

Fire Research Report

Alcohol and Fire: A Strategic Review

BERL

August 2011

This report details the New Zealand Fire Service (NZFS) strategies to minimise the risk of fire associated with alcohol consumption and determine if current NZFS strategies are appropriate, effective; and are aligned with best practice approaches undertaken by other government and non-government agencies.

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New Zealand Fire Service Commission

ALCOHOL AND FIRE: A STRATEGIC REVIEW

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1 Summary

The New Zealand Fire Service (NZFS) is the mandated lead government agency in regards to fire. Their principle role is to reduce the incidence of fire and its consequences for people, property, the community and the environment.¹

While the NZFS is not the lead agency in regards to alcohol they are one of several New Zealand government agencies whose work is directly affected by alcohol and its sale, supply and consumption. It is therefore important that NZFS strategies are appropriate in regards to minimising the risk of fire associated with alcohol consumption.

In 2010, the Law Commission reviewed the New Zealand liquor laws and released their findings as a report, *Alcohol in Our Lives: Curbing the Harm*. The New Zealand government responded to this review and adopted in full, or in part, 126 of the Law Commission's 153 recommendations.² These recommendations were focused on reducing heavy episodic drinking; reducing excessive drinking by young people; reducing the harm caused by alcohol use, including crime, disorder, public nuisance and negative public health outcomes; and implementing a sustainable solution to address alcohol-related harm that facilitates community involvement.³

Consequently it is timely for the NZFS to consider in 2011 if their strategies in regards to alcohol are appropriate, and effectively aligned and coordinated with other government and non-government agencies. To undertake this review, BERL has split the strategies examined into three areas: technical, environmental and behavioural strategies. We have provided examples of the areas that fall within these strategies in Table 1.

- Technical strategies include technical solutions in regards to fire mitigation, such as the use of fire detection and suppression systems to help detect and suppress fires, and fire plans for buildings. It also includes technical solutions such as work completed by NZTA in regards to roading design, and research completed by ACC on non-slip floor surfaces.
- Environmental strategies include a focus on when fires occur and in what setting, and the various causes of fires. These strategies also include the hours that licensed premises are open, the purchasing age for alcohol, and aspects of the work the New

¹ For further discussion on the profile, role, funding and organisational structure of the NZFS see BERL. (2008). Developing a Composite Performance Measure. NZFS Commission Research Report No. 86.

² Office of the Minister of Justice. Cabinet Paper: Alcohol Law Reform. (<http://www.justice.govt.nz/policy/crime-prevention/alcohol>). Cabinet Paper August 2010, downloaded March 8 2011.

³ Office of the Minister of Justice. Cabinet Paper: Alcohol Law Reform. (<http://www.justice.govt.nz/policy/crime-prevention/alcohol>). Cabinet Paper August 2010, downloaded March 8 2011.

Zealand Police has undertaken in regards to the built environment – lighting or the location of seating at licensed premises.

- Behavioural strategies include advertising campaigns that are focused on raising awareness and changing behaviour, as well as education programmes.

Table 1 Strategic focus areas

Technical	Environmental	Behavioural
Smoke alarms	Residential setting	Education campaigns
Fire extinguishers	Business setting	Advertising & media campaigns
Fire blankets	Social setting including sport & recreation	Awareness raising
Built environment		Government policy & legislation

Based on the strategic focus areas, three potential options could be considered by the NZFS in regards to best practice approaches to managing the risk of fire associated with alcohol.

1. The NZFS could focus solely on technical strategies, as this is their area of expertise and it is appropriate to their role as the mandated lead government agency in regards to fire.
2. The NZFS could continue with the status quo in regards to maintaining their efforts in all three strategic focus areas, measuring their performance targets, and focusing on reducing the incidence of fire and its consequences for people, property, the community and the environment.
3. The NZFS could focus on their area of expertise in regards to technical strategies, and work in collaboration with government agencies on developing and implementing environmental and behavioural strategies.

Our overarching recommendation is that the NZFS undertake option three. Here, the NZFS could contribute to the work of other government agencies by providing technical expertise. Focusing on their area of expertise, the NZFS could provide technical solutions and continue to promote the use of fire detection and suppression systems to help detect and suppress fires. The NZFS could also direct their technical strategies into aligning with other government and non-government agencies working in this area.

We believe the NZFS needs to work closely with other New Zealand government agencies to better align their strategies with current thinking in regards to minimising the harm associated with alcohol consumption. By undertaking option three, the NZFS will also benefit from the expertise of other government agencies in the areas of environmental and behavioural strategies.

Many agencies are attracted to the task of working with the NZFS in regards to the harms associated with alcohol consumption. If the NZFS decides to undertake option three, we would recommend that the NZFS consider proactively putting in place a strategy that brings other government and non-government agencies together, and playing a key role in initiating and coordinating these discussions.

Further, if the NZFS decides to undertake option three we would recommend the NZFS work closely with other government agencies in regards to delivering key messages through education and marketing campaigns, particularly those focused on at-risk groups. Often the people identified by a government agency as being 'at-risk' are the same across agencies. Therefore, it is important for the NZFS to work on collaborative community projects, and engage in legislation, policy and procedure development discussions in regards to alcohol. Agencies spoken to as part of this research who are currently working in this area have identified an interest and willingness to work with the NZFS on this issue.

By working collaboratively the NZFS will ensure they are contributing to the area under discussion as well as benefitting from existing data and information collections. This is a key point as the NZFS currently has a gap in their incident data statistics in regards to fire fatalities and injuries and the causal role of alcohol. However, as part of working with other agencies in regards to data and information collection, the NZFS needs to identify what data they need to gather, what data or information can be provided by other agencies, and where the gaps are.

Through a strategic review of the NZFS incident data system (SMS), it has already been identified that the NZFS needs to improve the quality and accuracy of emergency incident reporting. Further, the potential of SMS has not yet been fully exploited, and there is a need to consider in detail what the core information needs of the NZFS are, and how these relate to the current collection of incident data statistics. The NZFS is not alone in this regards. Other international studies on the contributory role alcohol plays in the incidence and consequence of fire have raised concerns about the data collections of fire and rescue services including the ability to gather data and information at an incident, and the validity and reliability of this data and information.

Finally, we would also recommend that the NZFS draw on the experiences of other fire and rescue services internationally to consider how best to monitor the effectiveness of these strategies, and how to effectively collect data and information on alcohol consumption and the incidence and consequences of fire. International best practise may provide some direction on monitoring effectiveness in this regard.

2 Alcohol and harm in New Zealand

The World Health Organisation has a lexicon of terms related to harmful alcohol use. These include, for example, alcohol use, alcohol misuse, hazardous drinking, heavy drinking, binge drinking, and abnormal drinking behaviour. Some authors reserve the term abuse for illegal substances, such as illegal drugs, while harmful use of legal drugs, such as alcohol, is called misuse.

The phrasing of use, misuse and abuse is complicated by the possibility of beneficial substance use, particularly in the case of moderate alcohol consumption. This possibility is based on epidemiological studies showing reduced risk of certain diseases, such as ischaemic heart disease among light to moderate drinkers.⁴ So, while alcohol use may be benign or harmful in some cases, it is possible that it may be beneficial in other cases.

The focus of our current project does not explicitly examine the benign or beneficial use of alcohol. We focus here on harmful alcohol use and its contribution to the risk, incidence and consequence of fire.

2.1 Alcohol and harm in New Zealand

Alcohol is the most commonly used recreational drug in New Zealand.⁵ In most instances, alcohol is enjoyed in a social environment and is consumed moderately. However, alcohol misuse is growing in our communities, increasing mortality and morbidity figures, and resulting in alcohol-related harm.

The Ministry of Health regularly monitors alcohol and drug use in the population to observe trends over time and to develop appropriate policy and services. A study by the Ministry of Health on Alcohol Use in New Zealand (2007) found 5.7 percent of New Zealanders aged 12 to 65 years old had been physically assaulted in the last 12 months (2007/08) by someone who had been drinking.

⁴ The British Medical Association Board of Science (2008) argues that “alcohol consumption is linked to long-term health and social consequences through three main causal pathways: intoxication, dependence and toxic (and beneficial) biological effects”. WHO (2002) has also used this schema, but only with reference to harmful alcohol consumption. These arguments are reinforced by recent epidemiological work that argues that firm conclusions on potential health benefits of moderate alcohol consumption cannot be made on the evidence that is available (Lindberg and Amsterdam 2008, Fillmore et al 2007, 2006).

⁵ Ministry of Health. (2009). Alcohol Use in New Zealand: Key Results of the 2007/08 New Zealand Alcohol and Drug Use Survey. Ministry of Health: Wellington.

In the last 12 months 1.7 percent of New Zealanders had been involved in a motor vehicle accident and 1.4 percent had been involved in some other type of accident that had caused injury or major damage due to someone else's drinking.⁶

This report also highlighted that approximately 3.8 percent of New Zealanders aged 12 to 65 years old had experienced large effects on their home life from someone else's drinking. Approximately 3.5 percent had experienced large negative effects on their friends and social life, and 1.7 percent felt that someone else's drinking had a large negative effect on their financial position.

2.2 The social costs of harmful alcohol and other drug use

In 2009, the Ministry of Health and the Accident Compensation Corporation (ACC) engaged BERL to estimate the social costs of harmful drug use in New Zealand. Social costs reflect that society as a whole has fewer resources and less welfare than in the absence of harmful drug use. BERL analysed two categories of drugs: alcohol and other drugs, where other drugs included illegal and misused legal drugs. The study did not cover tobacco.

Harmful drug use in 2005/06 caused an estimated \$6,881 million of social costs in New Zealand.⁷ This is equivalent to the Gross Domestic Product (GDP) of New Zealand's agriculture industry (\$6,701 million) or finance industry (\$6,982 million). This total consists of \$4,918 million in tangible resource costs and \$1,963 million of intangible welfare costs.⁸

- Harmful alcohol use in 2005/06 cost New Zealand an estimated \$4,794 million of diverted resources and lost welfare. To put this figure in perspective, the social cost across all cost categories was equivalent to almost two thirds of Vote Health⁹ in 2005/06; and the tangible costs alone to over two fifths of Vote Health.
- The research indicated that 28.4 percent (or \$1,951 million) of the social costs of harmful drug use result from injury. This equates to \$2,900 per harmful drug user per annum.

⁶ Ministry of Health. (2009). Alcohol Use in New Zealand: Key Results of the 2007/08 New Zealand Alcohol and Drug Use Survey. Ministry of Health: Wellington.

⁷ BERL. (2009). Costs of Harmful Alcohol and Other Drug Use. Wellington.

⁸ GDP does not include intangible costs according to its definition in the system of national accounts (SNA). This may suggest that a comparison between social costs (that include intangible costs) and GDP may not be useful, as they have different conceptual bases. However, Easton (1997) argues that some form of benchmarking is useful for informed decision-making. It states that "the magnitudes shed light on the enormity of the problem, and the significance of its various components. In this report, comparisons made with GDP figures are used as orders of magnitudes, to provide an indicator of size rather than a precise measurement of proportion of GDP. BERL. (2009). Costs of Harmful Alcohol and Other Drug Use. Wellington.

⁹ The term 'Vote' refers to funding approved by parliament for a specified range of outputs and that is the responsibility of a particular government Minister (the 'Vote' Minister).

- Using estimates from international research, this study suggests that up to 50 percent (\$3,440 million) of the social costs of harmful drug use may be avoidable.

Subsequently, the findings from this study were used in the Law Commission review of the law governing the sale and supply of alcohol in New Zealand. This review was in response to growing public concern about the harms associated with the misuse of alcohol.

2.2.1 Drivers of crime

Reducing the harm caused by alcohol is one of four priority areas in addressing what has been termed “the drivers of crime”. This has become a focus for the New Zealand government, and New Zealand government agencies. Frequent and pervasive excessive drinking and intoxication, it has been argued by these agencies, is contributing to New Zealand’s crime rate, injury rate, and road crash statistics, and affecting the overall level of health and well-being of New Zealanders.

2.3 Alcohol in our lives: curbing the harm

Alcohol in Our Lives: Curbing the Harm was the final report produced by the Law Commission on their review of New Zealand’s liquor laws. This report was published in April 2010. Two key findings of the Law Commission review relevant to this research project are:

- The level of alcohol-related harm being experienced in New Zealand is growing.
- A new policy framework and regulations regarding alcohol needs to be put in place.

Overall, the Law Commission proposed to the New Zealand government an integrated package of policies. Key elements of these policies included:

- A new Alcohol Harm Reduction Act to replace the Sale of Liquor Act 1989.
- Increasing the price of alcohol through excise tax increases in order to reduce consumption.
- Regulating promotions that encourage increased consumption or purchase of alcohol.
- Moving over time to regulate alcohol advertising and sponsorship.
- Increasing the purchase age for alcohol to 20 years.
- Strengthening the responsibility of parents supplying alcohol to minors.

- Increasing personal responsibility for unacceptable or harmful behaviour induced by alcohol.
- Cutting back the hours licensed premises are open.
- Introducing new grounds upon which licences to sell alcohol can be declined.
- Allowing more local input into licensing decisions through local alcohol policies and District Licensing Committees (these bodies are recommended to replace District Licensing Agencies).
- Streamlining the enforcement of the alcohol laws and placing the overall decision-making in a new Alcohol Regulatory Authority (building on the existing Liquor Licensing Authority) presided over by District Court judges especially selected for the task.
- A substantially improved and reorganised system for the treatment of people with alcohol problems.¹⁰

This report focused on the amount of alcohol consumed on a single drinking occasion and the risks of immediate harms from this drinking occasion. The Law Commission argued that the frequency and quantity of alcohol consumed determined the level of risk.

In their review, the Law Commission argued that the drinking patterns of New Zealanders are a major problem. Those who drank infrequently, but drunk to intoxication when they did drink, were more likely to generate significantly more acute harms than those who drank several times a week but only in small quantities.¹¹

Some of the harms identified included alcohol poisoning and accidental injury due to intoxication, sometimes causing death. This included death in the home and on the roads. Harm upon third parties as a result of others' excessive alcohol consumption included victims of crime and domestic violence, and children; and the harmful effects of alcohol on educational outcomes, workplace productivity, friendships, social and home life, and the financial position of households.¹²

¹⁰ Law Commission. (2010). Alcohol in our lives: Curbing the harm. A report on the review of the regulatory framework for the sale and supply of liquor. Wellington.

¹¹ Law Commission. (2010). Alcohol in our lives: Curbing the harm. A report on the review of the regulatory framework for the sale and supply of liquor. Wellington.

¹² Law Commission. (2010). Alcohol in our lives: Curbing the harm. A report on the review of the regulatory framework for the sale and supply of liquor. Wellington.

In August 2010 the Government responded to the Law Commission's review and adopted in full, or in part, 126 of the Law Commission's 153 recommendations.¹³ These recommendations were focussed on reducing heavy episodic drinking; reducing excessive drinking by young people; reducing the harm caused by alcohol use, including crime, disorder, public nuisance and negative public health outcomes; and implementing a sustainable solution to address alcohol-related harm that facilitates community involvement.¹⁴

These recommendations and their adoption will impact on the work of the NZFS. Alcohol consumption has been linked as a contributory factor to fire. Firefighters attend incidents involving death on our roads due to alcohol, and death and injury in the home caused by intoxication. The NZFS are therefore acutely aware of the alcohol-related harms identified by the Law Commission.

The adoption of the Law Commission's recommendations by the New Zealand government means it is timely for the NZFS to consider if the strategies they have in place to minimise the risk of fire associated with alcohol consumption are appropriate, and effectively aligned and coordinated with other government and non-government agencies. Consequently, the aim of this project is to review NZFS strategies to ensure best practice approaches are in place and recommend if any new strategies should be considered.

¹³ Office of the Minister of Justice. Cabinet Paper: Alcohol Law Reform. (<http://www.justice.govt.nz/policy/crime-prevention/alcohol>). Cabinet Paper August 2010, downloaded March 8 2011.

¹⁴ Office of the Minister of Justice. Cabinet Paper: Alcohol Law Reform. (<http://www.justice.govt.nz/policy/crime-prevention/alcohol>). Cabinet Paper August 2010, downloaded March 8 2011.

3 Alcohol and fire: current NZFS strategies

The NZFS is the mandated lead government agency in regards to fire. The principle role of the NZFS is to reduce the incidence of fire and its consequences for people, property, the community and the environment.¹⁵ As an organisation, the NZFS constantly seeks to improve its operations and performance. This is illustrated through current NZFS strategies, policy and procedure documents.

The NZFS does not have a clear and direct strategy to minimise the risk of fire due to alcohol consumption. Our project team became aware of this gap early on in the project. In our review of NZFS strategies, policy and procedures we have therefore considered if the NZFS was to develop strategies in this area, where they would appropriately sit, and how they could be incorporated into the existing framework. As part of our review, we also considered how new strategies, projects or programmes could be evaluated and monitored. Data collection and incident reporting would play a key role in this.

Research conducted through the contestable research fund has linked alcohol consumption to the incidence and consequences of fire in New Zealand. However, the NZFS are not the lead government agency in regards to alcohol and the amount of data captured at a fire incident regarding alcohol is limited. This means that while the organisation is aware that there is a problem, the NZFS are currently unable to determine the degree of the problem. The inability to capture data nor measure the degree of the problem also makes it difficult for the NZFS to formulate strategies, and monitor performance.

3.1 NZFS strategic priority areas and objectives

Current and previous NZFS strategies are well documented, as evidenced by the documents in the NZFS library and databases, and available on the NZFS website. We reviewed NZFS strategic documents from 2005 to the present. This review process, including interviews with key NZFS personnel, provided us with a context for current NZFS strategies. However, it also clearly illustrated that NZFS strategies are dynamic and evolving.

Since 2005, two strategic plans have been developed by the NZFS. These are the Strategic Plan 2005-2010, and the Strategic Plan 2010-2015. Based on these two documents, there have been five strategic priority areas (SPAs) that have been consistent for the NZFS over the last six years. These include:

¹⁵ For further discussion on the profile, role, funding and organisational structure of the NZFS see BERL. (2008). Developing a Composite Performance Measure. NZFS Commission Research Report No. 86.

1. Improve community fire outcomes through fire prevention, fire safety and better response.
2. Foster the integration of urban and rural service delivery.
3. Contribute to enhanced community security.
4. Develop and protect our people and promote internal stakeholder partnerships.
5. Improve service performance, accountability, and resource utilisation.

There is only one SPA that was not considered in the current strategic plan of the NZFS, *Support regional, national and international security*.

Of the five SPAs, only the first, *improve community fire outcomes through fire prevention, fire safety and better response*, provides a potential connection between NZFS SPAs, alcohol consumption and fire. The other SPAs are of equal importance, but are not necessarily linked to the causal relationship and association between alcohol and fire.

If the NZFS were to develop specific strategies in regards to alcohol and fire, these strategies would be best placed to sit within the SPA, *Improve community fire outcomes through fire prevention, fire safety and better response*.

3.2 NZFS performance targets

In their annual reports, the NZFS sets out how they have performed over the past year across a range of strategies and programmes. These strategies and programmes are designed to reflect the role of the NZFS, and the services they provide on behalf of the Government.

Four key indicators are used to monitor the performance of the NZFS. These are avoidable residential fire fatalities; fire injuries to the public; fires in structures; and hectares lost to wildfire.

Previous research completed by BERL (2010) stated that in recent years the average rate of fires, fire fatalities, structural fires and fire injuries per 100,000 population has fallen. Some of these statistical improvements may be the direct result of NZFS action, such as

advertising and awareness campaigns and better readiness and response to fires, while others may be due to external factors such as changing demographics.¹⁶

Changes in fire incident data and statistics may also be due to the increasing attendance of the NZFS at non-fire incidents. In 2008/09, for example, non-fire incidents accounted for over 45 percent of the incidents where NZFS assistance was required.¹⁷

If the NZFS were to develop specific strategies in regards to alcohol and fire, three of the four key indicators could potentially be linked to incidents that have alcohol as a contributing factor and used to monitor the performance of the NZFS. These are *avoidable residential fire fatalities; fire injuries to the public; and fires in structures*.

3.3 NZFS annual reports

Our review of NZFS annual reports between 2006 and 2010 found that the attainment and evaluation of national goals, as measured through these reports, is evolving.

Starting in 2008, NZFS annual reports include the Commission Performance Evaluation as differentiated from the Statement of Service Performance. This is an indication that over time the NZFS has refined its evaluation procedures. With this improvement, we could see how the national goals and output performance of the NZFS is measured and attained. Through the annual reports we were also able to see how the national goals were set in the Statement of Intent.

The NZFS Commission monitors fire fatalities and injuries from fire to assess progress against its statutory mandate to protect life. Based on the latest annual report (2010), both of these national goals have shown significant reductions over the last five to 10 years.

- Avoidable residential fire fatalities per 100,000 population has declined by 44 percent since 1997.
- Injuries to the public from fire per 100,000 population has declined by 31 percent since 2002.

Research and data analysis completed by the NZFS Commission indicates that the delivery of fire safety education is the main reason for the decline in fatalities and fire-related injuries. To reduce the incidence of fire and its consequences for people, property, the community

¹⁶ BERL. (2010). The Impact of Changes in New Zealand's Demographic Profile on Fire Outcomes. NZFS Commission Research Report.

¹⁷ MartinJenkins. (2010). Understanding the New Zealand Fire Service's Contribution to Non-Fire Outcomes. NZFS Commission Research Report Number 102.

and the environment, the NZFS engages in a variety of marketing and awareness raising campaigns to motivate and change behaviour. The latest key fire safety messages are focused on education in the areas of unattended cooking kills; smoke alarms save lives; and never underestimate the speed of fire.

Although there is information on the attainment of the NZFS national goals and objectives in the annual reports, there is no clear or specific programme or project referred to in these reports that directly relates to mitigating the risk of fire due to alcohol consumption.

3.4 NZFS risk management model

Like their counterpart in Australia, the NZFS is implementing risk management and prevention strategies, as evidenced by the NZFS Risk Management Plan.

The risk management model is an iterative process consisting of steps that, when actioned in sequence, enable continuous improvement in decision-making. This model also facilitates and encourages continuous improvement in performance. While this does necessitate a greater reliance on information gathering and monitoring, it also allows the success or failure of any mitigation strategy to be evaluated and communicated to all stakeholders.

The implementation of a risk management model allows continuous improvement in performance, decision-making, and information gathering, rather than static strategies. It also allows the inclusion of best practice, latest research findings, and data and information within this model of continuous improvement. Risk management and prevention strategies therefore allow the NZFS to work in areas of concern – such as alcohol and fire – in an iterative way.

3.5 NZFS contestable research fund

As mentioned earlier, research conducted through the contestable research fund has linked alcohol consumption to the incidence and consequences of fire, including a large number of potentially preventable injuries and fatalities.

- Between 1991 and 1997, alcohol was a probable factor in almost two-thirds of the fatal unintentional domestic fire incidents involving New Zealanders aged between 15 and 64 years old.
- Alcohol is an important factor in fires resulting from unattended stove top or oven cooking, and inappropriately discarded cigarettes or smoking materials.
- Some disturbance of the usual routine - attendance at a party or social function, returning home after midnight, being away from home, or having overnight guests - can

result in fatal fires. Further, some of these disturbances resulted in alcohol and unattended cooking incidents.

- Alcohol consumption played a role in the behaviour of victims and others in fire ignition and consequent fatalities in 131 unintentional residential fire deaths between 1997 and 2003. Of those victims not aware of the fire in time, almost half were affected by alcohol.

Impairment from alcohol consumption was a significant risk factor identified by Dr Ian Miller and Dr Paula Beever in their research on victim behaviour and residential fire deaths in New Zealand. Fire safety and prevention strategies discussed in international literature emphasise technological and engineering solutions, such as smoke alarms and detectors, rather than focusing on the behaviour of the victim. However, victim behaviour is considered a key factor in fire safety and prevention.

The research completed by Miller and Beever highlighted the role behaviour plays in fire safety and prevention, and the role the victim plays in fire ignition, fire spread and fatal outcomes. While alcohol was not the cause of the fatal fires examined, as established at inquest, careless acts or irresponsible actions lead to the fire such as unattended cooking, careless smoking or unattended candles.¹⁸

International studies on alcohol and fire have illustrated that alcohol consumption is a contributory factor that affects the ignition of fire, responsiveness to fire, and effective escape behaviour. In New Zealand, the University of Otago attempted to look at the role of alcohol as a contributing factor in serious unintentional domestic fire incidents. As part of their literature review, this study found that although the public were aware of the role alcohol played in injury, they underestimated the contribution of alcohol to fatal fires.¹⁹

As discussed in section 4, overall the number of international studies in this area – alcohol and fire – remains limited. Most studies are focused on a particular aspect of this problem, such as the number of fatalities, the time the fatality occurred or the ability of occupants to wake and react to the fire. Despite this, alcohol is affecting the work of fire and rescue services internationally. These services have expressed growing concern about alcohol and fire, particularly the role alcohol plays in the incidence and consequences of fire, and the need for fire and rescue services to take action to address this issue.

¹⁸ Miller, I. & Beever, P. (2001). Victim Behaviours, Intentionality, and Differential Risks in Residential Fire Deaths.

¹⁹ University of Otago Fire Research Group. (2003). Role of alcohol in serious unintentional domestic fire incidents. Second progress report. Unpublished.

3.6 NZFS databases

Various statistics gathered from fire incidents have been used to illustrate the extent of this issue internationally. However, concerns have been raised about data collection including the ability to gather data and information, and the validity and reliability of this data and information.

In New Zealand, research conducted through the contestable research fund provides the NZFS with data and information that can be used in advertising and education programmes. But, a gap remains in the NZFS incident data system and their data collection at incidents.

The NZFS has a database on fire fatalities. This database includes information on blood alcohol levels at the time of autopsy, and if available, it records any known history of alcoholism or drug taking. The table below shows the number of fatalities between 2000 and 2007, and the proportion of these fatalities that relate to alcohol consumption. Although the available data is not to the latest year, it does provide some information on the incidence of alcohol-related fatalities.

Table 2 Incidence of alcohol related fatalities, 2000-2007

	2000	2001	2002	2003	2004	2005	2006	2007
Number of fatalities	15	16	26	26	20	16	16	15
incidence of alcohol-related fatalities	40.00%	43.75%	46.15%	50.00%	25.00%	31.25%	31.25%	26.67%

Between 2000 and 2003, almost half of the fatalities recorded were related to alcohol consumption. Until 2007, the number of fatalities related to alcohol consumption was at the two-digit level.

One of the key shortcomings of this data is that it only records blood alcohol levels at the time of autopsy. Consequently, the database does not capture statistics on fire-related injury due to alcohol nor does it capture those fatalities or injuries inflicted on third parties due to the drinking of others, such as children and other members of a household.

Research completed by the Accident Compensation Corporation (ACC) has found that alcohol is a contributing factor in two-fifths of all falls in the home and that many of the injuries resulting from these falls are repeat injuries rather than an initial incident. ACC is therefore raising awareness about alcohol and its consumption in a home setting focused around injury prevention methods and host responsibility.

Research such as this indicates that the NZFS may be seriously underestimating the extent of the problem between alcohol and fire.

4 Alcohol as a contributory factor to fire

This section discusses our review of various technical, environmental and behavioural strategies that have been adopted by fire and rescue services internationally. This review addressed the question, what lessons can be learnt from agencies internationally in regards to mitigating the risk of fire, accident or injury associated with alcohol consumption?

The number of international studies in this area – alcohol and fire – remains limited and most are focused on a particular aspect of this problem, such as the number of fatalities, the time the fatality occurred or the ability of occupants to wake and react to the fire.

Fire and rescue services are not the lead agency in this area, and many services are currently unable to determine the degree of the problem between alcohol consumption and fire. As such, the studies completed in this area conclude that by working with other agencies to share information, data and resources, fire and rescue services will have the greatest impact in reducing the impact of alcohol on the incidence and consequences of fire.

By working with other agencies, fire and rescue services will ensure:

- They are contributing to the area under discussion as well as benefitting from existing data and information collections, collaborative community projects, and legislation, policy and procedure development.
- By working together in a proactive rather than reactive way to this issue, fire and rescue services, it is argued, will benefit from the work of others in this area and be able to work in conjunction with them and other lead agencies to have one message and one voice.

4.1 Harmful alcohol use and fire: United States

Between 2003 and 2006, impairment by alcohol was a contributing factor in an average of 350, or 12 percent, of all home fire deaths in the United States.²⁰ Of this number:

- 71 percent of the victims impaired by alcohol were male.
- 88 percent of these males were over the age of 14 and under the age of 65.

In North Carolina, Runyan et al. found that the risk of death was greatest in fires involving alcohol-impaired people. In a subsequent study Marshall et al. found that 53 percent of the

²⁰ Ahrens, M. (2009). Possible Impairment by Alcohol or Drugs as a Contributing Factor in Home Fire Deaths. National Fire Protection Association Fire Analysis and Research Division. Quincy, MA.

adult fatal fire victims who had their blood alcohol measured were intoxicated (i.e. more than 100 mg/100 ml).²¹

4.2 Harmful alcohol use and fire: Canada

A study on fire fatalities involving alcohol was conducted in the province of Ontario, Canada. This study provided empirical data on the profiles of victims and when fatal unintentional fire incidents were most likely to occur. The latter could be linked to seasons, with the number of fires and fatalities increasing gradually during the winter months of October to January. March had the highest number of alcohol-impaired fire fatalities.²²

- 30 percent of victims were aged between 35 and 44 years old.
- None of the children under the age of 15 (11 percent) who died as a result of fire were impaired by alcohol; however, in some multiple-fatality fires an adult was impaired by alcohol and a child below the age of 15 died in the same fire
- The largest number of total fatalities was among those aged over 75, but only three percent of these victims were alcohol impaired.
- 68 percent of all alcohol-related fire deaths occurred during the period 10 pm to 6 am. Fire fatalities peaked between midnight and 2 am, when most people are asleep. These hours may correspond to normal sleeping patterns and the depressant effects of alcohol.
- Smoking was the leading cause in alcohol-related fatalities, where it was linked to 28 percent of all alcohol-related deaths. Other leading causes of fire fatalities in which alcohol was a factor included open flame, cooking and heating.²³

4.3 Harmful alcohol use and fire: United Kingdom

In a study of unintentional dwelling fires in London, Holborn et al identified alcohol and intoxication as a common risk factor that lead to death. This study found:

- 58 percent of victims were tested for the presence of alcohol. Of this number, 40 percent had blood alcohol concentrations in excess of the legal limit for driving in the

²¹ Holborn, P. G., Nolan, P.F., & Golt, J. An analysis of fatal unintentional dwelling fires investigated by London Fire Brigade between 1996 and 2000.

²² The Ontario Fire Service Messenger. Alcohol responsible for 1-in-5 fire fatalities. March/April 2004.

²³ The Ontario Fire Service Messenger. Alcohol responsible for 1-in-5 fire fatalities. March/April 2004.

United Kingdom (80mg/100ml). Further, 24 percent of these victims would have been highly intoxicated at their time of death (i.e. in excess of 200mg/100ml of blood).

- Over two-thirds of the male victims aged between 20 to 59 years old that were tested for alcohol were intoxicated.
- The majority of victims who were “highly intoxicated” died between 9pm and 3am.²⁴

Statistics released by the BMA Board of Science (2008) indicate that in the United Kingdom the number of people dying from alcohol-related mortality in the 15 to 34 year old age group is growing. In addition, the rate of death in the wider population due to liver cirrhosis has almost trebled since 1970.

Harmful alcohol use is a major cause of admission to hospital in an accident and emergency setting in the United Kingdom. In an editorial in the British Medical Journal, Gilmore and Sheron (2007) argue that the damage to third parties in the United Kingdom, such as the victims of domestic violence, from the exposure to harmful alcohol use is far greater than the effect of passive smoking. They state that the delay in implementing policies to reduce the harm of alcohol is costing lives.

Scotland has high levels of alcohol consumption. Figures from 2008 indicate that Scotland has the highest alcohol-related death statistics in the United Kingdom, and 50 percent of Scottish men and 30 percent of Scottish women may be exceeding their weekly limits.²⁵

In Scotland, Fire and Rescue Services has recognised that alcohol is a contributory factor in fires. High levels of alcohol consumption in Scotland may account in part for the higher numbers of fires and fire deaths experienced.²⁶ A fatal fire study undertaken in Scotland in 2009 as part of the Scottish Community Fire Safety Study found that well over half of all fire deaths across Scotland had alcohol recorded as a contributory factor.

However, this statement is not conclusive due to data limitations. Similar to the situation in New Zealand, incident records are limited in relation to the involvement of alcohol at a fire, particularly fires that involve injury rather than death. There is also concern that under-reporting may also be occurring due to the inability to connect alcohol as a causal factor in relation to the fire.

²⁴ Holborn, P. G., Nolan, P.F., & Golt, J. An analysis of fatal unintentional dwelling fires investigated by London Fire Brigade between 1996 and 2000.

²⁵ Note, this research does not mention what the weekly limits are in terms of alcohol consumption in the United Kingdom. Scottish Community Fire Safety Study. (2009). A study examining fire deaths and injuries in Scotland.

²⁶ Scottish Community Fire Safety Study. (2009). A study examining fire deaths and injuries in Scotland.

Other international studies have also identified alcohol as a risk factor in fatal fires. These studies were enumerated by Holborn et al. and the following list illustrates the extent of this problem:

- In Denmark, 35 percent of all unintentional fire victims were intoxicated at the time of the fire.²⁷
- In Japan, around 20 percent of all residential fire victims were drunk at the time of the fire, while 26 percent of these victims were chronic alcoholics.²⁸
- In the state of Victoria, Australia, 70 percent of unintentional residential fire victims were aged between 18 and 74 years old.
- Around half of these victims were tested for the presence of alcohol and were found to be intoxicated, with blood alcohol concentrations in excess of 100mg/100ml.
- Almost three quarters of the intoxicated victims were male. Males in their early 20s and those in the 40 to 50 year old age group were shown to be particularly at risk.²⁹

4.4 Victim behaviour and impaired judgement

The effect of a high blood alcohol concentration on cognitive function, physical coordination and performance, and behaviour is well researched and documented.³⁰ However, the relationship between high blood alcohol concentration and fire incidents, and in turn responsiveness to fire, is not as well known.

In the United States, a study has been completed on human factors and behaviour, and how these impact on injury and/or death in residential fires. This study found that between 2003 and 2006 alcohol impairment was a key causal factor in regards to residential fire and the victim's behaviour as a result of fire.³¹

²⁷ Holborn, P. G., Nolan, P.F., & Golt, J. An analysis of fatal unintentional dwelling fires investigated by London Fire Brigade between 1996 and 2000.

²⁸ Holborn, P. G., Nolan, P.F., & Golt, J. An analysis of fatal unintentional dwelling fires investigated by London Fire Brigade between 1996 and 2000.

²⁹ Holborn, P. G., Nolan, P.F., & Golt, J. An analysis of fatal unintentional dwelling fires investigated by London Fire Brigade between 1996 and 2000.

³⁰ For further information see Challands, N. Alcohol and fires.

³¹ Flynn, J.D. (2010). Characteristics of Home Fire Victims. National Fire Protection Association: Fire Analysis and Research Division. Quincy, MA.

- 11 percent of victims who were attempting to escape the fire were possibly impaired by alcohol.
- In terms of people trying to fight the fire or attempting to rescue others, 11 percent of people attempting to do this were possibly impaired by alcohol.
- 14 percent of those who were asleep when injured by the fire were possibly impaired by alcohol.
- Eight percent were unable to act or were irrational in their actions when fire was “discovered” due to alcohol.³²

In 2004, 95 percent of domestic dwellings in Scotland had a smoke detector. Despite their presence, fatalities still occurred. One of the four reasons given for this included the occupant being under the influence of alcohol and not able to respond due to being in an intoxicated state.³³

Impairment from alcohol consumption was a significant risk identified by Miller et al in research on victim behaviour and residential fire deaths in New Zealand. This research highlighted the role behaviour plays in fire safety and prevention, and the role the victim plays in fire ignition, fire spread and fatal outcomes. While alcohol was not the cause of the fatal fires examined, as established at inquest, careless acts or irresponsible actions lead to the fire causes such as unattended cooking, careless smoking or unattended candles.³⁴

As illustrated above, some international research has been completed on the association between alcohol and fire, but a gap still exists in this analysis in regards to the relationship between alcohol, sleep and fire. Fire safety and prevention strategies often emphasise technological and engineering solutions, such as smoke alarms and detectors, rather than focusing on behaviour. However, victim behaviour is considered a key factor in fire safety and prevention.

An Australian study has considered why some people avoid death or injury when they awake to a fire, while others become victims. Bruck argued that being asleep was not in itself a

³² Flynn, J.D., Characteristics of Home Fire Victims. National Fire Protection Association: Fire Analysis and Research Division. Quincy, MA. March 2010. These statistics were derived from the US Fire Administration's National Fire Incident Reporting System and the National Fire Protection Association's annual survey of US fire departments. Roughly, two-thirds of US fire departments participate in this annual survey; although not all of the departments provide data annually. These annual surveys, and their associated reports, provide population demographic information at the end of their reports, which could be good context for the NZFS in terms of comparisons with population demographics, number of fires, and alcohol prevalence. This data is presented as data sets and no relationships are derived between the data sets.

³³ Scottish Community Fire Safety Study. (2009). A study examining fire deaths and injuries in Scotland.

³⁴ Miller, I. & Beever, P. (2001). Victim Behaviours, Intentionality, and Differential Risks in Residential Fire Deaths.

major risk factor in regards to fire; it is other factors such as alcohol impairment that may influence the outcome.³⁵ At the date of this publication, 2001, no published studies had been undertaken on how waking in response to stimuli differs depending on the level of intoxication. However, general observations could be made based on sleep patterns – levels of sleep – the effect of alcohol on sleep patterns, and the time of day when fire incidents occur.

Bruck argued that deep sleep increases in the first two hours of sleep after drinking and decreased later in the night. This is an issue in terms of the correlation between deep sleep and the incidence of fire. In this study, fire fatalities peaked between midnight and 4am, which was also the time when deep sleep after drinking was most likely to occur.³⁶ Overall, this would impact on arousal from sleep and responsiveness to the situation.

This is further complicated by the recognition and reaction to smoke alarms among different people when they are sleeping. This study found that for some people a smoke alarm signal was a recognised significant sound and they therefore woke up. For others, even though they had been exposed to this alarm before they were sleeping they failed to correctly interpret the signal when they were awake.³⁷ It should be noted that these people were not impaired by alcohol.

Overall, Bruck argues that there needs to be a greater understanding of the role that alcohol plays in regards to sleep and arousal from sleep.

Research such as this, and concern regarding the connection between alcohol and fire in the United States, has resulted in a series of education and advertising campaigns. These campaigns have raised public awareness about alcohol and fire, as well as alcohol, injuries and fire. They aim to raise public awareness about this issue to a similar level to that surrounding other public health messages such as drinking and driving.³⁸

Currently, drinking to intoxication and regular binge drinking are persistent characteristics of New Zealand's drinking culture. Given that alcohol is a contributory factor to fire, the marketing and awareness raising campaigns the NZFS currently engages in could be used as part of a wider whole of government approach to shift attitudes, and motivate and incentivise people to modify and change their behaviour towards alcohol.

³⁵ Bruck, D. Waking up to Reality. Fire Prevention (346). July 2001.

³⁶ Bruck, D. Waking up to Reality. Fire Prevention (346). July 2001.

³⁷ Bruck, D. Waking up to Reality. Fire Prevention (346). July 2001

³⁸ Fire Chief. Home Fire Deaths Linked to Alcohol. March 2004. (www.firechief.com).

4.5 Summary: what lessons can be learnt from international studies

The annual Fire Knowledge Survey highlights whether there has been an improvement in the fire knowledge of the general public in New Zealand. This survey has found that, over time, knowledge in regards to fire safety, prevention and behaviour has improved. Further, the average rate of fires, fire fatalities, structural fires and fire injuries per 100,000 population has fallen in New Zealand.³⁹ Despite these positive outcomes, the NZFS cannot be complacent.

Fire knowledge may have improved among the general population but other contributory factors may now be impacting on incidents. As discussed in section 2, New Zealand has a binge drinking culture. New Zealanders who drink infrequently, but drink to intoxication when they do drink, are more likely to generate significantly more acute harms than those who drink several times a week but only in small quantities.⁴⁰ Frequent and pervasive excessive drinking and intoxication is contributing to New Zealand's crime rate, injury rate, road crash statistics, and affecting the overall level of health and well-being of New Zealanders.

Key findings from international studies on alcohol and fire can provide the NZFS with at risk profile in regards to alcohol and fire, but it is also important to learn from the experiences of others. Scotland for example has high levels of alcohol consumption, and growing numbers of alcohol-related fires and fire deaths.

The Fire and Rescue Service in Scotland has recognised that alcohol is a major social problem. Alcohol impacts on the work of several agencies in Scotland so requires a multi-agency response as the Fire and Rescue Service cannot tackle this problem alone.⁴¹ A study completed by the Fire and Rescue Service found that the fire services were often working with similar client groups and individual members of the community as other agencies. This strengthened the need to work together and provide succinct targeted messages in regards to alcohol harm, and alcohol and fire.

The Fire and Rescue Service concluded that fire safety messages - through education campaigns and advertising – were a good start but the conveyed messages needed to be practical. Community safety initiatives are now being undertaken in Scotland to reduce the incidence and consequence of fire and increase public safety through education and awareness. These initiatives include for example, education programmes, one-day events, media campaigns, and youth programmes. These initiatives are targeted at the profile of the

³⁹ BERL. (2010). The Impact of Changes in New Zealand's Demographic Profile on Fire Outcomes. NZFS Commission Research Report. October 2010

⁴⁰ Law Commission. (2010). Alcohol in our lives: Curbing the harm. A report on the review of the regulatory framework for the sale and supply of liquor. Wellington.

⁴¹ Scottish Community Fire Safety Study. (2009). A study examining fire deaths and injuries in Scotland.

local community they are being delivered in. This targeted delivery focuses on the risk profile of the community such as at-risk groups like children or people with special needs. It uses data from the Fire and Rescue Service, local knowledge and deprivation information.⁴²

In Scotland, the Fire and Rescue Service found that other agencies were not always aware of the contribution the Fire and Rescue Service could make. In turn, the Fire and Rescue Service was not always aware of the work other agencies were undertaking or the opportunities where they could work together to achieve additional value or mutual benefit.

As such, the Fire and Rescue Service are now strong advocates of agencies working together and sharing information to prevent the incidence and consequences of fire. They believe agencies working together could be an effective means of educating the public, improving fire safety knowledge and what they term 'risk recognition', and providing practical advice and guidance. The Fire and Rescue Service cannot work in isolation – it must work with other agencies to tackle the challenges in relation to alcohol.

4.5.1 At risk profile

Key findings from international studies on alcohol impairment as a contributing factor to fire outcomes can be summarised as:

- Residential fire victims impaired by alcohol are predominantly males in their early 20s and in the 40 to 50 year old age group.
- Alcohol intoxication impairs judgement making a fire more likely. Impaired judgement can cause a fire such as leaving cooking or heating equipment unattended. The living room, kitchen and bedroom are key locations within a dwelling where fires start.
- Fire fatalities related to alcohol impairment generally occur between 10 p.m and six a.m. The majority of fatalities occur between two and five a.m. This corresponds to normal sleeping patterns and the depressant effects of alcohol.
- Alcohol impedes decision-making and prevents waking, which can delay effective escape. In these instances there appears to be little difference in whether a smoke detector is present or not, or whether it operates or not.
- International fire and rescue services typically determine possible impairment by alcohol based on evidence at the scene or from interviews. Autopsy results are often unavailable when incident reports are filed.

⁴² Scottish Community Fire Safety Study. A study examining fire deaths and injuries in Scotland. 2009.

5 Alcohol and harm reduction strategies

The NZFS is one of several New Zealand government agencies whose work is directly affected by alcohol, its sale, supply and consumption. Other agencies include, for example, the Ministry of Health, the Ministry of Justice, the Ministry of Transport, the Ministry of Social Development, the Department of Corrections, the Police, the Accident Compensation Corporation (ACC), and the Alcohol Advisory Council of New Zealand (ALAC).

This section discusses our review of various technical, environmental and behavioural strategies that have been adopted by government and non-government agencies in New Zealand. This review addressed the questions:

- What lessons can be learnt from other government and non-government agencies in New Zealand in regards to mitigating the risk of fire, accident or injury associated with alcohol consumption?
- How have their strategies acted to minimise the risks associated with alcohol consumption? What evidence, or practical observations, exist to indicate that behaviour change has occurred as a result of these strategies?
- When and how are these strategies monitored and tested to ensure effectiveness?

Our recommendation is that the NZFS work closely with other New Zealand government agencies in regards to:

- Minimising the harm associated with alcohol consumption to better align their strategies with current thinking in this area.
- Delivering key messages through education and marketing campaigns, particularly those focused on at-risk groups, and working collaboratively on community projects.
- Engaging with other government agencies in legislation, policy and procedure development discussions in regards to alcohol.

Agencies spoken to as part of this research who are currently working in this area have identified an interest and willingness to work with the NZFS on this issue.

5.1 The Ministry of Justice

In December 2010, the Ministry of Justice released the findings of the New Zealand Crime and Safety Survey (NZCASS) 2009. This survey considered alcohol and drug use prior to victimisation (victims of assaults and threats). It found alcohol and/or drug abuse featured in

two-thirds of all incidents and sometimes both the perpetrator and victim had been drinking or abusing drugs prior to the assault. Other key findings were:

- In 23 percent of all offences, the offender and the victim had been drinking prior to the assault.
- In 16 percent of all offences, only the offender had been drinking prior to the assault
- In 48 percent of all offences, neither the victim nor the offender had been drinking.⁴³

5.1.1 Addressing the Drivers of Crime

Addressing the Drivers of Crime is a whole-of-government priority that shares responsibilities across a range of government agencies and social providers including education, health, economic, social and community development sectors.⁴⁴ The agencies involved are ACC, ALAC, the Department of Corrections, the Ministry of Health, the Ministry of Justice, NZ Police, the Ministry of Social Development, Te Pūni Kōkiri, and the Ministry of Transport. One of the most prominent results from action on *Addressing the Drivers of Crime* has been the Law Commission report *Alcohol in our lives: Curbing the harm*.⁴⁵

5.1.2 NZFS and the Ministry of Justice

The Ministry of Justice does not directly target alcohol harm and fire. They are the lead government agency in regards to policy work in the area of alcohol harm and alcohol harm reduction.

The Ministry of Justice is responsible for coordinating the *Addressing the Drivers of Crime* work programme across government agencies. It is important that the NZFS are aware of this as the Ministry of Justice will be influencing and writing policy and legislation in regards to reducing the harm caused by alcohol, and improving access to alcohol and other drug treatment.

The Ministry of Justice is also leading policy work in two of the four priority areas for *Addressing the Drivers of Crime* – a number of actions reducing harm from alcohol, and

⁴³ Ministry of Social Development. Taskforce for Action on Violence within Families. (<http://www.msd.govt.nz/about-msd-and-our-work/work-programmes/initiatives/action-family-violence/taskforce-work.html>). Accessed 4 April 2011.

⁴⁴ Ministry of Justice.(2010). Statement of Intent 2010-2013. (<http://www.justice.govt.nz/publications/global-publications/s/statement-of-intent-201020132013-1/publication>). Accessed 4 April 2011.

⁴⁵ Ministry of Justice. Annual Report 1 July 2009-30 June 2010. (<http://www.justice.govt.nz/publications/global-publications/m/annual-report-2009-2010/contents>). Accessed 4 April 2011.

improving government and community responses to repeat low-level offending. The policy work the Ministry of Justice is focused on has already identified these areas of concern:

- Many New Zealanders display problematic drinking behaviours, which create considerable harm.
- Drinking is a key factor associated with a significant proportion of violent offending and other offending.
- Timely treatment and recovery programmes can reduce this harm.

These initiatives are expected to help address the underlying drivers of crime. To show progress, the Ministry of Justice will monitor the implementation of agreed actions within the priority areas (short-term); improvements in service access, efficacy, and efficiency that result from the actions (medium-term); and improvements in criminal justice outcomes, including reduced offending and victimisation, particularly in relation to Māori (long-term).⁴⁶

5.1.3 Department of Corrections

The Department of Corrections is contributing to two priorities areas in the Drivers of Crime initiative. They are contributing to alcohol treatment services and managing low-level offenders.

For the alcohol workstream, the Department of Corrections is investigating ways to improve access to addiction assessment and treatment services for people at all points in the criminal justice system; from intoxicated people in Police custody who have a history of problematic alcohol use, to offenders on community-based sentences who misuse or abuse alcohol, to parolees with identified alcohol treatment needs requiring community treatment services upon release from prison.⁴⁷

5.2 New Zealand Police

The vision of the New Zealand Police is Safer Communities Together, while the mission of the New Zealand Police is to be a world-class police service working in partnership with

⁴⁶ Ministry of Justice. Statement of Intent 2010-2013. (<http://www.justice.govt.nz/publications/global-publications/s/statement-of-intent-201020132013-1/publication>.) Accessed 4 April 2011.

⁴⁷ Department of Corrections. Corrections help address 'drivers of crime'. Corrections News March –April 2010. (http://www.corrections.govt.nz/news-and-publications/magazines-and-newsletters/corrections-news/2011/corrections_news_mar-apr_2010/corrections_helps_address_drivers_of_crime.html.) Accessed 4 April 2011.

citizens and the community to prevent crime and road trauma, to enhance public safety and to maintain law and order⁴⁸

Alcohol impacts on all areas of the work of the New Zealand Police. This includes road crashes, family violence, violence on the streets, homicides and sexual assaults.

- At least 31 percent of recorded offences were committed where the offender had consumed alcohol prior to committing the offence.
- At least 18 percent of the Police budget is spent on the effects of alcohol misuse. Alcohol abuse contributes to a significant proportion of calls for police service.
- It is very likely that the number of victims affected by alcohol will continue to be at least one third of those that come to Police attention.⁴⁹

The New Zealand Police are able to track data on offenders through databases such as Alcolink. This survey is completed within 12 hours of the offence and is often called “the last drink survey”. However, data on the victims of other people’s drinking, such as family violence or sexual offences, is not as readily available and the New Zealand Police are trying to access more information on injury.

In the area of injury, the New Zealand Police are working with ACC and ALAC to access hospital emergency department data and hospital admissions data, and put in place brief intervention work. This fits with the enforcement role of the New Zealand Police and their focus on education. The Police are aware that alcohol is present in the mindset and culture of many communities in New Zealand and that this mindset and culture is difficult to legislate against.

The New Zealand Police would be interested in working with the NZFS in regards to data collection and strategy formulation. There are close links between these agencies in regards to educating the general public through ‘intervention packages’, which are sound bites of information delivered through education and marketing. These packages could also be aimed at specific groups and address key areas of concern in regards to alcohol consumption.

⁴⁸ New Zealand Police. About the New Zealand Police. (<http://www.police.govt.nz/about/index.html>). Accessed 18 March 2011.

⁴⁹ New Zealand Police. (2009) National Alcohol Assessment. (<http://www.police.govt.nz/sites/default/files/Police-National-Alcohol-Assessment.pdf>). . Accessed 18 March 2011.

5.2.1 NZFS and the New Zealand Police

While the New Zealand Police do not directly target alcohol harm and fire, they do encourage alcohol harm reduction through law enforcement, compliance and education.

In regards to formulating strategies on alcohol and fire, the NZFS may wish to consider that Alcolink has identified that the percentage of alleged offenders identifying their place of last drink at home or private residence has increased over the past three years, while the percentage of those who named licensed premises has decreased by the same margin. With a greater increase in place of last drink relating to home-based drinking it is very likely that the number of offences in residential areas will also increase. This may be exacerbated by the accessibility of cheaper alcohol in off-licensed premises.

While the Police are unable to enter people's homes and influence their behaviour, the Police are attempting to be innovative in how they potentially influence behaviour outside of the home, including in and around licensed and off-licensed premises.

The New Zealand Police are therefore considering environmental and behavioural strategies in regards to reducing alcohol misuse and harm. They are taking a proactive role in visiting licensed premises and off-licensed premises, and are training their alcohol harm reduction offices to work closely with local authorities and licensed premises and others working in the community to build relationships. The NZFS also works in the community and there is the opportunity for the NZFS and the Police to work together in this area of concern.

The New Zealand Police are considering how crime can be prevented through the built environment such as the lighting of licensed premises, where tables are located and how this influences alcohol consumption.

5.3 The Ministry of Health

Similar to the New Zealand Police, alcohol impacts on all areas of the work of the Ministry of Health. In 2008, the Family Violence Death Review Committee (FVDRC) was established by the Ministry of Health. The aim of this committee was to review all family violence deaths.

A study was undertaken to look at family homicides between 2002 and 2006. Family homicide is classified as couple-related, child victim, and other family member. This study

found alcohol or drug use was a common factor in the perpetrators' background and at the time of the event.⁵⁰

- A woman is at a higher risk of being killed by a male partner if he abuses alcohol and/or drugs.
- The three most common factors associated with child homicide events are drug and alcohol use and abuse; physical punishment; and extreme response to intimate partner separation.
- In other family member homicide events, drug and alcohol consumption was a factor in 17 of the 26 events.⁵¹
- Children are at highest risk of death from maltreatment in their first year of life when they live with young unemployed parents or caregivers who abuse alcohol and drugs.

This study concluded that focusing existing campaigns for reducing the prevalence of drug and alcohol use towards parents of dependent children will contribute to improving child safety. Including education on the association between drug and alcohol misuse and violence may also have an impact on couple-related and other family member violence.⁵² These findings may be of interest to people undertaking community work on behalf of the NZFS, including education and advertising campaigns focused on children and families.

5.3.1 NZFS and the Ministry of Health

National Drug Policy New Zealand sits within the Ministry of Health. This is a policy team of the Ministry of Health whose goal is to prevent and reduce the health, social and economic harms that are linked to tobacco, alcohol, illegal and other drug use. Their strategies are focused on the principles of harm minimisation.⁵³

Of interest to the NZFS, the National Drug Policy unit has a ministerial committee on drug policy that is chaired by the Minister of Health. This committee includes the ministers of corrections, customs, justice, police, Māori affairs, youth affairs, transport, and education.

⁵⁰ Martin, J. & Pritchard, R. Learning from Tragedy: Homicide within Families in New Zealand 2002-2006. Working Paper April 2010. Prepared for Centre for Social Research and Evaluation.

⁵¹ Martin, J. & Pritchard, R. Learning from Tragedy: Homicide within Families in New Zealand 2002-2006. Working Paper April 2010. Prepared for Centre for Social Research and Evaluation.

⁵² Martin, J. & Pritchard, R. Learning from Tragedy: Homicide within Families in New Zealand 2002-2006. Working Paper April 2010. Prepared for Centre for Social Research and Evaluation.

⁵³ For further information see <http://www.ndp.govt.nz/moh.nsf/indexcm/ndp-alcohol-home>.

This committee decides if new policy initiatives should be implemented. Alcohol, and policy initiatives in regards to harm minimisation and reduction, is within the brief of this committee.

5.4 The Alcohol Advisory Council of New Zealand (ALAC)

ALAC is a permanent council that aims to encourage the responsible use of alcohol, and minimise the misuse. It was established in 1976 and is now a Crown Entity.⁵⁴

The overall mission of ALAC is to lead a change in New Zealand's drinking culture. To do this, ALAC has three strategic focus areas: supply control, demand reduction, and problem limitation.

- Supply control. This strategy focuses on harm reduction through effective enforcement and compliance with the Sale of Liquor Act. Here, the strategy focuses on ALAC working with the New Zealand Police, Territorial Local Authorities (TLAs) and Public Health Units.
- Demand reduction. This strategy focuses on changing New Zealand's drinking culture through marketing. In particular, this strategy focuses on drinking patterns, tolerance of intoxication, and behaviour change.
- Problem limitation. This strategy focuses on addiction services, support and assistance programmes. This strategy involves ALAC working with the Ministry of Health and District Health Boards (DHBs).

ALAC also leads targeted marketing campaigns and interventions, and makes submissions in regards to policy interventions and change.

5.4.1 *Responsible, moderate drinking with no harm*

ALAC measures the level of alcohol harm in New Zealand through the data collections of others. For example, they use hospital data including emergency department data, from the Ministry of Health to look at mortality and morbidity measures. ALAC also uses data from the Ministry of Transport to examine drink-driving statistics. These data collections allow ALAC to look at prevalence measures - prevalence of harm - and factors that contribute to these measures. This allows ALAC to consider what interventions could be undertaken to promote responsible, moderate drinking.

⁵⁴ The Alcohol Advisory Council of New Zealand . (<http://www.alac.org.nz>).

Of interest to the NZFS, when ALAC is considering what intervention is needed they question, is the intervention needed to change immediate behaviour? Or is it an intervention to influence long-term behaviour change?

ALAC measures the success of their interventions through an annual survey and evaluations of their national advertising campaigns. The annual survey is one means of measuring changes in alcohol-related behaviour. It contains measures that can be tracked over time, and while it asks similar questions as the evaluations of the national advertising campaigns, the focus is more on the total picture of alcohol related behaviour rather than just about a specific campaign. The evaluation monitors the national advertising campaigns and discusses awareness, recall, and changes in behaviour and attitudes.

5.4.2 NZFS and ALAC

While ALAC does not directly target alcohol harm and fire, they do encourage responsible, moderate drinking with no harm. ALAC are aware of the role alcohol plays as a contributing factor in the incidence and consequences of fire. As such, if harm reduction also means that responsible, moderate drinking reduces the number of fire incidents due to alcohol consumption then ALAC would be interested in working with the NZFS.

ALAC produces various practical resources for encouraging responsible moderate drinking and would be interested in working with the NZFS to expand these resources and produce good exemplars. One example of the resources ALAC currently produces of relevance to NZFS work is the 'summer party pack', which provides information on how to have a summer party without alcohol or reducing the amount of alcohol available at the party.

The three priority populations for ALAC are youth (people aged 24 years old and younger), Pacific peoples, and Māori and their associated demographic data, including income. Their strategy documents are based on these priority populations. A crossover therefore exists between the priority populations of ALAC and the at-risk groups identified by the NZFS.

In regards to formulating strategies on alcohol and fire, there are two interesting aspects to the focus on ALAC's work that the NZFS may wish to consider. Firstly, ALAC talks about "keeping the national conversation on alcohol to the forefront". Secondly, ALAC uses "mass communications and national marketing to hold a mirror to the existing social norms and show people how they can change". These approaches to alcohol, behaviour and social norms could also be used by the NZFS in their approach to dealing with the issues surrounding alcohol and fire.

The following are two research projects commissioned by ALAC on their priority populations. Again, these research findings may be useful to the NZFS in the formulation of their

strategies on alcohol and fire as they illustrate groups who are at-risk to alcohol-related harm, and how behaviour may potentially impact on fire incidence resulting from alcohol consumption.

Drinking cultures

ALAC commissioned BRC Marketing & Social Research in 2003 to undertake a survey of the current attitudes (motivators and inhibitors) and behaviours of New Zealanders towards the consumption of alcohol. This survey was completed between 4 June and 6 September 2003 with two specific population groups – young people between the ages of 12 and 17, and adults aged 18+. The respondents were evenly distributed across three key ethnic groups – Maori, Pacific and all other ethnic groups, which was mostly Pakeha Europeans. Surveys were undertaken using Computer Assisted Telephone Interview (CATI). The survey found that:

- The current New Zealand drinking culture is one characterised by many people who are tolerant of drunkenness. As a result, it is a society in which many current drinkers appear to exercise little self-control.
- The current New Zealand drinking culture includes many adults who currently drink and are not concerned about their physical or mental well-being because of their drinking.
- New Zealand is also a society in which the ‘benefits’ of alcohol as a ‘social lubricant’ and ‘relaxant’ are recognised.

Youth drinking and binge drinking

A characteristic of the current New Zealand alcohol environment is youth binge drinking - approximately a third of youth drinkers aged 12 – 24 binge drink, with consequent negative impacts on themselves and New Zealand society such as alcohol-related offending, injuries and motor vehicle accidents.

Further, ALAC research has found that young people aged 14 – 18 years of age have experienced an increase in consumption since the purchase age was lowered in 1999. Therefore, consumption increased at the lowered purchase age but also extended to younger age groups. Of particular concern is that a significant proportion of young drinkers aged 15 – 17 acquire alcohol from friends 18 years or over, and this situation is exacerbated by half of school students in year 13 turning 18 during the school year.

5.5 Accident Compensation Corporation

The vision of ACC is freedom from injury and its consequences, for everyone in New Zealand. ACC works towards this goal by preventing injury and ensuring proper treatment for anyone who is injured.⁵⁵ Currently, ACC has in place seven strategic priorities. These include:

- Ensuring New Zealanders have confidence in ACC.
- Maintaining fair and stable levies.
- People-focused with good outcomes.
- Open and fair access for all New Zealanders.
- Working to reduce injuries and occupational diseases.
- Efficient, sustainable and flexible organisation.
- Rehabilitation focused on returning to productive life.⁵⁶

While ACC does not directly target alcohol harm and fire, they do encourage drinking in moderation through their national advertising campaigns in regards to alcohol, injury and falls. ACC is also mandated to lead the New Zealand Injury Prevention Strategy.

- Injuries currently result in about 1,700 deaths and 50,000 hospitalisations per year.
- The social and economic costs are considerable and are estimated to be \$6 billion per year in 2008 dollar terms.⁵⁷

5.5.1 National Injury Prevention Strategy

The New Zealand Injury Prevention Strategy fits in the wider context of strategies such as those related to transport and road safety, and alcohol. This strategy was put in place as it has been recognised by government agencies working in this area that injury is the leading

⁵⁵ A Accident Compensation Corporation.(2008). Strategic Plan 2007-2012. (<http://www.acc.co.nz>.) Accessed 4/04/2011.

⁵⁶ Accident Compensation Corporation.(2008). Strategic Plan 2007-2012. (<http://www.acc.co.nz>.) Accessed 4/04/2011.

⁵⁷ O'Dea, D. & Wren, J. (2010). New Zealand Estimates of the Total Social and Economic Cost of "All injuries" and the Six Priority Areas Respectively, at June 2008 Prices: Technical Report Prepared for NZPIS. ACC, Wellington, 16 February 2010.

cause of premature death and disability in New Zealand, yet most injuries and their consequences are preventable.

The focus for ACC in regards to injury prevention is around the prevention of injury, falls and drowning. As part of developing this strategy, the government agencies involved - such as Ministry of Social Development and Department of Labour - identified a gap within the strategy in regards to alcohol. ACC has taken the lead in this area, and is attempting to gather data and complete research.

5.5.2 NZFS and ACC

This lead role fits within the mandate of ACC as objective six of the injury prevention strategy is to advance injury prevention knowledge and information. One of the actions within this objective is to, 'investigate the demographic (eg. age and gender), geographic, and socio-economic characteristics of groups most at risk of injury and the factors that contribute to injury, both underlying (eg. social conditions) and more immediate (e.g. alcohol).

Currently, it is difficult to measure if someone has been drinking prior to an event such as a fall or injury. As such, ACC is working with district health boards, hospital emergency departments and hospital admissions to gather data and information on alcohol and other drug related injuries. Data is being also collected from people who are presented at an emergency department with injury that may be related to alcohol and other drugs.

ACC would also like to extend this data collection to include general practitioners, ambulance crews and the NZFS. Extending the data collection, ACC believes, would provide a broader picture of trends and areas of concern, and also to help them to devise strategies to deal with these issues in a positive and proactive manner. As such ACC would welcome working collaboratively with the NZFS in the area of alcohol and fire, and in the collection and storage of data.

Objective seven of the National Injury Prevention Strategy is to develop and implement effective injury prevention interventions. One of the actions of this objective is to, 'identify the groups most at risk of injury, the settings in which injuries occur, and the circumstances of injury'.⁵⁸ Initially findings from undertaking this objective is that the at-risk groups identified by ACC to date are similar to those groups identified by the NZFS. This again highlights common areas of interest and concern, and the potential for the two agencies to work together.

⁵⁸ Accident Compensation Corporation. (2003). New Zealand Injury Prevention Strategy. (<http://www.nzips.govt.nz/documents/strategycolour.pdf>.) Accessed 4/04/2011.

ACC already works with several other agencies. For example, ACC supports the New Zealand Police by providing resources to increase the profile of 'booze bus' operations in cities, and to carry out rural drink driving enforcement to remote communities. This work links with broader alcohol abuse prevention programmes in the community.⁵⁹ ACC also argues that alcohol is the second biggest contributing factor in road crashes. They state that with 80mg/100ml (the current legal limit) you are twice as likely to have a crash as a driver with a 50mg level, and four times as likely as a driver with a zero blood alcohol level.⁶⁰

Currently, ACC are working with the Ministry of Health in regards to New Zealand Safety Week. The focus of this work is on alcohol consumption, alcohol awareness, and the home. ACC are also investing in brief interventions in various settings, and funding small studies in communities such as Whanganui, Whangarei, Newtown and Porirua. Brief interventions may occur at the point of arrest, and ACC is working with the Police and programmes such as Nurses at Watch Houses to investigate this further.

The Fire Awareness & Intervention Programmes (FAIP) are consequences-based education programmes for children and young people with fire lighting tendencies. The NZFS could consider how these brief intervention programmes could be potentially modified to cater for other areas of concern such as alcohol and fire. In addition, the NZFS could consider how these programmes fit with the intervention programmes of other agencies such as ACC and how they could work together.

5.5.3 Water Safety New Zealand

As mentioned earlier, the focus for ACC in regards to injury prevention also includes drowning. Although not directly related to alcohol and fire we thought the following statistics would be of interest to the NZFS. The following statistics were sourced from Water Safety New Zealand's DrownBase and are accurate as at 1 February 2011.

- Between 2006 and 2010, seven percent of domestic drownings involved alcohol. Domestic drownings are drownings that occur in the bath or buckets, and occur as a result of an immersion incident (non-recreational activity).
- Between 2006 and 2011, 20 percent of the total number of drownings occurred at beaches. 11 percent of beach drownings involved alcohol.

⁵⁹ Accident Compensation Corporation. Drink driving. (<http://www.acc.co.nz/preventing-injuries/on-the-road/PI00051>.) Accessed 4/04/ 2011.

⁶⁰ Accident Compensation Corporation. Drink driving. (<http://www.acc.co.nz/preventing-injuries/on-the-road/PI00051>.) Accessed 4/04/ 2011.

- Only two percent of drownings occurred in public pools but 25 percent of these drowning involved alcohol. Public pools include thermal pools and hotel/motel pools.
- Four percent of total drownings occurred in home pools between 2006 and 2010, 14 percent of home pool drownings involved alcohol and home pools include spa pools.
- 10 percent of total drownings occurred at inland still waters – this includes ponds, lakes and drains. Of this number 17 percent of inland still water drownings involved alcohol.
- 31 percent of total drownings occurred in rivers between 2006 and 2010, 19 percent of river drownings involved alcohol – river drowning includes creeks, rivers and streams.
- 13 percent of total drownings occurred in tidal waters, such as estuary, harbour, marinas, river/harbour bar. 30 percent of tidal water drowning involved alcohol.

According to Water Safety New Zealand, drowning is the third highest cause of unintentional death in New Zealand.⁶¹

5.6 The New Zealand Transport Agency

The New Zealand Transport Agency (NZTA) bases their national road safety advertising campaigns on statistics. Crash data, and its analysis, forms the basis of these campaigns.

The NZTA are therefore similar to the NZFS in that their advertising campaigns are predominantly driven by research and evidence in the form of data. In the case of the NZTA, the data analysed is identifying who is crashing and where they are crashing.

5.6.1 NZFS and NZTA

Similar to the NZFS, advertising campaigns for the NZTA are tested with the relevant target audience and the effectiveness of these campaigns are also measured. The NZTA has a series of measures – including intermediate and overall outcome measures. Similar to the Fire Knowledge Survey, the NZTA are interested in audience recall and relevance as an intermediate outcome measure, along with public attitude towards key areas of enforcement such as speed and drink-driving.

⁶¹ Water Safety New Zealand. Drowning factsheets. Accessed 18 March 2011. (<http://www.watersafety.org.nz>).

While their overall outcome is to reduce road deaths and injuries, the NZTA are also interested in behavioural outcomes, and here the focus is on reduced drink-driving and speeds.

These advertising campaigns are very much focused on raising awareness and changing behaviour rather than trying to educate people.

Data is also used from the New Zealand survey of Public Attitudes to Road Safety. This longitudinal survey focuses on general road safety issues as well as specific issues such as alcohol, speed, and safety belts. The survey is completed face-to-face and provides an indication of how attitudes and behaviour is changing.

The New Zealand Transport Agency believes they share common areas of interest and concern with the NZFS, and there is the potential for the two agencies to work together and this should be explored.

6 Recommendations

In New Zealand, the NZFS is one of several New Zealand government agencies whose work is directly affected by alcohol, its sale, supply and consumption. It is therefore important that NZFS strategies are appropriate in regards to minimising the risk of fire associated with alcohol consumption.

In 2010, the Law Commission reviewed the New Zealand liquor laws and released their findings as a report, *Alcohol in Our Lives: Curbing the Harm*. The New Zealand government responded to this review and adopted in full, or in part, 126 of the Law Commission's 153 recommendations.⁶² These recommendations were focused on reducing heavy episodic drinking; reducing excessive drinking by young people; reducing the harm caused by alcohol use, including crime, disorder, public nuisance and negative public health outcomes; and implementing a sustainable solution to address alcohol-related harm that facilitates community involvement.⁶³

Consequently it is timely for the NZFS to consider in 2011 if their strategies in regards to alcohol are appropriate. To undertake this review, BERL has split the strategies examined into three areas: technical, environmental and behavioural strategies. We have provided examples of the areas that fall within these strategies in Table 3.

- Technical strategies include technical solutions in regards to fire mitigation, such as the use of fire detection and suppression systems to help detect and suppress fires and fire plans for buildings. It also includes technical solutions in regards to roading design such as the work completed by NZTA, and design around non-slip floor surfaces such as the research completed by ACC.
- Environmental strategies include a focus on when fires occur and in what setting, and the various causes of fires. These strategies also include the hours that licensed premises are open, the purchasing age for alcohol, and aspects of the work the New Zealand Police has undertaken in regards to the built environment – lighting or the location of seating at licensed premises.
- Behavioural strategies include advertising campaigns that are focused on raising awareness and changing behaviour, as well as education programmes.

⁶² Office of the Minister of Justice. Cabinet Paper: Alcohol Law Reform. (<http://www.justice.govt.nz/policy/crime-prevention/alcohol>). Cabinet Paper August 2010, downloaded March 8 2011.

⁶³ Office of the Minister of Justice. Cabinet Paper: Alcohol Law Reform. (<http://www.justice.govt.nz/policy/crime-prevention/alcohol>). Cabinet Paper August 2010, downloaded March 8 2011.

Table 3 Strategic focus areas

Technical	Environmental	Behavioural
Smoke alarms	Residential setting	Education campaigns
Fire extinguishers	Business setting	Advertising & media campaigns
Fire blankets	Social setting including sport & recreation	Awareness raising
Built environment		Government policy & legislation

Our research has identified three potential options that the NZFS could consider in regards to best practice approaches to managing the risk of fire associated with the consumption of alcohol.

1. The NZFS could only focus on technical strategies as this is their area of expertise and it is appropriate to their role as the mandated lead government agency in regards to fire.
2. The NZFS could continue with the status quo in regards to maintaining their efforts in all three strategic focus areas, measuring their performance targets, and focusing on reducing the incidence of fire and its consequences for people, property, the community and the environment.
3. The NZFS could focus on their area of expertise in regards to technical strategies, and work in collaboration with government agencies on developing and implementing environmental and behavioural strategies.

Our overarching recommendation is that the NZFS undertake option three. We believe the NZFS needs to work closely with other New Zealand government agencies to better align their strategies with current thinking in regards to minimising the harm associated with alcohol consumption. These agencies include the Ministry of Health, the Ministry of Justice, the Ministry of Transport, the Ministry of Social Development, the Department of Corrections, the Police, the Accident Compensation Corporation, and the Alcohol Advisory Council of New Zealand.

6.1 Option one – focus on technical strategies only

Under this option, the NZFS could focus on technical strategies to manage the risk of fire associated with alcohol consumption, as this is an area they have a comparative advantage in and it is appropriate to their mandated role.

Here, the NZFS would work with other government agencies, focusing on their area of expertise – technical strategies – and the other agencies would focus on their areas of expertise such as education and influencing behaviour, or environmental strategies.

The NZFS is currently involved in technical solutions and strategies in regards to fire mitigation, and many of these options are focused on technical solutions. As part of their statutory mandate the NZFS promotes the use of fire detection and suppression systems to help detect and suppress fires. The NZFS also works with territorial authorities to provide advice on building consent applications.⁶⁴

Research work completed as part of the contestable research fund by the Crown Research Institutes (CRIs), universities, BRANZ, and private sector research companies has highlighted various fire outcomes and the technical solutions that can be employed to prevent the incidence and consequences of fire.

This option would involve devoting more resources and putting more effort into technical strategies to manage the risk of fire, and not focusing on environmental or behavioural strategies. The positive aspect of focusing on this area is that the NZFS would be able to devote more resources into an area they have a comparative advantage in, and this is therefore potentially a more efficient allocation of effort. That is, focusing on their area of expertise may lead to better outcomes in the technical area of reducing harm.

A negative aspect of pursuing this option is that the approach may be too general, and it may not be the best approach to managing the risk of fire associated with alcohol consumption. For example, if the NZFS was to focus on encouraging people to have more smoke detectors in their home it may not be enough to discourage or change their risky behaviour. This highlights another negative aspect of this option. As mentioned in Section 4, a technical strategy could be one answer to meeting the problems associated with alcohol being a contributing factor in the incidence of fire, but the behaviour of the victim needs to also be a key consideration in regards to fire safety and prevention.

6.2 Option two – status quo

The NZFS could continue with the status quo in regards to their strategic priority areas and performance targets, focusing on the reduction of the incidence of fire and its consequences for people, property, the community and the environment.

This option would involve the NZFS continuing to work by themselves on fire safety messages in regards to alcohol and fire rather than working in conjunction with other government and non-government agencies.

⁶⁴ Key Strategy. NZFS Strategic Plan 2005-2010.

The positive aspect of focusing on this area is that the NZFS would be directly addressing the risk of fire associated with the consumption of alcohol through fire safety messages and education in this area. However, the negative aspect of pursuing this strategy is that the NZFS would be working in a silo situation in which they may not be aware of the work others are doing in this area; the NZFS may potentially be communicating contradictory messages or the same message in a different way to the same target audience; and the NZFS may not be able to draw on the subject matter expertise and resources of others already working in this area.

Another negative aspect of pursuing this strategy is that the NZFS may not be able to take advantage of any positive externalities that may be generated through working in conjunction with others in this area of concern. For example, the safety messages of other government agencies may influence the behaviour of people in their home environment, decreasing the incidence or likelihood of incidence of fire. Nor can they draw on the economies of scale they could have applied had they been working with others in this area.

6.3 Option three – focus on technical strategies, collaborate with others

The NZFS could focus on technical strategies and work in collaboration with government agencies on developing and implementing environmental and behavioural strategies. Under this option, the NZFS could target at-risk groups, and improve fire safety knowledge and behaviour in regards to alcohol consumption and the incidence of fire among the general public.

If the NZFS were to develop specific strategies in regards to undertaking this option, these strategies would be best placed to sit within the SPA, *Improve community fire outcomes through fire prevention, fire safety and better response*. These strategies may be in the form of improving the key messages in regards to alcohol and fire, and fire safety and prevention education and advice that is focused more on the specific at-risk groups identified by the NZFS and other government agencies working in this area.

Here, the NZFS could contribute to the work of other government agencies by providing technical expertise. Focusing on their area of expertise, the NZFS could provide technical solutions and continue to promote the use of fire detection and suppression systems to help detect and suppress fires. The NZFS could also direct their technical strategies into aligning with other government and non-government agencies working in this area.

One of the major positive aspects of this option would be a more efficient allocation of resources through economies of scale and less duplication of effort. By working with other agencies the NZFS could also contribute to government policy and potentially influence decision-making.

Consequently, if the NZFS was to consider this option and act collaboratively with other government and non-government agencies in this area the key performance indicators, deliverables and measurable outcomes that the NZFS currently employs would need to be acknowledged across all the agencies, not just by the NZFS. Working with other government and non-government agencies and aligning NZFS strategies as part of this work may impact on funding structures and this may need to be considered by the NZFS.

6.4 Discussion

Our research indicates that the NZFS does have a role to play in data collection, but there could also be a role for the NZFS in regards to the co-ordination of data and data collection between agencies. Each of the agencies spoken to as part of this research were interested in similar data sets and were aware of the core issues in regards to the harm associated with alcohol consumption. The agencies were also aware of the need to work together to collect and co-ordinate data gathering, analysis and housing. For some this is already occurring, so the NZFS should consider how they can also contribute to pre-existing collaborations as well as establish new collaborations in regards to data collection and co-ordination.

In regards to data collection, we would recommend the NZFS work collaboratively with other government agencies working in this area, and draw on the experiences of other fire and rescue services internationally. For example, by working collaboratively the NZFS will ensure they are contributing to the area under discussion as well as benefitting from existing data and information collections. This is a key point as the NZFS currently has a gap in their incident data statistics in regards to fire fatalities and injuries and the causal role of alcohol.

As part of working with other agencies in regards to data and information collection, the NZFS needs to identify what data they need to gather, what data or information can be provided by other agencies, and where the gaps are. Through a strategic review of the NZFS incident data system, it has already been identified that the NZFS needs to improve the quality and accuracy of emergency incident reporting. Further, the potential of the SMS has not yet been fully exploited, and there is a need to consider in detail what the core information needs of the NZFS are, and how these relate to the current collection of incident data statistics.

The NZFS is not alone in this regards, as we mentioned in Section 4, other international studies have raised concerns about the data collections of fire and rescue services including the ability to gather data and information at an incident, and the validity and reliability of this data and information. In addition, all of the government agencies spoken to as part of this research highlighted the difficulties in obtaining data and information in regards to alcohol and injury, and alcohol and fatalities.

By working with other agencies, research completed by Fire and Rescue Service in Scotland highlighted that they were able to contribute to the area under discussion as well as benefit from existing data and information collections, collaborative community projects, and legislation, policy and procedure development. This is a very positive lesson that the NZFS can learn from. In the situation in Scotland, the Fire and Rescue Service has found that by working together in a proactive rather than reactive way to this issue, fire and rescue services have benefitted from the work of others in this area and are now able to work in conjunction with them and other lead agencies to have one message and one voice.

The NZFS could work with others to provide one key message in regards to the harms associated with the consumption of alcohol, and providing people with incentives that will influence their behaviour and decision-making. Working with other agencies will allow the NZFS to eave fire safety and fire prevention messages in with other key messages in regards to accidents and injuries in the home, workplace and in social settings; alcohol consumption and moderation; and education, marketing and social marketing campaigns.

We would also recommend that the NZFS draw on the experiences of other fire and rescue services internationally to consider how best to monitor the effectiveness of these strategies, and how to effectively collect data and information on alcohol consumption and the incidence and consequences of fire.

Many agencies are attracted to the task of working with the NZFS in regards to the harms associated with alcohol consumption. If the NZFS decides to undertake option three, we would recommend that the NZFS consider proactively putting in place a strategy that brings other government and non-government agencies together, and playing a key role in initiating and coordinating these discussions.

7 Appendix 1: Research methodology

To meet our research objectives and address our research questions, this project was broken down into three stages:

The first stage of our research involved an examination of relevant research, documents and data. This review and analysis allowed us to undertake a gap analysis in stage two in order to determine how effective various technical, environmental and behavioural strategies have been in minimising the risk of fire, accident or injury associated with alcohol consumption. In stage two we also undertook a series of interviews with people in other government and non-government agencies who are working in this area of strategic policy and research.

Stages one and two were then feed into stage three, where we recommended if the strategies the NZFS have in place are appropriate to minimise the risk of fire associated with alcohol consumption.

Across the three stages of this project, we addressed the research questions enumerated below:

1. How have the strategies the NZFS employs to minimise the risk of fire associated with alcohol consumption evolved?
2. In theory, how should these strategies act to minimise the risk of fire associated with alcohol consumption?
3. What evidence, or practical observations, exist to indicate that behaviour change has occurred as a result of these strategies?
4. When and how are these strategies monitored and tested to ensure effectiveness?
5. What lessons can be learnt from other government and non-government agencies in New Zealand and internationally regarding strategies to mitigate the risk of fire, accident or injury associated with alcohol consumption?

7.1.1 Stage one

During the first stage of project implementation, we gathered the relevant documents available at the NZFS. The documents reviewed were the following:

- Statement of Intent 2010/2013
- Strategic Plan 2005/2010

- Statement of Strategic Direction (2008 to 2013)
- Strategic Plan 2010 – 2015
- National Risk Management Plan
- Annual Reports (2006 – 2010).

Moreover, we conducted a literature review of strategies employed by government and non-government agencies in New Zealand and internationally to mitigate the risk of fire, accident or injury associated with alcohol consumption.

The government and non-government agencies within New Zealand, which we visited the websites of included the following:

- Alcohol Advisory Council of New Zealand
- Accident Compensation Corporation
- Ministry of Health
- Ministry of Justice
- Ministry of Social Development
- New Zealand Police.

We also researched the existing strategies employed by other organisations outside of New Zealand. This included studies from Canada, the United States, Norway, the United Kingdom, and Scotland.

7.1.2 Stage two

The second stage of our research drew on the findings from our review of relevant research, documents and data to undertake a gap analysis. We drew heavily on our networks in this area and our knowledge of existing data.

In this stage we consulted the stakeholders in other government and non-government agencies working in this area, such as Accident Compensation Corporation, the Alcohol Advisory Council of New Zealand, the Ministry of Health, and the New Zealand Police. We discussed with them the research and strategies they are currently involved in, and how this could potentially impact on the strategic policy options facing the NZFS.

The results of the consultation were fed into the matrix that compares current NZFS strategies with that of relevant government and non-government organisations, and data and information that illustrates the effectiveness of these strategies.

7.1.3 *Stage three*

Results on stages one and two were then fed into stage three, where we discussed the evidence that behaviour change has or has not occurred among the general public and members of the 'at-risk' groups identified as a result of NZFS strategies. Evidence included the monitoring and evaluation of behaviour change, particularly in regards to improvements in fire safety and fire knowledge, and a lowering of injury and fatality rates.

Our exploration in determining the success or otherwise of the current strategies led us to make recommendations regarding data sets and data sources, and their usability in answering our five research questions. It also led us to make recommendations in regards to when and how the NZFS monitors and tests their strategies for effectiveness, and what lessons can be learnt from other government and non-government agencies in New Zealand and internationally regarding their strategies to mitigate the risk of fire, accident or injury associated with alcohol consumption.

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