Attachment A

Department of Community Safety Submission to the Select Committee on Agricultural and Related Industries Inquiry into the incidence and severity of bushfires across Australia

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Introduction

The impact that bushfires can have on human and animal life, agricultural land, the environment, public and private assets is a matter of ongoing national concern. Although bushfires are an inevitable risk associated with Australia's beautiful and unique habitats, the tragic events of 7 February 2009 in Victoria are a reminder of the devastating impact that bushfires can have.

Fortunately, Queensland rarely experiences consequences of the magnitude of the recent Victorian bushfires. However, the Victorian experience has reinforced the importance of reviewing state preparedness for, protection from, and responses to bushfires.

This submission has been prepared by the Department of Community Safety (DCS), with the aim of providing, in response to the Select Committee's terms of reference, an overview of the incidence and severity of bushfires in Queensland.

The Queensland Context

The lead agency for managing bushfires and bushfire threat in Queensland (for both urban and rural communities) is the Queensland Fire and Rescue Service (QFRS), a division of the Department of Community Safety (DCS). DCS also comprises Emergency Management Queensland, the Queensland Ambulance Service and Queensland Corrective Services.

QFRS employs approximately 3,059 permanent full time equivalent staff; approximately 34,000 volunteers; has 241 urban stations operating 492 urban fire appliances; and 1,480 rural brigades operating 943 rural fire appliances.

For the period 1 July 2008 to 30 June 2009, rural fire brigades responded to 1,743 wildfires and attended 1,632 controlled burns.

In partnership with other agencies QFRS undertakes cooperative management approaches to bushfire prevention and risk reduction through initiatives such as the establishment of a State Inter-Departmental Committee (SIDC) on Bushfires, the introduction of a Wildfire Mitigation initiative and the establishment of local Fire Management Groups.

State Interdepartmental Committee on Bushfires: The Interdepartmental Committee on bushfires (the SIDC) was established in 1994 following recommendations from the 1994 Bushfire Audit, which examined Queensland's preparedness for major bushfires that occurred in Queensland

and New South Wales that year. The key purpose of the SIDC is to provide a strategic forum for the coordination of policy and procedures relating to rural fire management in order to achieve a consistent, comprehensive and whole-of-government approach to managing fire in Queensland.

The Assistant Commissioner for Rural Operations is the Chair of the SIDC which includes representatives from the Department of Environment and Resource Management, the Department of Transport and Main Roads; Queensland Police Service; Forestry Plantations Queensland; QR Limited; the Local Government Association of Queensland; Brisbane City Council; and the Bureau of Meteorology.

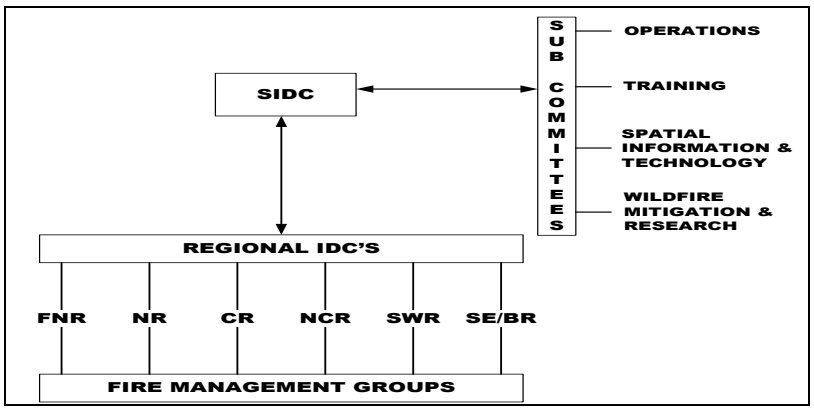
Fire Management Groups: Fire Management Groups (FMG) have been established to further encourage a cooperative approach between the QFRS, land management agencies, the community and other stakeholders to provide for cooperative and coordinated bushfire management in a local area.

A FMG may undertake activities such as joint fire management planning, prescribed burning, community education and bushfire risk mitigation.

Groups are traditionally chaired either by a local Rural Operations Officer or by a representative of another government agency, community group or local landholder and they work closely with the Regional IDC to ensure fire management at the local level is consistent with regional priorities

The following diagram illustrates the relationship between the SIDC and Fire Management Groups.

State Interdepartmental Committee on Bushfires



Wildfire Mitigation Initiative: To ensure wildfire risk mitigation planning is carried out in a consistent manner across the state, Rural Operations introduced the Wildfire Mitigation initiative in 2008.

The primary aim of the initiative is to ensure that all areas of wildfire mitigation activities of the QFRS and other relevant stakeholders, such as land management agencies and local government are coordinated with a common purpose to reduce risk of wildfire impact, prepare communities and inform operations.

The key objectives of the Wildfire Mitigation initiative are to:

- Minimise the risk to the public and firefighters by reducing the potential impact of wildfires and ensure that land owners and land managers understand their fire management responsibilities and contribute to the planning process;
- Improve the effectiveness of wildfire mitigation through strategic fuel management and other initiatives, and by managing fire in the landscape to protect natural and cultural resources, including scenic amenity and tourism values; and
- Reduce wildfire risk by ensuring that the community is well informed about wildfire protection measures and prepared for wildfire events through community programs, such as the Bushfire Prepared Communities program.

Specific responses to the Committee's Terms of Reference

a. the impact of bushfires on human and animal life, agricultural land, the environment, the public and private assets and local communities

Bushfires can cause a range of negative economic, personal and social impacts on people, communities, property and infrastructure. These direct and indirect impacts can further be categorised as short, medium and long-term; and require a range of management strategies in both a policy and operational sense.

Data collected from the Rural Australasian Incident Reporting System (AIRS) estimate that as a result of the 12,821 total number of wildfire Incidents reported during the period 1 July 2004 to 30 June 2009, Queensland experienced**:** [1]

- 62 civilian injuries
- 2 civilian fatalities
- 40 houses damaged
- 324 other buildings damaged
- 307 other vehicles damaged
- 3863.675 kms fence line damaged
- 121 other livestock lost

[1] The data is based on voluntary reporting by volunteer firefighters and therefore is only representative. It has been estimated that this data would only be inclusive of approximately 10% of actual wildfire incidents. Additionally, information in regard to categories such as 'Estimated dollar loss' are subjectively assessed and therefore can only be considered an estimation.

- 2355766.35 tonnes of fodder/hay lost
- 8 sheep lost
- 179 cattle lost
- 7 horses lost
- 1125 machinery units lost
- Estimated dollar loss $30,857,109.17

Environmentally, severe bushfires can disrupt water supplies and contaminate water catchment areas with ash or erosion. Smoke and ash can increase carbon dioxide in the atmosphere, causing health problems and localised weather changes.

Bushfire risk is associated with the demographics of an area as well as climatic conditions and the adequacy of local fire management. There are hundreds of bushfires of various sizes per year in Queensland, but only some are severe enough to cause property damage or loss of life.

Notwithstanding the negative impacts of bushfires, it is also important to acknowledge the importance of bushfires to local ecosystems - many plants adapt to, withstand and even need fire for re-generation and survival.

It is important to determine not only how to prevent bushfires, but also gain further insight on their effects on communities, the environment, plants and animal; and also to better understand the dangers brought about by climate change and drought.

Through its active involvement with the Australasian Fire and Emergency Service Authorities Council (AFAC) and the Bushfire Cooperative Research Centre (CRC), QFRS is engaged in various committees and research programs which provide up-to-date and accurate information and technologies in relation to the prevention and effects of bushfires.

Importantly, QFRS is also represented on the South-East Queensland Fire and Biodiversity Consortium. Established in 1998 by Griffith University, the Consortium comprises a number of state agencies and local government authorities to provide a focus for fire ecology research and evidence-based outcomes for the southeast Queensland region.

b. factors contributing to the causes and risks of bushfires across Australia, including natural resource management policies, hazard reduction and agricultural land maintenance;

Fires have always been a part of the Australian landscape and are either as a result of natural causes or human activity. Research indicates that the majority of bushfires are caused by human activity, whether accidental or intentional. In a February 2009 report[2] the Australian Institute of Criminology suggested that approximately half of all vegetation fires (some 20,000 to

[2] Muller, D.(2009) Using Crime Prevention to reduce deliberate bushfires in Australia, *Australian Institute of Criminology*, Research and Public Policy Series 98, Australian Institute of Criminology, Canberra

30,000 each year) are deliberately lit. However, as neither natural nor human causes can be totally eliminated, the aim of fire management planning and its policies is to minimise risk through fire management to protect life, property and the environment. This is reflected in policies and strategic documents of all Australian fire and land management agencies.

Prescribed burning is the most important tool for bushfire managers, whose objective is to minimise the occurrence of severe large scale bushfires. Thus, the primary shortfall of bushfire management nationally is the failure to undertake adequate prescribed burning programs (for fuel reduction and other purposes).

A key objective of the Queensland *Fire and Rescue Service Act 1990* is to prevent and limit the onset of wildfires through control of fire ignition. This is achieved through a 'Permit to Light Fire' system, whereby prescribed burning must be authorised through a 'fire permit' issued by a voluntary Fire Warden within the district. Approximately 15,000 fire permits are issued to Queensland landholders each year. As at 21 July 2009, there are 2418 Fire Warden Districts and 227 Chief Fire Wardens within Queensland.

It is essential that Australia remains at the forefront of bushfire research, and that there are active programs supported by both State and federal governments.

Critical areas of research requiring further exploration include fire behaviour; fire effects; fire operations including planning; prevention and suppression; improved fire detection; monitoring; and early warning to minimise fire impacts on communities, infrastructure and the environment. Queensland engages in cooperative research activities with the Bushfire CRC and AFAC through the QFRS to investigate these critical areas.

c. the extent and effectiveness of bushfire mitigation strategies and practices, including application of resources for agricultural land, national parks, state forests, other Crown land, open space areas adjacent to development and private property and the impact of hazard reduction strategies;

Queensland uses a structured risk management process to ensure that the level of bushfire risk is identified at a regional level and that appropriate mitigation plans and actions are considered and available. These may include a variety of initiatives such as prescribed burning, landscape modification and community education.

In Queensland, landholders are required to undertake hazard reduction burns under the permit to light fire system. In cases where a landholder has not engaged in hazard reduction measures, the Commissioner can dictate the construction of firebreaks to reduce fire risk, or order that vegetation be

managed where the vegetation presents a fire risk, and require a person to suspend operations where those operations present a fire risk.[3]

These powers are rarely enforced, because compliance with other legislation / regulations and a cooperative management approach provide more effective avenues of reducing fire risk.

Most local governments in Queensland have introduced by-laws and requirements that determine how individuals can use fire on their land.

Agencies such the Queensland Department of Environment and Resource Management and Forestry Plantations Queensland are responsible for managing fire on land under their control. Both agencies have systems and processes in place to facilitate a consistent and coordinated approach to fire management planning, prescribed burning and wildfire suppression.

Research and analysis remain the most effective tools for determining the extent and effectiveness of bushfire mitigation strategies and practices. Fire and land management agencies, research bodies and other organisations throughout Australia, most of which are actively involved with the Australasian Fire Authorities Council and Bushfire Cooperative Research Centre, have undertaken research relating to:

- bushfires, and the impact of bushfire mitigation strategies;
- the impacts of bushfires on the environment, life, property and the economy;
- resources and infrastructure for fire mitigation and firefighting;
- efficiency of resource use and the best use of technologies;
- cooperation between agencies and jurisdictions; and
- examples of best practice.

Continuing research and operational efforts are required to achieve successful fire management, particularly in relation to spatial fuel monitoring processes that will allow fire agencies to establish the areas of highest fire risk as well as the effectiveness of fire mitigation and vegetation recovery.

Responsibility for the application to resources specified in the terms of reference rests with other parties (e.g. landholders, the Department of Environment and Resource Management and Forestry Plantations Queensland).

d. the identification of measures that can be undertaken by government, industry and the service industries, small business, tourism and water catchments;

Australia does not have a national bushfire policy. The Australasian Fire Authorities Council has a position paper on bushfire management which is comprehensive and strategic in outlook but does not bind States or agencies.

[3] *Fire and Rescue Service Act 1990* section 69

As a result, each of the States has a mixture of policies between various agencies that are responsible for fire management. In some cases, there are three separate policies within the one state, for example one for state forests, one for national parks and one belonging to the emergency services.

There are also separate policies between and within states that do not connect with one another and/or are contradictory. Many local governments have varying fire mitigation strategies, which have been developed independently from organisations with fire management responsibility. Notably, private plantation companies, which now own most of Australia's plantation resources, are not represented anywhere in bushfire policy development.

There is a significant opportunity for State and federal governments to negotiate the structure and direction of national policy that requires all relevant stakeholders to adhere to and implement a minimum best practice bushfire management system.

e. any alternative or developmental bushfire prevention and mitigation approaches which can be implemented;

Fire management should be planned, based on contemporary public policy, updated on a regular basis, endorsed by local community stakeholders and bushfire experts, and apply to both private and public organisations. It should set out the priorities for mitigation and protection, and provide a blueprint for annual programs of preparedness, prevention and suppression.

Queensland's current bushfire prevention and mitigation approaches are based upon identified local risks and mitigated through community consultation and the responsible agencies.

Planning processes must be supported by all agencies and individuals responsible for fire management and public safety, as bushfire management can be strengthen by better interagency cooperation and resource sharing, and a more consistent approach to bushfire preparedness that matches suppression response capability with risk, and multi stakeholder response protocols.

Geographical Information Systems could be used to monitor fire risk in real time and on a daily basis, and to deploy suppression forces in direct proportion to risk.

Given the likely increase in fire risk due to climate change, which may alter the current environment (e.g. less rainfall, dryer conditions), more emphasis should be placed on risk mitigation and fire preparedness planning at a landscape level, involving all relevant stakeholders with fire management responsibility. This would involve cooperation and joint planning by landholders, industry and community groups and government agencies such

as Fire Services, Land Management Agencies, local Government and other state and federal agencies.

The continuation of federal and state government initiatives, such as the Bushfire Mitigation Program now under the Disaster Resilience Program (Disaster Resilience Australia Package) aimed at identifying and addressing bushfire mitigation risk priorities across the nation are important to fund fire management at a landscape level.

f. the appropriateness of planning and building codes with respect to land use in the bushfire prone regions;

In Queensland, the planning codes and building standards in bushfire prone areas are regulated through the *State Planning Policy SPP1/03 – Mitigating the Adverse Effects of Flood, Bushfire and Landslides* and to some extent the revised Australian Standard AS3959 -2009 - *Building in Bushfire Prone Area*s, which is expected to be adopted in Queensland by October 2009.

In the past, urban development was often surrounded by a cleared rural buffer. More recently, urban development is moving into rural areas and natural vegetation. Additionally, there has been a tendency to subdivide large bush blocks on the urban fringe.

Environmental controls generally prevent the clearing of native vegetation. Where rural land is subdivided, revegetation with native species often creates the same bushland environment without adequate means to manage the bushfire risk. Future disasters in these areas are inevitable unless adequate precautions are taken.

QFRS has prepared maps for all local governments in Queensland showing Bushfire Hazard Assessments. The maps have been developed in accordance with the methodology stated in Appendix 3 of the *State Planning Policy 1/03:* Local governments utilise these when undertaking Natural Hazard Assessments.

g. the adequacy and funding of firefighting resources both paid and voluntary and the usefulness of an impact on farm-labour

QFRS has approximately 3,059 full time equivalent employees, which includes operational firefighting staff (including auxiliary staff) and support personnel (including communications, maintenance, administration and corporate services staff) and around 34,000 volunteer firefighters.

The operating budget for QFRS for 2008-09 was $397.9 million. This has been increased by $35.1 million to $433 million for 2009-10. Queensland continues to increase investment in Rural Operations divisions to ensure that capability is commensurate with the State's bushfire risk.

Last year $4.5 million was spent on the construction of rural firefighting appliances and firefighting trailers, to provide an anticipated 34 new or

replacement appliances. This includes the first six of 14 specialised appliances that have a minimum 3,000 litre water carrying capacity and are fitted with essential communications and firefighting equipment.

Rural Operations also provide a range of services and financial subsidies to rural fire brigades, including grants for specified projects, training, community education, geographic information and administrative support.

Emergency services workers and volunteers face increasing operational demands. To maintain their operational capability and effective frontline emergency services delivery it is vital that adequate resources, both fiscal and human resources are made available. Continuation of federal and state funding for fire management is vital. Additionally, alternative funding arrangements such as industry funding/donations and cooperative agreements need to be explored.

h. the role of volunteers

Queensland rural communities rely heavily on volunteer firefighters for protection from bushfires and other emergency situations. This is replicated in all Australian States and Territories where volunteer-based fire services provide the majority of community protection during bushfire emergencies.

In Queensland, approximately 34,000 volunteers make up the 1,480 rural brigades across the state, which are supported by part-time and full-time firefighters. An estimate of the time and financial contribution that rural volunteers make to the Queensland community cannot be provided; however it is recognised that they provide a depth and capacity that cannot be achieved through the number of paid firefighters.

Research suggests that Australian volunteer-based fire agencies lose between 6.7% and 8.3% of their total volunteer firefighter memberships annually. Reasons for leaving volunteering include work and family needs, moving away from the area, dissatisfaction with their role as volunteers in the organisation, dissatisfaction with the organisation and age and/or health issues.[4]

Volunteers have also cited concerns about the possible negative impacts of climate change on the frequency and severity of large fires which would inevitably require greater demands on volunteers' time and the current economic uncertainty.[5]

[4] McLennan, J. Birch, A, Cowlishaw, S., and Hayes, P (2009) Maintaining volunteer firefighter numbers: Adding value to the retention coin. *The Australian Journal of Emergency Management,* Vol.24, No. 2, p 40

[5] McLennan, J. (2008) *Issues facing Australian volunteer-based emergency services organisations: 2008-2010: A report prepared for Emergency Management Australia (EMA).* Complex Decision research Group, School of Psychological Science, La Trobe University, Bundoora in McLennan, J. Birch, A, Cowlishaw, S., and Hayes, P (2009) Maintaining volunteer firefighter numbers: Adding value to the retention coin. *The Australian Journal of Emergency Management,* Vol.24, No. 2, p 40

As with all Australian jurisdictions, Queensland is identifying ways to strengthen the capacity of its volunteer pool to meet the increasing demands on the State's fire service.

In her report[6], commissioned by Emergency Management Australia (EMA), Judy Esmond also identified five major challenges to the sustainability of, and growth in emergency management volunteers. These five areas feature prominently in the Volunteer Management Strategy being developed by the DCS. Grounded in the *Toward Q2*, *Queensland's Tomorrow* target of increasing the proportion of Queenslanders involved in their communities as volunteers by 50%, the Strategy consists of significant number of initiatives in the areas of recruitment, support, training, management, retention and resourcing of volunteers.

Key initiatives within the Volunteer Management Strategy include:

- development of new membership roles for the RFS and SES;
- investigating the feasibility of a volunteer passport to allow national recognition of qualifications;
- enhanced leadership opportunities;
- e-Learning initiatives to promote flexible learning options;
- review and implementation of exit interviews for volunteers;
- whole-of-Department volunteer survey to be conducted in 2009; and
- review of grants and subsidy programs.

Volunteer recruitment is based on local rural brigade requirements and often stems from a sense of mutual obligation to support their local rural community. Volunteers typically experience out of pocket costs for transport, uniforms, training, and incidental expenses. On average, involvement in volunteering will cost an individual between $300 and $600 per annum. Rising costs of living may cause some to rethink their volunteering commitment.

Volunteers are part of the social fabric of many rural towns and localities. To maintain competent, skilled rural volunteers, the Queensland Government promotes volunteering and commits significant resources to their training and development.

In 2008-09, $2.5 million was spent on the training and development of rural fire volunteers. The Queensland Government is improving Rural Fire Service training to ensure that volunteers are appropriately skilled, thereby strengthening the State's bushfire response capability. For example, the Volunteer Learning and Development Framework is a new training structure, linking training to volunteer roles. By aligning training courses to Rural Fire Service roles, volunteers have the opportunity to develop and maintain the specific knowledge and skills necessary to perform their role within the brigade.

[6] Esmond, J (2009) *Report on the Attraction, Support and Retention of Emergency Management Volunteers*. Commonwealth of Australia

Queensland has supported emergency management volunteers through a $52 million funding package over five years to boost equipment and training for emergency services volunteers; and through commitments to specialised rural fire appliances and upgrades to vehicles.

The complex legal and administrative requirements for volunteers (for example police records checks, insurance, financial accountability, workplace health and safety) create additional financial impost for government. In Queensland, the impact of these requirements on volunteers has been minimised through:

- comprehensive QFRS motor vehicle insurance policy covering privately-owned vehicles and machinery made available to brigades;
- Queensland Government Insurance Fund protection for volunteers, indemnifying them against liability while they are engaged in authorised activities;
- grant indemnities and legal assistance in relation to civil proceedings, inquiries and investigations; and
- workers' compensation in the event of injury sustained during authorised activities.

Volunteer shortfalls can be attributed to a range of other factors including a decline in rural and remote populations, an increase in transient populations, and a shortage of people to undertake paid work in regional and remote centres.

To ensure volunteering for rural fire brigades remains an attractive and viable option, there is a need to:

- identify and address 'avoidable' reasons for resigning;
- provide a suitable work-life balance for volunteers; and
- support improved quality of brigade leadership/management.[7]

Queensland will continue to develop and investigate ways to ensure the sustainability and capability of its volunteers through state driven strategies and its participation in the National Volunteer Action Plan Reference Group.

i. The impact of climate change

The variation in climate across an area the size of Queensland (more than 1,730,000 square kilometres) is considerable ranging from low rainfall and hot summers in the inland west, a monsoon season in the north, and warm temperate conditions along the coastal strip, in contrast with low minimum temperatures that can be experienced inland and about the southern ranges. Climate change is exacerbating many of the already harsh conditions experienced across the State which has resulted in some areas being subject to flooding while others experience the devastating effects of drought.

[7] McLennan, J. Birch, A, Cowlishaw, S., and Hayes, P (2009) Maintaining volunteer firefighter numbers: Adding value to the retention coin. *The Australian Journal of Emergency Management,* Vol.24, No. 2, p 45

Already this year, Queensland has experienced several episodes of heavy rainfall that has caused major flooding across the State. While there may seem to be a disconnect between the heavy rainfall and the State's bushfire season this weather has in fact resulted in heightening Queensland's fire potential for the 2009-2010 season.

Fire Season Potential in Queensland is based on climate outlook, current weather conditions and existing and potential fuel loads. Queensland's fire season usually commences in late winter in the far north and north-west, progressing south into central inland and coastal areas to the south-east border during spring. The fire season continues through summer in southern and far south-western Queensland. In 2009, the increased wet weather created additional vegetation to fuel fires throughout the State, and has also hampered property owners' efforts to reduce fuel loads through controlled burning. Consequently, excess fuel loads have led to early-season fires near Rockhampton and Gladstone. However, there is no evidence that fire potential in Queensland has increased as a result of climate change since last year.

Changes in global climate have the potential to significantly impact on the bushfire threat in Queensland, although the prediction of the overall impacts of climate change in specific regions is complex. Current climate change models suggest that for south-eastern Australia there could be an increase in the frequency of very high and extreme fire danger days, especially in inland areas. An increase in temperature, in combination with a drying climate also suggests that the window of opportunity to carry out prescribed burning to mitigate the impact of wildfires is likely to decrease. In northern Australia, current predictions suggest that the frequency of severe weather events such as cyclones, storms, floods and droughts could increase. This can have far reaching impacts including some ecosystems becoming more arid, increased lightning strikes, and more severe cyclones.

The incidence and severity of bushfires does not feature significantly in projected climate change scenarios as their occurrence will depend on a range of factors, of which climate is only one.[8]

One of the most important factors that requires significant consideration is how climate change will impact on vegetation creep. For example, climate change may result in the marked increase of a particular species of vegetation which carries a high fuel load volatility. A determining factor in a potentially manageable fire becoming an unmanageable fire is the "abundance and dryness of the fuel and the occurrence of suitably hot and windy conditions that cause fire to spread".[9] Being able to identify which species of vegetation will be affected will assist fire services with developing mitigation strategies to reduce the potential impact that the increase would otherwise have had.

[8] Pittock, B (editor) (2003) *Climate Change: An Australian Guide to the Science and Potential Impacts* Australian Greenhouse Office, p 65
[9] Ibid 7

Queensland emergency services are preparing for the possibility of future climate change. DCS is contributing to state and national agendas to ensure that the development of strategies for adapting to changing patterns of natural disasters and extreme weather events remains at the forefront of policy development. At a state level DCS is contributing to the review of the existing Queensland climate change policy frameworks, *ClimateSmart 2050* and *ClimateSmart Adaptation 2007-12* and the review of the *South East Queensland Regional Plan: Climate Management Plan*.

At a national level, DCS is a consortium partner of the National Climate Change Adaptation Research Facility and in this role influences work in relation to the development of strategies for adapting to climate change effects. DCS is a member of the drafting team which has developed the National Adaptation Research plan to set the research priorities for the disaster and emergency management sectors.

As the understanding of the probable impacts of climate change at a state and regional level becomes more certain, there will be a need for more targeted research and review of operational capability.

j. fire – its causes (accidental, natural and deliberate) and remedies;

Causes of bushfires include natural causes such as lightning strikes, or as a result of human activity. These can be as simple as a poorly extinguished campfire to escaped burns from prescribed burns; fires started by equipment or machinery; and deliberately lit fires. This category includes all fires which are deliberately lit and develop into bushfires. Examples include children playing with matches or experimenting with fire, farmers deliberately lighting fires without necessary permits or authority, or fires lit with the intent to cause damage or destroy property. Much of the public debate around bushfire arson focuses on these fires and the subsequent sentencing of arsonists. Due to the inherent difficulties of catching and convicting bushfire arsonists, this rarely occurs.

Australian fire agencies have a long history of running programs and promoting community safety to reduce the incidence of bushfire arson and potential damage of fires. Programs in schools, advice on the preparation and defence of property and other community education activities are well-established. Most of these programs have, to date, been concerned with protecting against fire rather than preventing fires from starting.

Primary prevention techniques to reduce deliberate bushfires need to rely on an understanding of the situations in which such fires occur and either changing something about the environment or the community in order to prevent it happening in the future. For example, available evidence on bushfire arson suggests that the risk of deliberate fires is higher during certain

times of the year and week and often most notably on the fringe of urban areas.[10]

A cooperative approach by fire agencies, land management agencies and police is required to identify and document arson hotspots. Once an understanding of the arson pattern is established, appropriate prevention techniques can be applied in order to reduce bushfire incidents. QFRS is currently working with the Queensland Police Service through an exchange program to obtain data on the location of habitual arsonists to enable this to be and mapped along with Australasian Incident Reporting System data on suspicious fires.

A proactive management approach to fire prevention is considered to reduce the likelihood of deliberately lit fires to develop into severe wildfires. By knowing where frequent arson attacks occur and using prescribed burning in high risk areas to reduce available fuel, this can reduce the risk of a severe wildfire. Again, this approach relies on the close cooperation of relevant agencies.

Further avenues of arson prevention programs can explore the effectiveness of juvenile and adult intervention programs. Providing sufficient resources for fire agencies and law enforcement agencies to carry out bushfire investigations and research into bushfire arson, not only to improve conviction rates of offenders but to develop better fire prevention strategies, are equally important.

k. the impact of bushfires on biodiversity and measures to protect biodiversity.

Bushfires of a large scale, high intensity and high frequency can have an immediate and severe impact on biodiversity that may, depending on the affected ecosystems, catchment areas or species, take years to fully recover. These bushfires are often the result of inappropriate fire regimes, and in particular, of an insufficient level of landscape-scale prescribed burning.

For land managers, the implication of prescribed burning for biodiversity management is a significant issue as the ecologically sustainable management of ecosystems needs to be balanced in many areas with hazard reduction burning to protect life and property and to mitigate the development and impact of wildfires.

Increasing their knowledge base through extensive research programs will help land managers to protect life and property while maintaining ecological processes essential to ecosystem health and productivity, and improve awareness and understanding of the role of fire in biodiversity management.

[10] Muller, D.(2009) Using Crime Prevention to reduce deliberate bushfires in Australia, *Australian Institute of Criminology*, Research and Public Policy Series 98, Australian Institute of Criminology, Canberra

An increase in prescribed burning across the landscape in a manner that mimics natural fire regimes, represents the most appropriate strategy for minimising the immediate and long-term threats to biodiversity from large and intense bushfires.

This is somewhat contradictory however, to the continuing trends of reduced expenditure by government land management agencies, reduced expertise, and greater reliance on suppression by fire and volunteer agencies, which makes it increasingly difficult to carry out prescribed burning programs.

Burning for biodiversity will require more specific prescriptions and a wider range of intensities and burning conditions than is required for hazard reduction burning alone. This in turn will require better knowledge of fire behaviour, better practical application of fire, and additional resources in terms of personnel and equipment to allow burns to be carried out in a safe and timely fashion.

I. insurance against bushfires

A comprehensive analysis of the economic costs of natural disasters, including bushfires in Australia has not been undertaken since the Commonwealth Bureau of Transport Economics released their report in 2001.[11] The report looked at natural disasters from 1967 -1999 and estimated that natural disasters cost the Australian community between $860 million and $1.14 billion per annum. In projecting the average annual cost, bushfires in Queensland made up four million of the average annual cost.[12]

Despite the high risk posed by bushfires in many areas, lack of insurance against such natural disasters is a common problem throughout Australia. According to a survey conducted by the Insurance Council of Australia, around one in four Australian households has neither building nor contents insurance and many more are underinsured.

In the aftermath of natural disasters there has been much debate about whether insurance should be compulsory. Putting aside the financial ramifications for insurance companies, it is difficult to imagine any government pursuing a compulsory insurance scheme as bushfires are only one of the many natural disasters potentially impacting on communities. For many individuals, insuring their private home and other possessions is a personal choice and decisions about insurance cover are made based on a perceived level of risk and available and affordable insurance policies.

There is scope to work with the Insurance Council of Australia and industry to provide consumers with more flexible insurance options that may lead to a wider public acceptance, including:

[11] *Bureau of Transport Economics* (2001) "Economic costs of natural disasters in Australia", Report 103, Canberra.
[12] *Bureau of Transport Economics* (2001) "Economic costs of natural disasters in Australia", Report 103, Canberra, p 35

- working with the insurers to explore broader cover under their policies and identify and provide consumers with access to more reliable tools for calculating rebuilding costs;
- facilitating better communication between insurers and their clients to improve understanding of insurance coverage need; and
- continued promotion of appropriate community education messages about underinsurance and non insurance.

Summary

Bushfires are a part of living in Australia, and will inevitability have some impact on the environment, public and private assets, local communities and individuals.

The events of 7 February 2009 are a shocking reminder of how severe bushfires can be. Yet, effective emergency services frameworks and risk mitigation strategies are currently operating in Australia which have prevented similar tragedies from occurring.

To diminish the potential impact of bushfires on the State, Queensland has in place a range of successful mitigation strategies and activities that are designed to put the State in the best position to defend those areas at highest risk, including:

- working with stakeholders to develop cooperative management approaches to bushfire prevention and risk reduction;
- operating a world class fire service;
- using proven hazard reduction strategies; and
- supporting the capacity and capability of Queensland volunteer firefighting forces.

The most important strategies Queensland implements are those that educate and raise awareness within the community about how to live with, and minimise the potential impacts of bushfires.