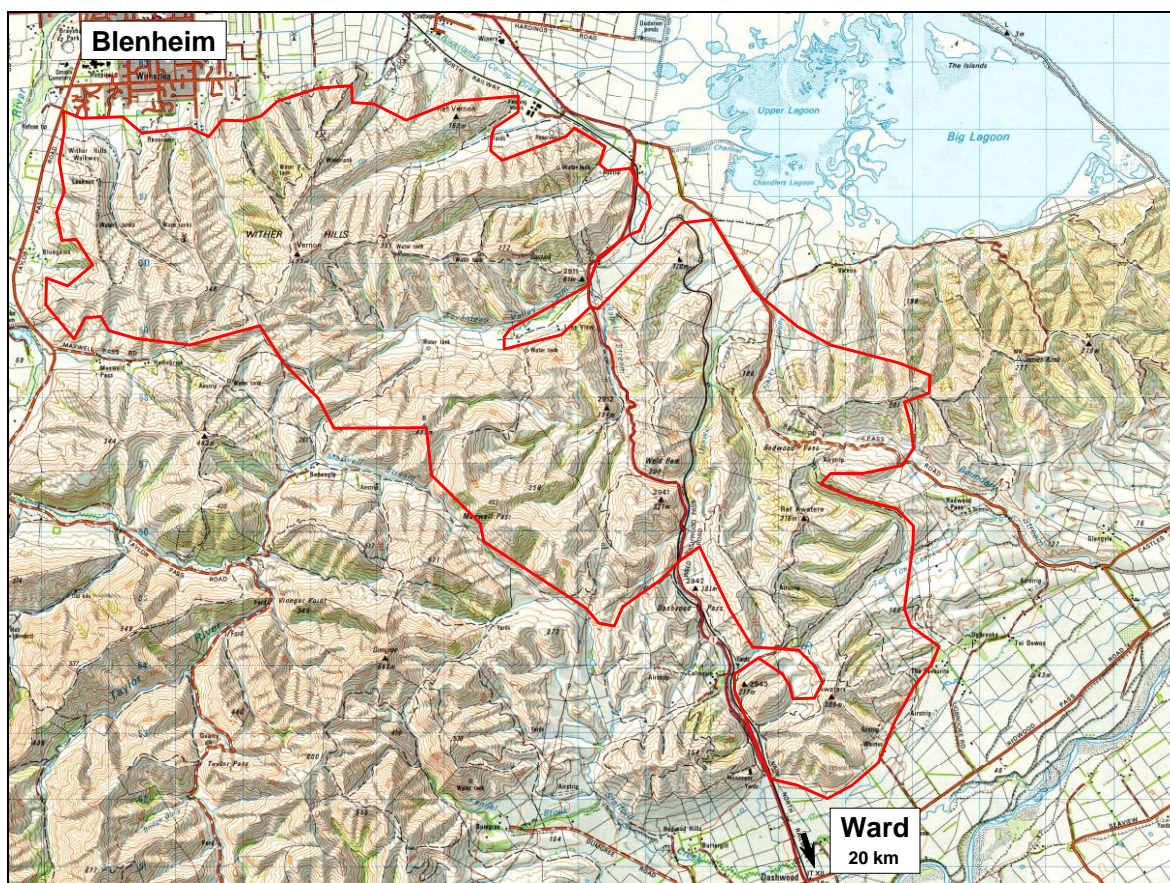


Figure 2: Extent of Wither Hills fire (MapWorld 2000, scale approx. 1:86,300).

At the time of the Blenheim fires in 2000, the NZ Fire Service's (NZFS) Blenheim Volunteer Fire Brigade had a dual, and somewhat informal, role as both the urban structural fire service (protecting the Urban Fire District of Blenheim township) and the initial response for the Rural Fire Authority, the MDC. The Brigade's Chief Fire Officer also filled the role of Principal Rural Fire Officer on paid contract to the MDC. However, the MDC was (and still is) the Rural Fire Authority (RFA) for the majority of the rural area encompassed within the Marlborough District with the responsibility for rural fire control under the Forest and Rural Fires Act 1977. The initial response to the Boxing Day fires at Ward and Wither Hills was undertaken by the NZFS's volunteer brigades from Blenheim and surrounding areas (e.g., from Ward, Picton, Seddon, Renwick and Wairau Valley), and MDC supported the firefighting effort in incident management (as opposed to direct firefighting) roles using its Civil Defence¹, administration and other staff. Other RFAs from across the region, especially the Marlborough North Rural Fire District (which has a number of Volunteer Rural Fire Forces), the Department of Conservation (DoC) and local forestry companies, also provided assistance with fighting the fires. Subsequently, a national Incident Management Team was brought in to coordinate the firefighting efforts, and additional fire crews came from as far afield as the Nelson, West Coast and Wellington regions.

¹ In recognition of the all hazards approach and broader emergency management role, Civil Defence became Civil Defence and Emergency Management with the introduction of the Civil Defence and Emergency Management Act in 2002.

A study of fire insurance in New Zealand which focused on the 2000 Wither Hills fire was undertaken by Scion (Graham and Langer, 2008). Interviews with firefighters, Civil Defence volunteers and farmers for the insurance study also provided an insight into the lessons learned from the fire. The aim of this report is to highlight some of the major problems that faced fire services (including the NZFS, and the MDC as the RFA) and members of the rural farming community during the Wither Hills fire. It is not the intention of this report to suggest that any person or organisation was to blame for the outcome of the Wither Hills fire, rather to detail the difference of opinions about the issues raised in the interviews and related investigations. It is hoped that this information will assist fire researchers, regional and district councils, NZFS and RFAs to improve fire management practices including recovery, thereby enhancing the resilience of communities to rural fires.

This report begins with a brief overview of the fire event before detailing the key issues highlighted by interviews. The report reveals that there were some positive outcomes as a direct result of the fire. Significant findings of the study are reported and recommendations provided.

2. RESEARCH APPROACH

This study was undertaken in Blenheim in 2006. Five formal and two informal interviews were carried out with MDC staff, urban firefighters, paid rural firefighters and a volunteer rural firefighter who were involved in controlling the fire. In addition, two Civil Defence volunteers who assisted in the aftermath of the fire were interviewed. The interview process consisted of the interviewees being asked to describe their involvement in the fire, what they considered to be the major issues pertaining to the fire, and what lessons had been learned as a consequence of the fire. Relevant information from the six farmers who were affected by the Wither Hills fire and were interviewed in February 2007 for the insurance-focussed report (Graham and Langer, 2008) is also included in this report.

The identity of the people interviewed has been protected and therefore people are referred to by a code, merely identifying their occupation. For example, the firefighters are referred to as FF1, FF2, FF3 and FF4. However, some officials and firefighters are mentioned by name when de-briefing and interviews are used to highlight some of the major issues raised following the fire. Farmers interviewed in Graham and Langer (2008) were identified as Farmer A, B, C, D, E, and F. They are identified in the same manner in this report.

3. FIRE EVENT

The NZFS Communication Centre received notification of the Wither Hills fire at 4.01 p.m. on Boxing Day, 26 December 2000. Fire investigators were unable to ascertain the actual cause of the fire, but they did establish that it began on a grass verge on Taylor Pass Road, between the Omaka Cemetery and the Wither Hills walkway (Darragh et al., 2000). This is an area approximately 5 km from the main business district of Blenheim where residential, commercial and rural properties are located.

FF1 advised that the rural firefighters had been fighting a fire in Ward, some 50 km to the south of Blenheim, since 9 a.m. that morning. They were returning to their Blenheim base just after 4 p.m. when they received notification of the Wither Hills fire. When they arrived the urban (NZFS) fire brigade was in attendance and firefighters were focussed on protecting residential properties on the left flank of the actively spreading fire. A number of people interviewed suggested that if the urban brigade had taken a different approach and

concentrated on protecting the right flank of the fire (nearest Taylor Pass Road) then the fire may not have spread onto the Wither Hills. However, most of those involved in the fire management process acknowledged that it was doubtful that they would have been able to contain the fire because of the weather conditions that particular day, the resulting fire behaviour, and the lack of adequate resources. Darragh et al. (2000) noted the following comments in relation to the conditions:

- Forward spread of the fire approximately 3-8 km/h
- Temperature 27.7 °C
- Relative Humidity 29%
- Wind Direction 295° (West North West)
- Wind Speed 37 km/h.

FF2 described the day of the fire and his approach to fighting the fire:

This particular day, the conditions were perfect with the temperatures and the wind and it just – you had no way of controlling the fire. I mean it spotted very early. By early I mean that it had spotted before it travelled a matter of a thousand metres. I didn't think that the fuel at that stage was all that thick and volatile. It was dry and the wind [was strong] but it was just going across the tops... We flanked it. We couldn't go to the head of it because it was travelling too quick...

FF3 was one of the first firefighters to arrive at the scene and he described his team's arrival:

I can still remember the guys reckoning that they [the flames] were about 12 feet high when I instructed the driver to drive straight through to get onto the burn and then get their hose reels out to protect the properties because that was exactly where the fire was heading... By the time they got their hoses out the fire was licking at the fences. I remember there was a two-storey house there and I remember the curtains blowing in the wind, coming out of the windows. It must have been so damn close.

Aircraft were not enlisted when the fire first broke out as it was initially believed that the fire could be contained using ground resources (MDC, 2001a). When the request for aerial support was raised there were delays as helicopters were still being used to contain the Ward fire (Bridges 2000: 1). The first helicopters on the scene were requested and responded at 4.19 p.m. Further helicopters were requested from Wellington at 4.30 p.m., and by 5.02 p.m. helicopters from Ward and Wellington were responding to the Wither Hills fire (Darragh et al., 2000). Aerial firefighting subsequently involved both helicopters and fixed-wing aircraft. The decision not to use aircraft at the commencement of the fire was mentioned by a number of farmers who believed that had helicopters been called in earlier, the fire would have been contained within a smaller area and would not have spread to Seventeen Valley and Redwood Pass. Today there are pre-determined trigger points in place when fire indices get to very high fire danger levels that ensure that crews and helicopters will be turned out immediately as a matter of course without waiting for any situation reports to be provided by the first-responding fire crews (MDC Emergency Services Manager, pers. comm.). This will result in more rapid response of both ground resources and aircraft, increasing the likelihood that fires will be successfully contained sooner in future.

By 7 a.m. the morning after the start of the fire (December 27), the National Rural Fire Authority (NRFA, the rural division of the NZ Fire Service Commission with the responsibility for rural fire administration and coordination) made the decision to deploy a National Incident Management Team (NIMT) to assist in containing the fire. The NRFA Manager Rural Fire, based in Christchurch was appointed as the Incident Controller and, on arrival at the Civil

Defence headquarters, his emergency team co-ordinated the planning and intelligence, operations, logistics, ground operations and aerial operations teams. The objectives of the NIMT were to ensure the safety of the public and firefighters, to protect structures and property, and to contain and extinguish the fire (Brooks, 2001: 166). By December 28, the NIMT returned the management of the fire and the mopping-up process to the MDC and local urban and rural fire forces. After the containment of the Incident Controller acknowledged the level of support he received, commenting that:

With the support of Civil Defence, Police, AREC², DoC, RNZAF³, and [Council] staff a lot of decisions I made were easier to make as I knew I had the support to make them happen (Barnes quoted in Brooks, 2001: pp170-171).

FF2 also acknowledged the assistance of the NIMT:

The National team was brilliant. But at the initial stage there was not a hell of a lot we could do and resources were very limited and without resources you just have to go in and try and control what's in the line... the team [NIMT] is very efficient in the way it works because it is standardised throughout [New Zealand]. It doesn't matter if you are in Blenheim or you are elsewhere.

Brooks (2001) provided a very poignant description of what the landscape looked like following the fire:

As they [the firefighters] look out on the charred landscape left in the fire's wake, the nightmarish events of the last 48 hours threaten to engulf them all over again. Drifts of smoke curl from the remaining hot spots. Trees stripped of their foliage spike the bare ground. Dead stock lie huddled together, their vain attempt at protection cruelly whipped away by the intensity of the fire. For the surviving stock there is nothing left to eat and no water to drink. What is more, there are no fences to hold them (Brooks 2001: 169).

4. FIRE ISSUES

4.1 Lack of resources

All of the firefighters interviewed acknowledged that the fire could have been handled better, but that with the limited resources available it was nearly impossible to contain the fire quickly. One of the major problems they faced was the lack of available resources, especially adequate firefighting equipment. As FF3 commented, "with the best of intentions, the best of resources, best bloody warning in place, you would be hard pressed to do something... [to] slow that [the fire] down". Most of the region's firefighting appliances were NZFS equipment designed for combating urban fires and therefore were unsuited to fighting rural fires off-road and in moderately hilly terrain. Compounding this problem was that there was an inadequate number of rural firefighting appliances. In addition, the rural firefighters had been fighting two fires earlier that day and as a result a lot of their equipment was either unusable or there were delays making some of the equipment operational again (e.g. refuelling and refilling of fire appliances and replacing foam and retardant supplies).

A further concern was the lack of a suitable building that could be used as an emergency headquarters. The co-ordination of the fire management process began at the roadside in a vehicle on Taylor Pass Road and then was moved to the Redwood Pass/State Highway 1 intersection. Next morning the command shifted to the Blenheim Fire Station, before moving

² Amateur Radio Emergency Communications Organisation.

³ Royal New Zealand Air Force.

to the old Civil Defence building located on Wither Road. However, the building was not set up to cope with the number of people that needed to work within the building. In addition, the premises were not air-conditioned, with a person interviewed stating that at one stage the fire management team was working in temperatures of 32 °C inside the building.

Staffing was another major resource issue. FF1 highlighted that most of his rural firefighting crew had been fighting other fires in the district since 9 a.m. and were fatigued by the time they returned to Blenheim to fight the Wither Hills fire. The fire also occurred when a number of firefighters were away for their Christmas holidays. In the words of FF1:

[The] Christmas period is bad for fire as well as bad for firefighters because you know a lot of them decide to take mum and the kids away for a holiday and suddenly... with some crews you only have to lose two or three people and they are down to four or five firefighters. Some of the rural brigades have only got ten people as it is. So it's not like you have got fifty people sitting there so if you have two or three go away it doesn't really matter.

The lack of adequate facilities for the fire management team and lack of firefighting resources (in particular manpower) did impact on the firefighting process. However, all of the firefighters and Council employees interviewed were adamant that even with more resources they would have struggled to contain the fire quickly.

4.2 Volunteer firefighters

There was also a lack of trained volunteer rural firefighters. At the time the fire occurred, the MDC did not maintain any volunteer rural fire forces in Blenheim. The NZFS Blenheim brigade is a trained volunteer urban fire brigade, but they were not fully trained in rural firefighting. There were, however a number of untrained volunteers who turned up wanting to assist with the firefighting process. For FF4 the biggest problem with the fire was this 'uncontrolled manpower':

We didn't have controlled manpower. We had some controlled groups but we had no trained crews. They did bring in some crews from Wainuiomata and some from Nelson and some Air Force guys as well. But I had, as far as I can recall, once things got going, I had a six man crew who I could go and talk to one guy and say this is what I want you to do and knew that he would get his guys doing it. Otherwise I was dealing with probably 15 or 20 other people that I would tell them what I wanted them to do, but they would then decide whether they were going to do... that was really frustrating... to have untrained, energetic, enthusiastic volunteers is just no good. Energy and enthusiasm is brilliant if harnessed, but it was unharnessed.

FF3 advised that one of the main reasons for not using some of the volunteers was because of their lack of protective clothing:

I mean God almighty, you know if we had sent somebody up there inadequately clothed, or without the correct protection, or without the right gear and if some bugger had got hurt we'd have been the first ones to be cried at or nailed to the wall or cross, whatever you want. We had people coming up there in jandals for God's sake you know...

This view was supported by FF2, who commented:

Vigilante groups, they do their own thing. They are protecting their own property or neighbours... and at that time of year when it is so hot and dry, they're all wearing shorts anyway – not protective clothing.

FF2 also noted that a major problem was that in some cases they did not know that volunteers were in particular areas as they had not signed in at the Incident Control Point at the fire management headquarters in the Civil Defence building. He advised that it was impossible to protect volunteers when they did not know where they were located. The NIMT directed that the safety of all of the firefighters, trained or volunteer was paramount. The NRFA National Rural Fire Officer, speaking at a de-briefing meeting, informed concerned community members that:

The first objective of any rural vegetation fire is safety and survival and we will not be putting people in dangerous situations who are not equipped... The policy for using people with varying degrees of firefighting experience was to give a half hour safety and survival briefing before sending them out in a team under the oversight of an experienced person (Dudfield quoted in Hutchinson, 2001).

From the farmers' perspective, most were upset about the way they were treated when they volunteered to help. A local farmer speaking at one of the de-briefing meetings said he was "disgusted with how farmers were treated" stating that "farmers need to be part of fire parties" (MDC, 2001b). Another farming couple, in a letter to the Council after the fire, commented that it was against the nature of farmers not to assist with fires. In their words, "you won't stop farmers, you must find a way to work with them" (correspondence to MDC, 9/02/2001). This issue was still causing most of the farmers interviewed some concern even though it was six years after the event. The farmers stated that they had been fighting fires on their properties for years, but did not feel that the authorities recognised their firefighting skills. One of the farmers also mentioned that he had been told that the reasons why volunteers were turned away primarily were because of occupational safety and health (OSH) issues. If anyone had been hurt then the Council/fire authorities may have been liable for a prosecution under the Health and Safety in Employment (HSE) Act 1992. While the same farmer agreed that health and safety issues were of concern, he stated that the fire authorities needed to do more to inform the farmers about safety issues and what is required of them in the event of a fire occurring in relation to fighting the fire.

As an outcome from the fire debrief meetings held following the fires, further discussions were held between the Council and farmers, and (at least) one Volunteer Rural Fire Force was subsequently established. Formally constituted to the RFA, such Volunteer Rural Fire Forces have access to training and support from the parent fire authority and subsidised funding for protective clothing and other equipment.

Recent discussions (February 2009) with the present MDC Emergency Services Manager have revealed that improvements in these areas continue to be made. There has been an increase in the number of volunteers by about 25, and regular training (fortnightly September – April and monthly May – August) takes place, some with other organisations (e.g. forest company staff and contractors). However, new volunteers continue to come from the urban area of Blenheim and its surrounds, and to date have included few farmers (at present there are two farmers in the Waihopai Rural Fire Force). In addition, there is also a high turn-over of NZFS volunteers in the region while the rural fire forces in the region remain fairly stable.

The MDC Emergency Services Manager also advised that RFA has and will continue to use people in fire suppression if they are adequately dressed, have had some experience of working in harsh rural environments (e.g. farmers or contractors), are under the supervision of a trained firefighter and have had attended a safety briefing, which is required to meet occupational safety and health (OSH) requirements⁴.

⁴ As contained within the NRFA Minimum Training Standards for Crew Leader, Firefighter and Fire Ground Entry.

4.3 Communication problems

Another problem was the lack of two-way radios and available communication channels. There was initially no effective communication channel between headquarters, firefighters and helicopter pilots as there was only one radio frequency available that was shared with the Police and NZFS. One farmer commented that he was amazed that there was not an accident in the air. The lack of two-way radios also caused major problems as many of the areas where the firefighters were working did not have cellular phone coverage. In the words of FF1:

A lot of crews that came in did not have comms [communication]. So crews were being sent out like we did. We got sent to the back of [named property] with a cell phone and that didn't work that well. We were in there for hours not knowing what was going on and they wouldn't have known what we were doing. We could have had an accident and they would have been none the wiser. So yeah, comms... that was one of the issues that came out of it. But the Council spent, I hate to think how many thousands of dollars. I think now we have got a pretty good comms system.

Recent discussions (February 2009) with the present MDC Emergency Services Manager have revealed that communications have improved considerably with the purchase of over 100 hand held portable radios (some repeater based) and air-to-ground portable radios. MDC also now has a mobile emergency command/control unit that includes full communications. All fire forces (nearly 50 people including contractors and forest company staff) in the MDC RFA area currently have pagers for call out rural firefighters. In addition, up to 120 radio channels are monitored by the MDC.

Another issue raised in the interviews and in the de-briefing transcripts was that a number of farmers felt that there was a lack of communication in keeping them aware of the current fire situation. Four of the farmers interviewed were on their farms when the fire occurred, they remained there preparing their properties for the arrival of the fire and stayed to fight the fire. Two were away from their properties and experienced difficulties in returning to their farms due to roadblocks (this is discussed in more detail in section 6.3). All of the interviewed farmers stated that it was impossible to get accurate information about the fire from fire services. Instead, they relied on neighbouring farmers to keep them informed of the progress of the fire. In response the fire authorities, whilst acknowledging this was an issue, commented that the fire developed so quickly that it was not possible to contact everyone. Their priority was to communicate with those in the direct line of the fire. They also advised that there was no up-to-date list of the farmers' cell phone numbers. One of the improvements instigated after the fire was a 'phone tree' system to contact farmers in specific locations. This enables the fire authorities and farmers to have a means of contacting farmers in the area to relay any fire information. Identification of farmer groups to focus communication would be an expedient way of ensuring communication with farmers during a fire incident (MDC Emergency Services Manager, pers. comm.).

Since the Wither Hills fire there has also been tighter control of fire seasons and imposed fire restrictions and bans, and improved communication of fire risk. A considerable number of fire signs have been installed (four new 'half grapefruit' fire danger signs were added bringing a total of 10) at prominent locations and about 50 total fire ban or fire by permit only signs alongside most side roads. In addition, the MDC pays three local radio stations under a 50:50 payment system to advertise the fire danger every day over the summer months (e.g. fire risk low – total fire remains in place) and provide tips on fire safety (e.g. not a good day to go into farm park).

4.4 The Wither Hills Walkway

With regards to the issue of liability, it is also pertinent to consider matters relating to the Wither Hills walkway, a popular recreational walking track within the Wither Hills farm park in the immediate path of the fire. The walking track was one of the major concerns for FF2. In his words:

I had no way whatsoever of knowing how many people were on that walkway 'cause there are no records. They [MDC] don't keep records and I believe they still don't keep records of people on that walkway. There's no register of signing in... [People] should register, sign in and sign out, at least that would give us some idea who is on the bloody track... we were very lucky that it was Boxing Day.

Four walkers on the track, aware that the fire was heading toward them at an alarming rate, used their cell phones to call for help. Helicopters were diverted from firefighting duties to collect them, but it was an anxious wait for them as by the time the helicopters arrived they were surrounded by fire (Wraight, 2000). One of the farming couples interviewed expressed their concern about people on the track in what they considered unsafe conditions. Farmer F said:

It amazed me. Not long after the fire, and even now, you get days that are 32, 35 degrees, howling nor' west, and someone's out on the farm at 3 p.m. – prime fire conditions – no common sense.

An insurance broker, when questioned about this issue, stated that there could be an incident where the MDC could be held legally liable if anything happened to walkers on the track:

It is possible that if the MDC allow the Wither Hills park to remain open when conditions are so extreme as to constitute a grave danger to life for anyone using the park, this maybe a situation which could trigger a liability claim for exemplary damages and potentially an OSH prosecution under the Health and Safety in Employment Act (1992).

It is recommended that the MDC discuss with their insurance broker the issue of legal liability in case members of the public are harmed whilst on Council land.

Farmer F also commented on the reaction of some of the local residents to the park closure for a few days, highlighting the importance of this community asset for some residents who use it on a regular basis:

We had people after the fire – they closed the farm down for two or three days – we had people complain because they couldn't get up there and go for a walk. And at that stage we hadn't buried a lot of the stock. Now why would you want to go up there? There were just mountains of dead stock. And you get some people, it's a bit macabre really, but people need to go up there for a run, and they were complaining they'd closed the farm.

Today when the fire danger risk is extreme in the Wither Hills farm park, the MDC erect signs which recommend that people to do not enter the park during the hottest part of the day (9 a.m. – 5 p.m.) or during hot windy conditions. However, some visitors often ignore the signs (MDC Emergency Services Manager, pers. comm.). The MDC now have an evacuation plan for the Wither Hills farm park within their current fire plan which details the evacuation procedures for recreational users of the park, including the New Zealand Police role in checking the whereabouts of the occupants of cars parked at entranceways. This plan is reviewed annually with Council staff and external agencies, including local Police.

5. URBAN/RURAL DIVIDE

5.1 Urban versus rural property owners

Firefighter interviews highlighted major differences in the way that urban and rural residents react to fires. Urban residents usually do not understand the intensity of a rural fire. They try to protect their property with a garden hose, but once the fire brigade arrives they move aside and let the firefighters take over the firefighting. In contrast, rural people tend to want to help more with the fire because they typically have a greater vested interest in protecting the property which provides their livelihood. This may depend on their previous experience in fighting fires and with the use of fire as a land management tool.

A number of farmers, for example, were extremely critical of the decision made by the fire management team not to back burn. However there appears to be some confusion over back burns. Firefighters can light a separate fire to burn from a secure line with the aim of removing unburned fuels between the fire and the control line (i.e. a “burn-out”), normally along the flanks of the fire to prevent later flare-ups which could breach the control lines. Alternatively, they can also light a fire some distance ahead of the fire to remove unburnt fuels and prevent further spread of the original fire (i.e. a “backfire” or “counter-fire”). Problems can arise with this latter fire control technique if the main wildfire changes direction negating the use of the backfire, or if the backfire itself gets out of control and becomes another wildfire that can draw resources away from fighting the original wildfire. The potential for such an escape to occur is high given the drier and often windy conditions under which wildfires usually occur. For this reason, backfiring can only be undertaken with the authorisation of the Principal Rural Fire Officer for the RFA. A backfire, which appears to have been unauthorised, is recorded as having occurred during the early hours of 27 December and to have escaped into an adjacent pine plantation (Darragh et al. 2000).

FF2 advised that they made this decision due to the strong winds and high temperatures. In his words:

The rural sector use fire as a tool a lot. And of course, they use back burns and that was why we were criticised for not back burning. I said I believed that back burning is a good method of attack but it has to be in the right environment and you have to have the right: a) the place to do it, and b) the right people and enough people and facilities to do it as well. You just can't go along and light fires willy nilly as a back burn without having people there to make sure that it back burns and it's got to be in the right place to make sure that it goes and does the proper [thing] – what it's meant to be doing. We were criticised by a lot of the rural community because they believed that if we had back burned it wouldn't have been so bad. But I still have my doubts. I thought of it, certainly did, but I just didn't believe that it was the right time. Too risky. Blamed either way – damned if you do and damned if you don't.

Another difference highlighted was that, in the event of having to evacuate areas, most of the firefighters stated that urban property owners would normally accept their recommendations, whereas rural landowners tend to want to stay and protect their properties. As FF2 commented:

A lot of them wouldn't go. They said “we will stop [and fight the fire]”, but they got rid of the families. The old man knew where the water was and the tractor; they put some fire breaks around their houses – around the immediate houses and that.

FF2's comments suggest that some properties were evacuated. None of the farmers interviewed were evacuated from their properties, although a couple of the farmers were advised that this could be a possibility. Farmer A advised that friends had arrived to help with the fire had moved most of their furniture to the local beach "cause they didn't think the beach would catch alight". He also stated that a fireman did arrive at their home "in the middle of the night" to advise them that they should prepare for evacuation. Farmers F stated that a woman (they were unsure where she was from) arrived at their premises during the night telling them that they should be prepared for evacuation. Farmer F was out helping fight the fire and his wife was adamant that she was not going to leave the premises without her husband. Both of these properties suffered extensive damage to their pastoral land, but the fire did not reach their houses.

5.2 Rural property owners and firefighters

The major concern raised by the interviewed farmers was that they believed that the fire services did not understand how important it was to protect their livestock and pasture as this was their livelihood. Interviewed farmers lost the majority of their pastureland, which was the case for other affected farmers in the area. They argued that in relation to the Wither Hills fire, the fire services fighting the fire put too much emphasis on protecting domestic structures rather than protecting their farm properties. A Council representative noted that the protection of livestock and pasture was a major issue raised in the de-briefing meetings and acknowledged that this was an area that the MDC and farmers needed to address by improving two-way communication between the Council and the farmers. However, he also commented that people need to realise that firefighting services will always "look after human life first and property – that is number one as far as statutory requirements". FF4 made the following comment about the farmers' reaction to the loss of stock:

I was quite surprised at the feeling of loss or the feeling of desperation when their stock got lost and that sort of thing, and I'm not a farmer. I was a little bit surprised at that. I guess to me a sheep is just [a] woolly old sheep and I know some people were extremely distraught to see twenty of them tangled up and cooked basically on the hoof. That was interesting.

He noted that this had given him a new insight into how farmers are affected by rural fires.

5.3 Urban versus rural firefighters

As already mentioned in Section 3, the focus on protecting life and structures highlighted differences in the way that urban and rural firefighters approach the containment of fires. FF1 commented that there were different approaches used in fighting fires with urban firefighters focusing on protecting life and structures. In his view, it was the wrong decision to put resources into protecting the urban domestic properties in the Wither Hills fire because they were not in danger. FF1 considered that the urban firefighters should have looked at the "bigger picture":

They most probably looked and thought "oh – houses", and it was a big fire and it had a big fire front. It was going and their concern would have been that if this gets into those houses we're right in the cactus... Most probably comes down to training and maybe a lot of them not having rural or vegetation firefighting experience. A lot of comments afterwards when we got there was the [urban firefighters] thought it was only a grass fire because most grass fires they go to they get them out.

The difference between approach/preparedness of urban and rural firefighters was also mentioned in the interviews with the farmers. One farmer stated that, in his view, urban firefighters "are most probably very good at putting out house fires in town, but they were lost

out here". One of the urban firefighters, when questioned about these comments and the perception that urban firefighters were not as experienced as rural firefighters in rural fires stated that:

That would be true. That has always been the mentality actually. There has always been that mentality that, you know, the city boys if you like – the tar seal firefighters – don't know the characteristics of bloody bush fires and this that and the next thing. What they don't realise is that of some of us come from a rural background... The fire was confined in the main, apart from the initial stages. It was confined to major bloody hill [country] but nobody had the gear. You don't have the trucks and so forth that can traverse those hills. You don't put trucks up the bloody hills these days. You don't chase it around the side of a hill with a truck or meet it head on with a vehicle.

6. AFTERMATH OF THE FIRE

6.1 Assistance after the fire

The President of Federated Farmers of New Zealand (FFNZ) in 2001 spoke of the turmoil after the fire:

People are really hurting. Emotions like grief, anger, blame, retaliation, fear, and relief run freely. Where do we start to come back from this? (Dillon quoted in Brooks, 2001: 169).

In the aftermath of the fire, staff from the welfare section of the Council's Civil Defence group, in association with Victims Support and the Salvation Army, visited all of the families directly affected by the fire. Federated Farmers NZ Inc. and the Rural Women of New Zealand (RWNZ) (formerly known as the Women's Division of Federated Farmers) also provided assistance. The RWNZ delivered gift parcels, with one of the farmers recalling that they received "a huge big cardboard box with anything they could dig out of their garden – all veggies. And I remember on the top of it there was a bunch of lavender, yeah, carrots, onions, things like that". She also commented that when she came home from being out for the morning following the fire her house was filled with people and gifts. "We came home and our doors were wide open, and it looked like someone had died. It was about twenty people in there. The bench was covered in food, casseroles, bottles of whisky, flowers, God knows what, it was just like a wake or something..."

The volunteers from Civil Defence who were interviewed stated that most of the families visited advised that they were coping with the help of friends, families and members of the community. However, one volunteer commented that he felt that most farmers were putting on a brave face after the event:

You see farmers are seen as people who can use number 8 wire and can do anything right. They are the worst in the emergency because they have no one to talk to. They are over a few hills away and the reality is after the fire a lot of the farmers literally sat in their chair and gazed at the blank wall opposite. They just couldn't handle it because they were blocked in and in most cases they had no one to talk to.

Federated Farmers also provided assistance by sourcing land and feed for the remaining stock. In addition, representatives from Federated Farmers were involved in the de-briefing meetings arranged by the MDC and assisted in the report to the Ministry for the Environment (MfE) requesting assistance for farmers to help with costs associated with re-seeding their

damaged land.⁵ In addition, apparently a Mayoral Relief Fund was established. The interviewed farmers acknowledged that they were aware that this fund had been set up, but none recalled receiving any assistance from the fund. Records of the Mayoral Relief Fund have not been found (MDC Emergency Services Manager, pers. comm.).

6.2 De-briefing meetings

From the farmers, the firefighters and the Council's perspective, the de-briefing meetings were essential. A Council representative advised that the MDC liaison officer discussed with individual farmers their concerns about animal welfare and insurance. Once all of the information about the fire was compiled, the MDC then organised a de-briefing meeting with concerned landowners on 15 February 2001. An operational de-briefing meeting on the firefighting operations was held a week earlier on 8 February 2001. In the view of the MDC representative, de-briefings are important because they allow people to express their views in an open forum and provide information about what needs to be improved in the event of other rural fires. FF1 also believed that the de-briefing meetings were a useful exercise: "you definitely have to de-brief, you can't just put it in the closet and say well that didn't happen... you definitely have to get everything out on the table". One of the positive aspects from the de-briefings was that it became very clear that the MDC did not have adequate resources to fight the fire. Massive improvements to the firefighting resources have occurred since the fire with the MDC having purchased three new four wheel drive fire appliances, four purpose-built water tankers and three slip-on smoke-chaser units. Despite the increased resources, no single RFA can maintain sufficient resources to fight a fire of a similar magnitude to the Wither Hills fire and therefore they enter into agreements with neighbouring RFAs to assist each other when required.

One of the first steps taken after the de-briefing meetings was the appointment of a newly created full-time position of Emergency Services Manager at MDC who is in charge of all civil emergencies, not just rural fires. The fire also highlighted that the existing Civil Defence building was not up to the standard required for such an extensive exercise because it lacked space and was not air-conditioned. This issue was resolved with the completion of a new purpose-built emergency management centre which was considered by a number of people interviewed to be one of the best emergency centres in New Zealand. Additional fire appliances that were designed to fight rural fires, plus firefighting and radio communications equipment have also been purchased. Training programmes and procedures were also put in place to develop a Volunteer Rural Fire Force. Farmers and firefighters commented that they doubt that this would have been done if the fire had not occurred. In the words of one of the firefighters: "we would never have got money out of Council before the fire".

However, in FF4's view, some of the de-briefing meetings were not as open as they should be. For him they were:

A bit flowery – you know. We don't really want to scratch any open wounds open again. If a wound is starting to heal up leave it. I have been to several de-briefs and it's really hard to, I guess, to keep discussing something that you know somebody's just shrinking and getting smaller and smaller about. In that way the de-briefs are quite good as they don't just point at someone and say well you stuffed up big time - look what it cost us. That doesn't happen at de-briefs, but at some stage I sort of think that often those things have to be discussed, at least somewhere recognised and realised, but it is really hard to do without deeply offending somebody whose done a damn good job.

⁵ More information about the involvement of Federated Farmers, stock losses and the Ministry for the Environment assistance can be found in Graham and Langer (2008).

The point that FF4 is making is that in some of the de-briefing meetings some members of the firefighting team were specifically blamed for the outcome of the fire. Other firefighters thought this was harsh considering the firefighters had fought as hard as they could to extinguish the fire. However, in FF4's view it may have been a useful exercise to explore this issue further.

There was also some animosity about the operational fire debrief meeting (8 February 2001) being an 'invite only' meeting (Pearce, pers. comm.). Farmers and other local residents considered that the meeting should have been open to anyone to attend. By keeping it a closed meeting some residents felt that the Council and the fire services were trying to cover something up. The landowner debrief meeting was also an 'invite only' meeting for the affected landowners. Members of the general public felt that they should have been able to attend the meeting to voice their opinions about the fire. Instead they were left to raise their concerns via the media (i.e. local newspapers). A MDC representative advised that the meetings were held as two separate meetings in order to separate the operational issues from the landowner issues. It was also normal policy to restrict the people attending the operational debrief meeting as the Council wanted to ensure that they had all the operational information before meeting with the public. He also advised that the Council did have a liaison person in place who the farmers and other residents could voice their concerns to on an individual basis. Records of informal meetings with individuals or small groups were not recorded (MDC Emergency Services Manager, pers. comm.).

6.3 Blame

One of the central issues mentioned in the de-briefing meetings and in the interviews with farmers was the issue of blame. Some residents believed that the MDC were liable for the resultant costs of the fire because it had started on Council land and because of the inadequacy of resources to control the fire. In one farmer's view:

I think the Council felt that they were guilty. They were falling over backwards to help people. I think that they realised that it had started on Council land and they were guilty because of where it started.

A number of the farmers interviewed said that they also held the NZFS responsible for the escalation of the fire, as they believed errors were made in the initial phase of the fire. In particular, the decision not to use aerial attack in the early stages which meant, in their view that the fire was able to get out of control once it hit the lower levels of the Wither Hills. They also argued that the NZFS decision to focus on protecting domestic properties rather than pastureland was detrimental to their financial well-being. The farmers acknowledged that the saving of human lives was paramount. However, they believed that more consideration should be given to the protection of pasture and livestock as this is their livelihood. If the pastureland to the right flank of the fire had been protected then they argued the fire would not have reached their farm properties. Farmer B felt very strongly that the fire was not handled correctly:

I believe that the Fire Chief at the time did not handle the fire adequately and I think you most probably [can] find documentation on it that shows the fire could have been put out right at the beginning. And then there was never a fire head office. When a fire starts you are meant to set up an office to co-ordinate the whole thing. And he took a wait and see stance – "oh well, I'll let the fire burn to the Awatere". I mean that would have burnt 1000 acres and houses and sheep and vineyards so it was shocking really... he basically didn't follow the fire plan. There are extenuating circumstances, I mean nobody had had a big fire like this and we weren't really ready for it. And whilst there was a fire plan in place, nobody had actually gone through it and reviewed it on an annual basis to say

“let’s make sure we are ready for a fire – is everything in place”. So there was no planning – well the planning was there, but I doubt anybody had bothered to read it to be quite honest.

One of the most contentious issues, in the view of the farmers, was the decision to enforce roadblocks into the fire area. The fire management team, in conjunction with the local police force, considered the fire a major safety issue to holiday travellers and members of the community and therefore established roadblocks on State Highway 1 and other roads within the fire area. The roadblocks were also used to prevent sightseers and possible looters from gaining access to fire affected properties. However, these roadblocks also meant that at least two of the farmers who were not on their farms at the time of the fire were unable to return to relocate their livestock and protect their properties. This also affected another farmer who was at home at the time of the fire, but had stock located on another farm property. Some farmers also voiced their concerns about not being able to get through the roadblocks to assist with the fire. The NZ Police Area Controller on the day was adamant that the authorities had adopted the correct stance:

The bottom line is, they do not know what is beyond the roadblock. People have got to act responsibly and, I must say, I was surprised at the behaviour of some citizens in acting extremely irresponsibly... What the public have got to remember is that this was a fast moving emergency, it was huge. Unlike a flood, where it builds up over two or three days perhaps (Caldwell quoted in Hutchinson, 2001).

The Police Area Controller recognised that there could be improvements to the system that was in place, but he made no apologies for the roadblocks saying: “We will always have our armchair critics, there are always things you can do better next time, however we did not have the benefit of hindsight” (Caldwell quoted in Hutchinson, 2001). One recommendation made after the fire was to have personnel available at the roadblocks who could identify local farmers thereby enabling them to get to their farms.

The present MDC Emergency Services Manager has suggested a process could be put in place to take the driver’s name and vehicle registration and allocate them a number on the vehicle window. This number could be called through by radio to get a briefing from incident management to advise whether the vehicle could proceed down a particular road. This way it would be possible to allow farmers/landowners back into the fire affected area to move stock if those managing the incident knew where the farmers were. This would make it possible to track farmers within the fire area. An appointed farmer liaison also could plan the evacuation of stock in conjunction with the incident management team.

Communication with farmers to explain fire regulations and to determine workable solutions requires two-way communication. It is important that the MDC and farmer groups work together to organise meetings with the obligation of both parties to listen and determine workable arrangements to satisfy both fire and stock management.

Farmer B also mentioned that a group of concerned farmers had obtained an opinion from a Queen’s Counsel to ascertain whether the fire authorities could be held legally liable for the fire. The response was, as stated by Farmer B:

Basically it said that there was government law which says that they are protected. There is no liability on the fire department for loss - for any losses. And to be quite honest, I guess you would never have anybody join the fire brigade if they were going to be held liable, so I guess you can really understand it.

However, when specifically questioned about the issue of blame, not all of the farmers expressed the opinion that they needed to blame anyone for the physical damage caused by the fire as they just wanted to get on with rebuilding their farm.

In response to the accusations that the firefighters were in some way responsible, all of firefighters interviewed said that they had done the best that they could do with the resources they had available. For most of them, it was a case of no matter what they did they would always be blamed if the decisions they made did not find favour with certain sections of their community. A Council representative also made the comment that:

You have to blame someone. It's a constant thing. The farming community or landowners obviously look at blaming the Council or the fire service or someone for whatever. Hence, that's the reason we go through a process of communication and debriefs so you go out into the community and talk about what happened, why it happened, when it happened, what you can do better next time. That's all part of that process at that time.

7. CONCLUSION AND RECOMMENDATIONS

This report has highlighted some of the major issues that were discussed by firefighters, fire managers and farmers in relation to the 2000 Wither Hills fire. Major lessons were learned as a result of this fire, and the MDC in particular are now considerably better prepared for another fire of this magnitude occurring. It is envisaged that the information highlighted in this report will assist the MDC in working with members of the rural community to improve their involvement in the firefighting process. In addition, this information will also be useful to other RFAs to ensure that they have adequate resources and contingency plans in place to control rural fires in their regions.

One of the major findings of this report is that there still remained a tension between farmers and the MDC and other fire services concerning the role of farmers in fighting fires at the time of the 2006 study. A key recommendation is to arrange open meetings between the farmers, the MDC and local firefighters with the intention of developing awareness within the community of the RFA and its legal responsibilities regarding firefighter and public safety and, in particular, to understand the reluctance of the MDC (and other RFAs) to have inadequately trained people in frontline firefighting positions because of OSH issues. In turn the MDC can learn more of farmers need to access their properties to ensure their stock is safe. This may help resolve some of the tensions that still remained more than 6 years after the fire.

The Wither Hills fire is another example that points to the need to provide adequate community recovery for fire affected communities. This should include more specific guidelines for community recovery within RFA fire plans and clearer links to recovery actions outlined in CDEM plans as identified in the related review of fire recovery planning in New Zealand (Hart et al., 2009).

7.1 Recommendations

Recommendations from this report for the Marlborough District Council, other Rural Fire Authorities, and more broadly for fire management in New Zealand are:

- Ensure that legal advice is taken to address the issue of the legal liability in relation to recreational users of Council land to protect Councils against the risk of people being harmed by a fire event.

- Investigate opportunities to hold open regular meetings or seminars for landowners (farmers, and lifestyle property and vineyard owners) with the Rural Fire Authority to discuss the landowners' role in fire events to ensure adequate preparedness. Information about Council and firefighting service requirements for public liability, statutory liability (in particular, requirements under the Health and Safety in the Employment Act 1992) should be provided.
- Examine ways of making good use of local knowledge, such as the role of a community liaison person to assist with the management of fires. Discuss issues with local residents and landowners to determine issues such as which local farmers need access in order to protect their farm properties and stock.
- Engage in dialogue with farmers to understand their attachment to their livestock and other property and livelihood values.
- Explore organising seminars that discuss the importance of having adequate insurance coverage. These seminars could be organised by the local/District Councils assisted by a local insurance broker or the Council's insurance broker.
- In addition to 'invite only' de-brief meetings following rural fires, organise public meeting(s) to ensure that all members of the community who were involved, assisted or who were affected by a fire event are able to voice their concerns soon after the fire de-brief meeting. This will aid the psychological coping process for fire-affected individuals and communities.
- Ensure a well resourced and well maintained communication system is available for emergency incident management.
- Maintain a list with the telephone numbers of a few representatives of the farming community to liaise with during a fire.
- Encourage farmers to establish and maintain an up-to-date list of the farmer's cell phone numbers in a phone tree system to allow communication with local farmers through farmer liaison representatives.
- Consider providing a level of basic training/education in firefighting to farmers and farm residents/workers, outside of a Rural Fire Force to allow them to assist in firefighting support capacities. Discuss options with farmers and their workers to enable this. People who want higher level training to meet fire standards should be encouraged to join and/or form Rural Fire Forces.
- Ensure regular interaction between urban and rural fire services through joint training, simulated fire exercises etc.
- Establish a recovery plan that highlights the importance of a co-ordinated recovery process for the local community. Council staff responsible should meet with representatives of organisations such as Civil Defence and Emergency Management (CDEM), FFNZ, RWNZ, and the Salvation Army to develop an appropriate plan. Where possible, fire recovery planning should involve appropriate community groups or individuals.

8. ACKNOWLEDGMENTS

This report was financially supported by Scion's Rural Fire Research Group through funding from the Foundation for Research, Science and Technology (FRST) (Contract C04X0403) and the rural fire sector (through members of the Rural Fire Research Advisory Committee).

The authors acknowledge the support of the Marlborough District Council in providing information, the use of their facilities, and for co-ordinating the interview process with Blenheim urban and rural firefighters and Civil Defence volunteers. The involvement of the individual firefighters, Civil Defence volunteers and local farmers who participated in this study is also greatly appreciated. Without their assistance and contribution this report could not have been completed. Information supplied on the Wither Hills fire and fire management in New Zealand and checking the content of the report by Ross Hamilton, Emergency Services Manager MDC, Grant Pearce and Stuart Anderson, Scion is gratefully acknowledged. The front cover photograph was kindly supplied by Stephen McKeown, Head of Department Computing, Shirley Boys High School. Assistance provided by Carolyn Hodgson and Rose O'Brien, Scion in editing and formatting this report is also appreciated.

9. REFERENCES

- Bridges, B. (2000). *Blenheim Wither Hills Fire, 26th December 2000*. Obtained from MDC archival records. NZ.WAR.007.050.
- Brooks, C. (2001). *One eyed and blinkered: Forty years of Civil Defence in Marlborough*, Marlborough, Marlborough Civil Defence Emergency Centre.
- Darragh, J., Dalton, R., More, T., & Rolton, R. (2000). *Investigation Report: Origin, Cause, Path and Impact of a wildfire, Wither Hills, Blenheim*. Obtained from MDC archival records, F090.06, Box 1699, NZF.WAR.008.
- Federated Farmers of New Zealand (Inc). (2001). *Marlborough Boxing Day 2000 Fires – Wither Hills and Ward – Situation update, evaluation and request for government assistance*, Wellington, New Zealand.
- Graham, R. & Langer, E. R. (2008). *Overview of insurance Issues in relation to rural fires*, Scion, Rural Fire Research Group, Christchurch. Scion Client Report No. 16182. 38 p.
- Hart, M., Langer, E.R., McGlone, M., & Pearce, H.G. (2009). Review of fire recovery planning in two regions of New Zealand. Scion, Rural Fire Research Group, Christchurch. Scion Client Report No. 16680. 14 p.
- MapWorld. (2000). MapWorld TopoMap NZ V2.0.61. Integrated Mapping Ltd, Christchurch and Terralink Ltd. (Mapping Software).
- Hutchinson, D. (2001). *Cockies couldn't get home during the fire, but police unrepentant*. *The Marlborough Express*, accessed www.stuff.co.nz 26/01/2001.
- Marlborough District Council. (2001a). *Minutes of Wither Hills Complex Operational Debrief at the Marlborough Hotel, 8 February 2001*. Obtained from MDC archival records F090.06
- Marlborough District Council. (2001b). *Minutes of Wither Hills & Ward Fire Landowner Debrief held in the Council Chambers, 15 February 2001*. Obtained from MDC archival records F090.06
- Wraight, V. (2000). Quiet stroll turns into race for life. *Marlborough Express*, 27/12/2000. Accessed www.stuff.co.nz 28/01/2001.

Correspondence

Undisclosed (name withheld for privacy). Correspondence to Council, 9/02/2001. Obtained from MDC archival records F090.06